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The Sustainable Business Perspectives: Circular Economy and Textile Recycling Market Opportunities

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INTRODUCTION

The relationship between sustainability principles and the business dimension has become a key issue in the last decades. Especially in recent years, the development of international market trends, such as globalization, offshore-outsourcing and emerging countries rapid growth, accelerated the urgency of integrating economic systems and corporate organizations by adopting wider management point of views, also from the sustainability perspective.

Circular economy could be one of the possible approaches to understand business, environmental and social implications of a product or a sector. Circular economy principles refer to an economic system that efficiently uses resources and does not generate wastes throughout all different phases of a product life cycle. The basic concepts are not new, but in the last period particular attention to this issue has been paid by researchers and institutions.

Therefore, the first part of this work will present the circular economy' theoretical framework: fundamental principles upon which the theory is based will be described, the motivations that fostered European institutions in promoting and eventually financing circular economy initiatives will be explained and contextualized, and appropriate managerial tools that could support principles' realization will be identified.

Circular economy lenses will be then applied to analyze recent evolution of the European and Italian

Main research themes and questions:

1) Theoretical analysis: Explanation of circular economy fundamentals and individuation of which could be appropriate managerial tools to realize circular economy principles.
2) Theoretical application: Use of circular economy lenses to analyze the Textile and Clothing industry' evolution.
3) Empirical analysis (qualitative): Formulation of a general model regarding the state of the art of Italian T&C recycling branch and potential business opportunities related to circular economy in the sector. The framework should also map involved economic actors.
4) Empirical analysis (quantitative): Investigation of how to concretely take advantage of circular economy possibilities in the Italian T&C sector.

textile and clothing sector. The observation of interesting recycling initiatives promoted by fashion brands (e.g.: H&M "Close the loop project[1]") has been the starting point for this specific, in-depth analysis of the T&C industry. Therefore, the sector will be analyzed from a wider perspective, meaning that economic, environmental and social effects of all value chain stages will be considered.

The empirical analysis of this work will try to provide two contributions: first, a general model that should describe which are current options to reuse and recycle used textiles and garments in Italy and should map who are the economic subjects involved in close-the-loop activities. Second, the quantification and strategic planning of one of the market possibilities.

Therefore, T&C reuse and recycle options and future business opportunities will be more in depth investigated, focusing on the state of the art in Italy, in order to formulate a reference model (Qualitative research). Then, the quantitative-empirical research will explore market demand and offer of one of the emerged business possibilities and which would be an appropriate strategy to concretely take advantage of it. The expected results consist in the quantification of the potential market size and in the development of a consistent business model, and relative plan, to generate value.

[1] H&M "Close the loop" initiative consists in giving customers who bring used clothes to H&M shops a discount ticket on new acquired garments (H&M Website).

CHAPTER 1. THE RELATIONSHIP BETWEEN BUSINESS AND SUSTAINABILITY

In the last decades the relationship between companies and sustainability issue has been contradictory, since firms have managed their impact on natural ecosystems and society in very different ways. Indeed, on one side, sustainability principles' implementation for businesses means costs, investments, changes and efforts for innovation. On the other side, sustainable approach could be seen as a strategic opportunity for growth or as an interesting way to catch attention, and relative profits, of costumers who care more about environment.

Nowadays the phenomenon of sustainable business has become more complex and there are more than two alternative perspectives. Many different factors, such as economic and financial crisis, fast growth of emerging countries, higher competition at the global level and growing customer awareness, influence decisions and have to be analyzed in order to better understand the actual context in which enterprises operate. Thus, companies are facing challenges, that seem difficult to solve through traditional business models. In particular, new perspectives and patterns for a more sustainable and integrated economy have been developed and are now quickly diffusing because of their effectiveness.

This chapter will provide a brief explanation of sustainability principles and their historical development, with a specific focus on their implications on companies activities. Then, motivations and organizational drivers towards sustainability will be analyzed, together with possible approaches to related changes. This general introduction will serve as background to better understand the link between business and sustainability and will present the fundamentals from which the new sustainable strategies, that will be further described, derive.

1.1 Definitions and Dimensions of Sustainability

Since the awareness about environmental and social issues has risen, several definitions have been formulated to describe emerged sustainability concepts,. The increasing amount of new expressions is however dispersive. Terminology in the field of sustainability has become crucial in order to avoid confusions and misconceptions (Glavič and Lukman, 2007).

For this reason, it is fundamental to clarify the meaning of important terms that are going to be used in this work. The following definitions have been selected and chosen as more significant to offer a general idea of the field that will be examined.

1.1.1 Principles of Sustainability

The concept of sustainability has originally been expressed in the famous and most diffused definition of "sustainable development", described as a "development that meets the needs of the present generations without compromising the ability of future generations to meet their own needs" (WCED 1987, p. 43).

In this wide definition, some key ideas related to sustainability can be identified. First, growth and improvements of life's quality remain central: through the acceptance of the intrinsic dynamism of world mechanisms, a continuous development is affordable, but limitation of resources and environmental capacity entail necessary researches to find better ways and technologies that guarantee life. Second, the long term perspective is embodied in the attention for future generations of every kind of living beings, included humans, animals and plants, pursuing intergenerational equity. Finally, world has to be seen as a system of interacting and interdependent parts, linked by exchanges of matter, energy and information, and narrow views should be avoided because they underestimate real effects. As a result, space and time are connected, which implies to consider consequences of people activities simultaneously both in the spatial dimension, without fixed boundaries, and the temporal one, knowing that the present time is decisive for the future time.

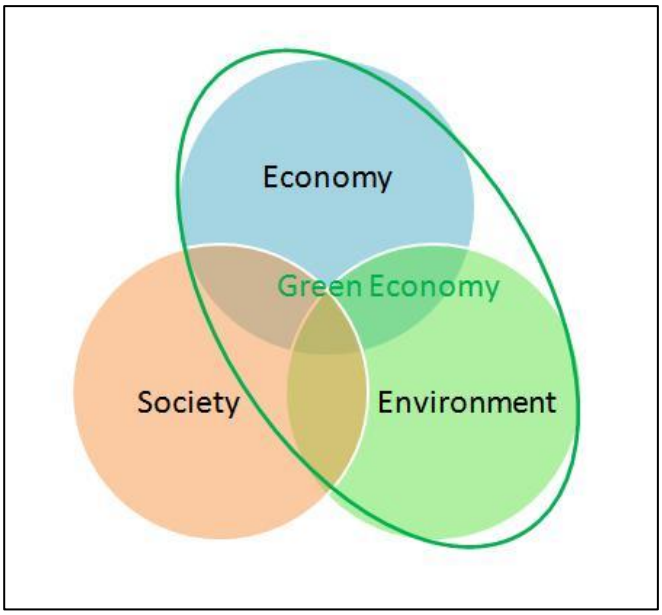
There are then two distinct approaches related to sustainability . On one hand, "hard sustainability" approach assumes that human capital cannot substitute natural capital, the last one being a stock of limited natural resources, continuously depleting. On the other hand, "soft sustainability" states that the replacement between the two capitals is possible, especially improving technological abilities (Becker, 1997).

1.1.2 The Three Pillars of Sustainability

Three main issues are involved in sustainability: economic growth, social equity and natural systems carrying capacity. These three aspects are interconnected, but their systemic integration in the business world is still in the development phase.

Actually, the need of harmony between economy, society and environment has always been recognized by different cultures. It is almost a paradox that the environmental issue has become important only in the last period, since every kind of human activity has an impact on natural eco-systems. In particular, economic activity is the mere transformation of raw materials and people labor in marketable outputs within the environmental context. Anyway, the actual background of global industrialization, advanced technology and information society modifies the approaches and actions that have to be taken to deal with sustainability (International Institute for Sustainable Development, 2002).

Figure 1 The three pillars of Sustainability



The expression "green economy" stems from the idea of an economy based on "improved human well-being and social equity, and significant reduction of environmental risks and ecological scarcities" (UNEP, UNEP Website(a)),. This is not the unique proposition and, among years, this term has assumed a wide range of meanings, since its general definition could include green policies as well as green business strategies. In any case, with the term "green economy" all the aspects that refer to the relationship between environment and economy are considered.

1.1.3 Corporate Sustainability

As it will be further explained, for a long time sustainability has been seen only from a macroeconomic perspective, almost ignoring managerial implications and not considering the micro level approach. The specification of "corporate sustainability" maintains substantially the general sense of sustainability described above , but at the same time differs from it because for a company the competitive and organizational contexts are predominant (Stocchetti, 2012).

Therefore, at a business level, sustainability could be defined "as meeting the needs of a firm's direct and indirect stakeholders (such as shareholders, employees, clients, pressure groups,

communities etc.), without compromising its ability to meet the needs of future stakeholders as well" (Dyllick and Hockerts 2002, p. 131).

The practical goal for enterprises is then "to minimize the impact of their activities on the environment and on social discomfort, without sacrificing profitability" (Stocchetti 2012, p.34), and to develop a long run vision which considers the economic, social and ecological dimensions simultaneously. Therefore, managers have to adopt new strategies to meet today's stakeholders needs and protect human and natural resources for the future at the same time.

According to Dyllick and Hockerts (2002), an enterprise could be sustainable:

1) Economically, when its economic capital (financial, tangible and intangible goods) is managed to ensure positive cash flows and a above average return on investment to shareholders;
2) Environmentally, when it consumes natural capital, which consists in both renewable or non-renewable resources and ecosystem services (e.g. plant and animal reproduction), at a rate below the natural reproduction, or at a rate below the development of substitutes and it takes care about the carrying capacity of the surrounding ecosystem;
3) Socially, when it adds value to the local community improving relationships with different stakeholders by conducting business in respect of human rights (societal capital), and it fosters individual competencies to grow (human capital).

These authors also assume that the three types of capital are rather complementary then substitutes, because not every kind of natural and social resources can be replaced by economic capital. Other assumptions are also the irreversibility of natural and social capital depletion and the non-linearity of environmental processes, which means that negative consequences could suddenly occur after an unknown threshold is reached. These considerations reflect the hard sustainability thinking, but the possibilities offered by technology have to be included in the reasoning as well.

Even if for a long time the economic part has been seen as separated from the other two and considered decisive for corporate survival, nowadays the interdependency and the need of integration between the three dimensions are recognized as crucial to achieve strategic advantage. In this work, the focus will be mainly on the linkage between corporate strategies and environmental issues.

1.2 Evolution of Sustainability in Management

Since the early nineteenth century, the increasing openness of trade and the financial, capital and people movements at international level have intensified the environmental tensions, becoming particularly intense, especially after the Second World War when western countries experienced high economic growth rates. Thus, initially sustainability issues mainly concerned natural ecosystems' problems caused by businesses.

Thanks to scientific researches and evidences about climate change and global warming at the end of the 1960's, the negative effects on the environment of economic activities has been acknowledged and the concept of "sustainable management" has slowly emerged.

Hart and Milstein (2003) have organized the noteworthy motives of sustainability development, individuating four main drivers:

1) Increasing Industrialization and the related high rates of pollution, resource consumption and waste creation;
2) Proliferation and intercommunication of civil society stakeholders, such as non-governmental organizations connected with environmentalists, particularly helped by information technology that has enabled principles diffusion;
3) Disrupting and sometimes unexpected improvements of technology in new fields, like nanotechnology and renewable energies;
4) Population, poverty and inequality increases caused by globalization.

1.2.1 The Global Dimension of Environmental Problems

The recognition of the environmental issue as a global problem has been the starting point, since spill-over and consequences of polluting actions don't remain into politically defined national boundaries, but spread all over and could potentially damage entire ecosystems.

This reason has led Sovereign States to collaborate internationally to find together possible solutions. Implications on companies, anyway, took long time before becoming effective: delays and inertia were unavoidable, given the implicit threat to business interests and given the macroeconomic perspective which has dominated the sustainability issue, through a sort of hegemony, putting in shadow the actual relevance of micro-level sustainability policies.

1.2.2 Milestones of Sustainability

In 1972 a group of scientists, government officials, economists known as the “Club of Rome”, published the book “The Limits to Growth”, which scientifically demonstrated how global resources, in a near future, would not be able to satisfy the needs of a fast-increasing population. In the same year, during the Stockholm Conference on Human Environment, the United Nations decided to involve world citizens in acting responsibly towards environment, declaring principles which should “inspire and guide people of the world in the preservation and enhancement of the human environment” (UN, 1972). Therefore, UN established the United Nations Environment Program (UNEP), an international, stable institution that promotes ”the wise use and sustainable development of the global environment” and represents the Environmental Department of the UN (UNEP, UNEP Website(b)).

Attention on sustainability has highly increased after the publication, in 1987, of the World Commission on Environment and Development report “Our Common Future”, where the previously mentioned specification of “sustainable development” has been defined.

In 1992, at the earth summit “United Nations Conference on Environment and Development (UNCED)” in Rio de Janeiro, another important organism was established: the United Nations Framework Convention on Climate Change (UNFCCC). Its main goal is to coordinate the cooperation between countries to limit average global temperature increases and the resulting climate change (UNFCC Website).

With the UNFCCC began then a long process of international cooperation and research to find possible instruments, mechanisms and solutions for environmental problems. One of the most important agreement signed has been the Kyoto Protocol in 1997, that committed 37 industrialized countries and the European Union to set and respect CO2 emissions reduction targets compared to 1990 levels over the period 2008-2012. The Protocol legally bound only developed countries (Annex I Party) because of their greater responsibility regarding current high levels of greenhouse gas emissions, stating the central principle of “common but differentiated responsibility”.

The Kyoto Protocol consisted in a compliance system of flexible market-based mechanisms, which should internalize environmental costs, recognized as a negative externality. At that time, three possible measures had been provided. The first was the creation of an Emissions Trading System

(ETS), that set levels of allowed emissions and allowed countries with excess capacity to sell it. The other two mechanisms were connected with the possibility to develop emission-reduction project in developing countries (Clean Development Mechanism), or in other industrialized countries (Joint implementation), earning in this way saleable certified emission reduction credits or units which could be counted towards meeting Kyoto targets.

Over years, various other programs have followed and big investments have financed projects aiming at substituting polluting devices and routines (Adaptation Programs) or to support research and development for new solutions to be less polluting (Mitigation Programs). Nevertheless, at the end of the Kyoto Protocol commitment period in 2012, no binding agreements were signed and no fixed goals were set during the Rio Plus 20 UNFCC Convention. Therefore, the result of decades of meetings, negotiations and multinational treaties related to sustainability is a complex system of nice principles and environmental laws, that strives to mediate interests and point of views of a lot of actors, but has difficulty in concretely changing behaviors.

Presently, UN agencies recognize that sustainability could imply huge costs, high risks and large-scale actions that are feasible only at a global level. For these reasons, the latest programs promoted by UNFCC, the “Climate Finance” and “Development and Transfer of Technology”, which aim to foster cooperation between countries through mechanisms that facilitate financial resources sharing for R&D projects and transfer of acquired technological knowledge.

It is remarkable that most of the measures above described committed Countries in acting against environmental pollution, since they are considered responsible for public goods involved, such as nature preservation and health security, and they have the legislative and executive power required to change people habits. National Governments have been free to implement the best measures they thought to reach their targets, therefore only in a second moment implications involved individuals and companies.

Indeed, the tools suggested by international regulators to foster green growth at the micro-level influenced firms and consumers behaviors in a more light and indirect way. The possibilities have been (World Bank, 2012):

1) Incentives: using market base mechanisms, for instance price instruments (taxes and subsidies), or quantity ones (tradable permits schemes, i.e. for CO2 emissions);

2) Information: improving green accounting, tackling firm behavioral biases and enabling public pressure through conscious information diffusion;
3) Imposition: levering upon norms and legislations.

1.2.3 From Macro Perspective to Micro Approach

As seen in the previous paragraph, since the beginning the policy-based or macro-level perspective approach has been dominant, providing concepts, principles and guidelines for regulations that are insufficient yet. It is evident that a unique approach is not enough effective and the micro level has to be necessary considered and integrated.

The micro perspective involves individuals and enterprises, consumers and producers, that are responsible for the largest part of human imprint on the environment because of their behaviors and habits. Even this approach requires global participation and contribution, since the convenience stands at the global level.

In particular, the focus of this work will be on "**the business link to sustainability"**. Indeed, for a long time no appropriate attention has been paid from environmental institutions to business dynamics, especially regarding actual implementation of sustainability principles, like individual motivation or business processes. In parallel, the majority of companies and managers have deliberately ignored the damages on environmental ecosystems and the irreversible degradation of natural resources, whose they were responsible for, and they have also boosted indiscriminate consumption and waste creation models (Stocchetti, 2012).

The recent, but rapid, shift of environmental responsibility from local authorities to business activities pushed corporate management to action. In effect, over the last decades, implications on private companies have almost become a priority. The main causes are connected with the fact that:

- Environmental institution regulations have become effective;
- Customer environmental awareness has increased, thanks to critical mass media communications;
- Serious environmental catastrophes caused by corporations, such as oil spills or entire area contamination, occurred;
- and Environmentalists and animalists have given rise to doubts about the way firms conduct their activities.

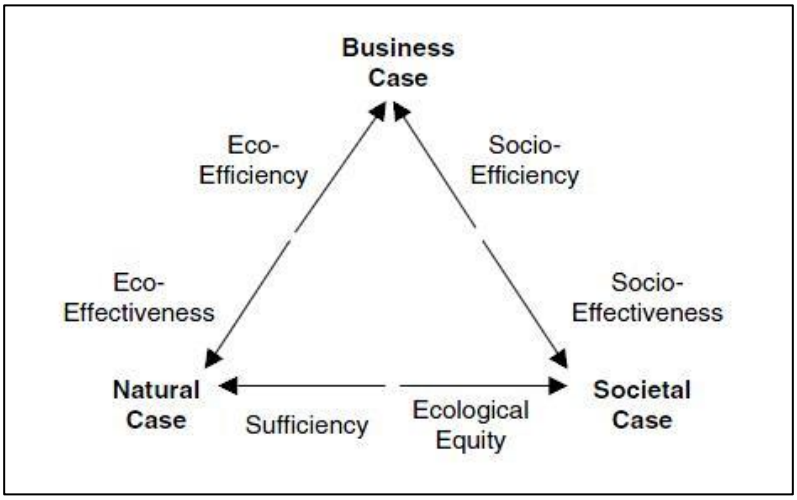
Beyond obligations and urgency, a spontaneous and voluntary acknowledgement of corporate responsibility has developed in parallel and it is known as "Corporate Social Responsibility" (CSR). It moved enterprises' focus from shareholder value creation onto stakeholders relevance, consideration and participation, including also social and societal issues (Hart and Milstein, 2003).

Even though industrial systems often determine environmental depletion and social concerns, they are also source of development and wealth for people (Azapagic, 2003), therefore the spillover of a sustainable approach to business management is both a challenge and a good opportunity for managers to adapt and improve strategies, integrating through a holistic method the innovative criteria of sustainability that should guide all daily decisions (Stocchetti, 2012).

1.3 Corporate Answers to Sustainability Call

When it comes to Corporate Sustainability, three cases, corresponding to the three pillars and capital of sustainability, have to be simultaneously and equally considered: the business, the natural and the social one (Dyllic and Hockerts, 2002).

Figure 2 The six Criteria of Corporate Sustainability. (Source: Model adapted from a previous work by Hockerts (1996, 1999). Source: Dyllic and Hockerts, 2002).



The "**business case**" refers mainly to the efficient use of natural resources (*eco-efficiency*, calculated as the relation of economic value added/aggregated ecological impact - Schaltegger and Sturm, 1998-) or social capital (*socio-efficiency*, calculated as the relation of economic value added/social impact -Figge and Hahn, 2001-) and the possible profit and financial opportunities offered by the adoption of a sustainable approach. From this perspective, the contribution of companies to sustainability is seen as instrumental to make more profits, reduce costs and improve brand reputation, thus without compromising economic performances. Until recent time, the focus of management research and literature have been mostly concentrated on this "case", trying to demonstrate the achievable profitability and win-win solutions, and has led to relative improvements rather than considering the whole implications.

Instead, for the "**natural case**" the main goal is to produce better environmental good. Regarding to the link between environment and business, *eco-effectiveness* is the appropriate criterion. It regards, for instance, the relativity of polluting behaviors respect to surrounding eco-systems and carrying capacity or the possible negative correlation between higher resource productivity (positive for efficiency) and nature degradation (negative for effectiveness). On the other hand, *sufficiency*, related to nature and society, is a subjective parameter that should indicate the reasonable amount of natural resources per person. Actually, many authors suggest that the latter issue is about individual choice and not corporate responsibility, but studies in this field are still missing and necessary in order to better analyze this concept.

Finally, two criteria concern the "**social case**": socio-effectiveness, intended as the conduction of business focused on an absolute positive social impact, and ecological equity, that considers the problem of natural capital distribution and consume respect to present and future generations.

Following this approach, enterprise managers should constantly try to Integrate the three cases, by improving economic, environmental and social performance at the same time, even if it seems impossible to reconcile with short-term financial pressures or profits delivery demand from shareholders, aspects that are usually considered as priority. Indeed, sustainability approach requires huge efforts for modifying and innovating firm strategies and it entails a kind of revolutionary change, which is often thwarted by organization change-resistance. However, the real challenge for business management is practical implementation of principles (Epstein and Buchvac, 2014).

1.3.1 Types of Green Industries

Initially, it is necessary to distinguish the two main groups of industries that deal with sustainability.

The first type consists in firms that are purposely born with an environmental or social core value, recognizing sustainability in their mission. Parrish (2010) defines this kind of entrepreneurship as "sustainability-driven", since it embeds environmental and social purposes and it positions the related benefits on the same level of economic performance. Following this definition, nature and people are seen as ends in their own for the generation of wealth. Another possible name for this typology, formulated by Schlange (2006), is "ecopreneurship", that refers to companies committed to the modification of economic and management systems through sustainability

ideals diffusion. Some examples could be businesses that deal with renewable energies, biological agriculture and food distribution, natural cosmetics, recycling, environmental protection services and green mobility. Most of them were probably born after first signals and acknowledgment of the "environmental case" for businesses, either because they believed in environmental values or because laws boosted their creation. In this case, their own existence could prove that they can survive since a market exists, even though public incentives and subsidies have probably distorted both supply and demand side.

In contrast, the other typology, which is composed by the majority of existing industries that offer every kind of products and services, does not follow sustainability principles as its reason to exist. However, firms inevitably impact on the environment through their polluting production and distribution processes or on local communities because of occupational and wealth issues. Enterprises of this second group follow the conventional way of doing business, that is a "self-interested, profit-seeking" approach (Parrish, 2010), attributing more importance to the "business case" of sustainability, especially profitability and financial returns. Modifying their way of thinking and operate is harder, but actually the real challenge is to guide this kind of companies towards environmental sustainability.

1.3.2 Reasons to go green

Management literature has been particularly prolific regarding the research on which kind of motivations could drive enterprises to go green, thus focusing on the environmental dimension. After a deep, and hopefully exhaustive, review of different surveys, some common points were individuated. The attempt of this paragraph is to summarize and systematically organize the various theoretical and empirical findings.

The basis upon which the re-organization has been founded is the Bansal and Roth pattern about "Motivations for Ecological Responsiveness" (2000), that is grounded on an empirical research and identifies three main reasons: legitimation, competitiveness and social responsibility. For each theme, different causes have been individuated, that could have different origins and could be affected by internal factors or external influences (Epstein and Buchvac, 2014). Moreover, each specific cause has a main objective to achieve, which entails the implementation of concrete actions (named "Responsive Initiatives") and could lead to remarkable benefits (Bansal and Roth, 2000). From a strategic point of view, the possible approaches that characterize enterprises

reactions to motivation impulses have been classified in four typologies: passive, when the cause is considered a constraint; adaptive, if it responds to stakeholders requests; reactive, when it is seen in competitive advantage terms and proactive, if the company answer goes beyond compliance and mere economic incentive, since it is guided by social responsibility and ecological values. Finally, in the last column, it has been specified if the peculiar motivation and related response is correlated more to sustainability-driven enterprises thinking or conventional one. The following table has been created to better understand the involved dimensions.

Table 1 Motivations to go green. (Source: own adaptation from Bansal & Roth (2000), Hart & Milstein (2003), Schlange (2006), Parrish (2010), Epstein & Buchvac (2014)).

MOTIVATION	CAUSE TYPOLOGY	INTERN / EXTERN	MAIN OBJECTIVE	RESPONSIVE INITIATIVES	POSSIBLE BENEFITS	STRATEGIC APPROACH	SUSTAINABILITY-DRIVEN / CONVENT.
LEGITIMATION	Government Regulation (Law and Market-base Instruments)	External	- Firm Survival - Pertinence Improvement of actions within set of regulations	- Compliance with norms and Application of economic instruments - Important role of Audit	- License to operate - Long term sustainability - Avoidance of costs and risks of non-compliance	Passive / Imitative	Conventional
	Stakeholders importance and pressure	External	- Maintain company brand Reputation	- Environmental committee creation and environmental managers - Role of Reporting	- Immediate response to emergency cases - Stakeholder increased consciousness	Adaptive	Conventional
COMPETITIVENESS	Sustainable economic convenience	Internal	- Economic and Financial Opportunities Exploitation	- Eco-efficiency - Technological Innovation - Product Value Chain Synergies - Industrial Symbiosis	- Costs reduction - Risk reduction - Stream efficiency - Resource sharing - Resource Perpetuation	Reactive / Proactive	Both
	Possible Profitability	Internal	- Economic and Financial Opportunities Exploitation	- Eco-products - Eco-label development - Green marketing	- Revenues/Profit margin Increase - ROI increase	Adaptive/ Proactive	Both
	Competitors Actions	External	- Maintain or Increase Competitive Advantage and Market Position	- Other competitors Best Practices Imitation - Differentiation	-Larger market share - Higher Investor attractiveness	Reactive	Conventional
SOCIAL RESPONSABILITY	Responsability Ackowledgement	Internal	- Worthy Contribution towards sustainable development	- Environmental Programs and Action Plans Implementation - CSR instruments	- Societal and Social Satisfaction	Adaptive / Proactive	Both
	Management Commitment	Internal	- Implementation of sustainability culture	- Business strategy and operations improvements	- Satisfactory strategic and operational Outcomes - individual satisfaction	Proactive	Sus
	Moral Mandate and Obligations	Internal	- Social goods preservation - Ecological values diffusion	Individual self-sustained initiatives	- Job creation - Ethical investors - Prevent Degradation - Good feelings	Proactive / Independent	Sus

Note that, although here motivations are distinguished, in reality companies manage business unconsciously following a mix of them. Furthermore, undoubtedly the list of possible initiatives here presented is not complete, since enterprises are free to decide the most appropriate measure to implement, often on a voluntary base and without fixed standards to compulsorily follow, thus they could act very differently. As previously specified, the table aims at giving a panoramic view and general understanding of the main reasons that drive companies towards sustainability.

1.3.2.1 Legitimation

The motive of legitimation derives from two possible external inputs: government regulation obligations, implemented through norms and market based instruments application, or stakeholders pressures (Bansal and Roth, 2000; Hart and Milstein, 2003; Epstein and Buhovac, 2014). Regarding legal duties, the main goals are: firm survival and improvements of enterprise responses appropriateness within the set of established rules. In this case, the most diffused actions that conventional firms adopt are to be in line with legal requirements and to audit compliance. These initiatives permit companies to keep operating with a longer term perspective and to avoid costs and risks of non-compliance, such as fines, penalties and inspections.

On the other side, stakeholders pressures have increased resonance and their consideration is becoming crucial to maintain positive brand reputation. Always more frequently, firms destine specific departments or persons to the environmental issue and they should develop stakeholders networking and participation (Bansal and Roth, 2000). Furthermore, important improvements have been done in Corporate Social Responsibility reporting, especially related to Sustainability balance sheet formulations and contents. Enterprises benefit from this adaptive approach because they are more prepared in case of particular emergency and stakeholders are more informed.

1.3.2.2 Competitiveness

Competitiveness refers to internal factors correlated with ecological costs and benefits evaluations and to external influences from the competitive context (Schaltteger and Sturm, 1998; Bansal and Roth, 2000; IISD and WBCSD, 2002; Hart and Milstein, 2003; Epstein and Buhovac, 2014). Actually, the possible economic and financial advantage given by the exploitation of sustainable profitability opportunities and competitors actions are often the main and most considered drivers towards sustainability.

Many authors have demonstrated the economic convenience of eco-efficiency initiatives, such as pollution prevention, waste management and environmental management systems (EMS), the latter being a set of management instruments that guide resource allocation, responsibility assignments and evaluation procedures for daily business practices (Glavič and Lukman, 2007). For sustainable-driven companies, the eco-efficiency logic is translated in the "*resource perpetuation"* concept, that implies protecting and maintaining the quality of natural and social resources through sustainable consumption (Parrish, 2010). Together with technological innovations, synergies among the product value chain and industrial symbiosis (the last two will be hereinafter analyzed), all these actions lead to remarkable cost reductions, in terms of lower health, safety, energy and labor expenses; financial risk decrease; efficiency improvements along the whole process of intermediations of the product and benefits from resource sharing with companies located nearby.

The positive profit-side effects are both the consequence of costs reduction, as it increases profit margin, and revenues growth, which is achieved by taking advantage of the expanding amount of environmentally-aware customers that demand for eco-products and eco-labels development. In this direction, some institutional authorities or private consulting agencies provide the possibility to certificate ecological production processes or materials, under certain specific standard conformity, to gain trust from clients. Financially, both cost and benefit progresses enhance return on investment rates.

Mainly conventional enterprises are forced also by competitors actions that threaten their competitive advantage and market position. In this case, two different ways to react are possible: either to imitate other's best practices (follower strategy) or to differentiate product portfolio with ecological products. Thus, firms are able to obtain larger market shares and attract more investors.

1.3.2.3 Social Responsibility

Social responsibility motivation is originated firstly by firms recognition of social importance of the environmental problems. This concern leads to the voluntary desire to contribute for sustainability development. Initiatives could include environmental programs, action plans implementation or use of CSR instruments.

Giving importance to social responsibility is the first step to rise discussion and to let companies question themselves about what they concretely could do at the societal (enterprise organization

and governance) and social (entire stakeholders community) level to satisfy and privilege worthy recipients (Parrish, 2010).

Managers commitment, that comes from individual ecological beliefs, is fundamental too and could be an incredible driver and internal motor for changing companies' way of conducting business. The goal is challenging, since it refers to the integration of sustainability culture within management and operation systems, by trying to balance the competing objectives of the economic, environmental and social cases. Actions thus go from business strategy design, through for instance "Corporate Sustainability Management System" (Azapagic, 2003), or decision-making criteria indications, such as "Qualitative Management" that requires to consider outcome effects in terms of "better" than "more" (Parrish, 2010), to practical daily activities and control. The expected benefits are multiple, since they could be obtained from various satisfaction outcomes objectives, and could even lead to better general performances which can compensate individual managers efforts.

The last and probably most admirable motive is "Moral Mandate" (Schlange,2006; Parrish, 2010), that is also difficult to recognize between false slogans or statements. Schlange (2006) individuates the main objective in the mere pleasure of doing something good for preserving socially significant public goods, such as environmental beauty, and diffusing ecological values. Frequently, sustainability-driven entrepreneurs act by self-sustaining particular initiatives, like environmental education, donations or local community promotion and development. This approach gives them the possibility to create new jobs, obtain ethical investors attention and capitals, prevent regional and community qualitative characteristics degradation and feel good because they have done the right thing (Bansal and Roth, 2000) to contribute to environmental progress.

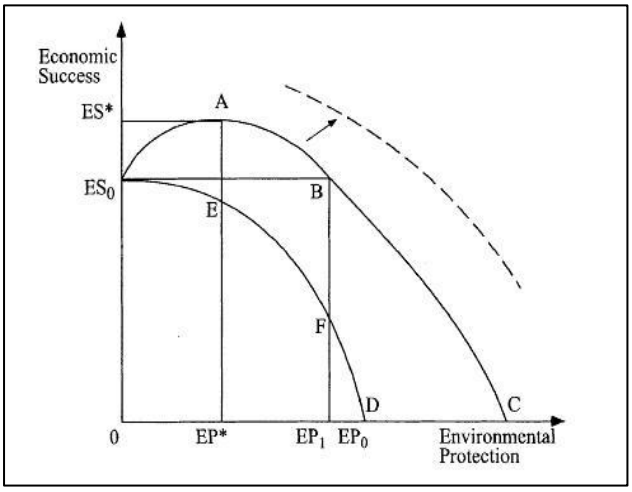
1.3.3 The Relationship between Economic and Environmental Performance and Trade-offs in Corporate Sustainability

As already mentioned, the firm real interest is to consider whether sustainable business approaches implementation could be economically convenient or not. This has actually been the main focus for a long time and it is called "business case for sustainability" or "win-win paradigm" (Dyllick and Hockerts, 2002; Salzmann et al., 2005). According to this paradigm, business, nature and human dimensions are harmonic between each other and the simultaneous integration of the

three aspects should pay off. Thus, economic performance has been the key decision driver, while environmental and social issues have been considered the dependent variables.

Nonetheless, Schaltegger and Synnestvedt (2002) stated that the relationship between environmental and economic performance is not necessarily positive or negative, since it is influenced by the way the firm wants to achieve a specific environmental target level. Moreover, the environmental goal depends on many different factors, such as national regulations, cultural mentality, companies types and sizes, stakeholders pressure and market liquidity.

Figure 3 Relationship between Economic and Environmental performance. (Source: Schaltegger & Synnestvedt, 2002).



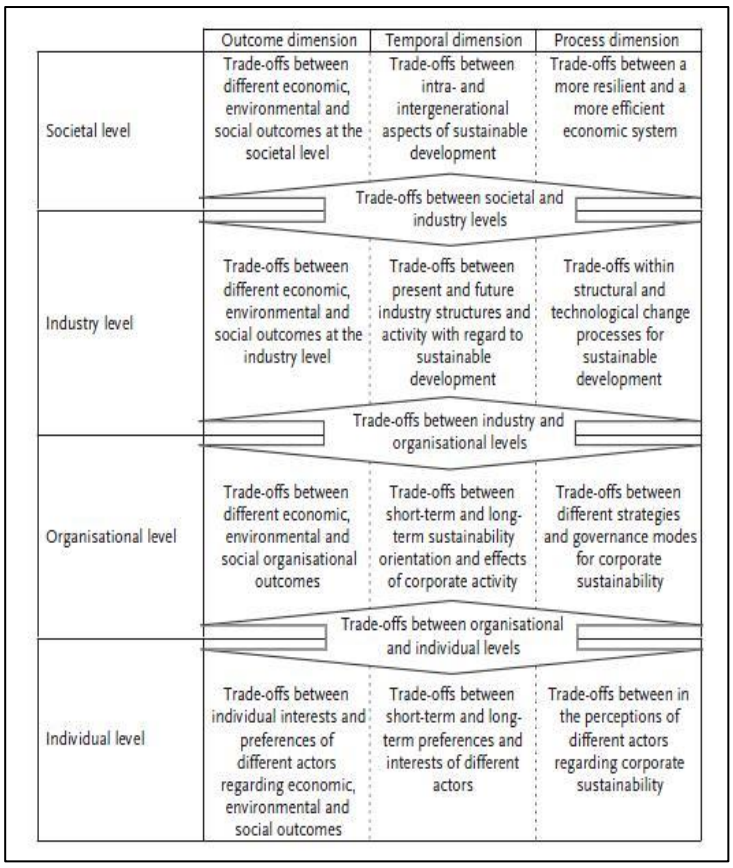
The authors developed a possible model of representation of the relationship between economic success and environmental protection, where, after having decided an appropriate efficiency-environmental management system (transformation curve's incline), it is possible to find the most economically convenient amount of environmental protection. Point A in Figure 3 should then represent the comparative valuation of both business and natural performance objectives and the threshold level from positive to negative relation.

In the research review about the various "business case approaches" that tried to demonstrate or disprove the financial payoffs and economic rationale of corporate sustainability made by Salzmann et al. (2005), three possible typologies of relationships are presented: positive, neutral and negative. The relationships have been studied from a theoretical point of view or from the empirical one, through case studies, quantitative analysis (such as portfolio' performance comparison and multiple association of financial and environmental measures), event studies, and descriptive research of managers' attitudes. For instance, in their analysis, King and Lenox (2001) found statistical evidences of the positive association between pollution reduction and financial gains, but could not say with confidence the direction of causality and the actual correlation among the two variables. Indeed, Salzmann and his co-authors (2005) criticize the fact that many studies do not provide convincing evidences, because sometimes the methodology is inappropriate, lacking of rigorous data selection or valid assumptions, or results are inconclusive.

In conclusion, they underline the complexity of the business case of sustainability and its relativity respect to the other cases.

Furthermore, the win-win logic of simultaneous integration of the three sustainability dimensions results too restrictive, since it does not include eventual conflicts between desirable economic, ecological and social goals in the analysis. Therefore, in order to concretely contribute to a real change in sustainable business conduct, trade-offs have to be considered, referring to "situations in which corporate contributions to sustainable development can only be achieved if one accepts a compromise between at least two sustainability aspects that are in conflict with each other" (Hahn et al. 2010, p. 220). For example, a small loss in economic performance can substantially improve environmental or social outcomes, while higher profits can hide serious and long lasting consequences on nature or people wealth. In the framework for trade-off in corporate sustainability proposed by Hahn et al. (2010, see table above), possible conflicts are identified respect to three dimensions: outcomes, meant as actual effects of corporate activities; process, referring to business practices and time, in relation with intergenerational aspects. Moreover, trade-offs could manifest at four different levels: individual (i.e. managers), organizational (i.e. single company), industry (i.e. group of firms, sectors) and societal (i.e. society). Each intersection individuates where conflicts could potentially occur, but further empirical research and management guidelines are still required, since this field of study has developed recently.

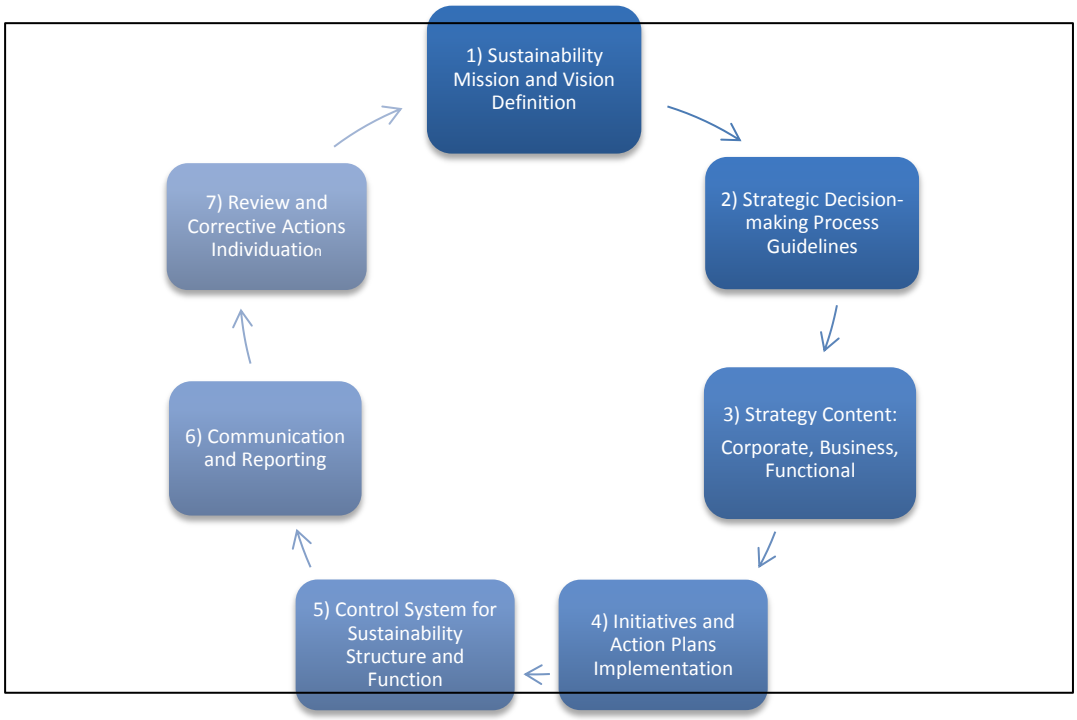
Figure 4 Trade-offs in corporate sustainability. (Source: Hahn et al., 2010).



1.3.4 Strategic Models to Implement Sustainability

Given the reasons and possible trade-offs that the sustainable approach entails, the main difficulty remains translating principles in decision-making guidance for daily practices and in concrete actions. However standard solutions cannot work for every kind of enterprise, since the ability to contribute towards sustainability goals making a difference varies by sector and organization. It is fundamental, however, to enhance management systems by supporting organizations during the delicate momentum of cultural reorientation and procedures refinement, that entails challenges related to corporate governance, strategic decision-making address, business planning, performance control systems and many other fields (IISD, 1992), and by providing them effective guideline-frameworks to follow. Therefore, a system approach is necessary and helps at creating a "**sustainable management framework**" that is here presented as a re-elaboration of possible models formulated by Azapagic (2003), the European Commission (2009), Bonn and Fisher (2011) and Stocchetti (2012).

Figure 5 Sustainable Management Framework. (Source: personal adaptation from Azapagic (2003), the EU Commission (2009), Bonn and Fisher (2011) and Stocchetti (2012)).



The starting point is to define firm's mission regarding main sustainability issues for the company, that should embrace stakeholder expectations and introduce related policies and principles (Azapagic, 2003). Connected with the mission, is the development of a vision about sustainable beliefs and priorities for the future, incorporating economic, environmental and social aspects,

that should guide decision-making processes among previously discussed trade-offs (Bonn and Fisher, 2011). Mission and vision should be supported by shared organizational culture and rules and they should also be aligned with business strategy (Azapagic, 2003).

The decision-making process concerns the way choices are taken and it is created, firstly indentifying strategic threats and opportunities and analyzing underlying causes through a scan of available environmental data and secondly building guidelines to support managers' thinking. The result of the decision making process is the strategy content, that refers to a set of strategies for the three company levels (Bonn and Fisher, 2011):

1) Corporate-level: refers to the overall organization scope and value added creation. It includes decisions about product or market differentiation, geographical covering, partnership and acquisition strategies and resource allocation between different business units.
2) Business-level: is about the individual strategic business unit, industry sector or market segment in which enterprise operates and compete. It could imply existing products modifications or new sustainable products development, therefore the role of technology in this case is fundamental and often it requires life-cycle assessment to analyze product impact at different product-life stages.
3) Functional-level: is the managers guidance in operation, finance, human resource and marketing areas. It entails relevant indicators definition, performance measurement and control systems.

Then, concrete initiatives and action programs can be planned, by setting specific targets, identifying responsibilities and assigning personnel and resources to specific objectives. During the implementation phase, Stocchetti (2012) proposes a structured Control System for Sustainability (CSS) that should constantly measure performances with respect to highly impacting economic, environmental and social variables and should also monitor eventual gaps between expected and actual results. An appropriate control system permits indeed to underline interrelationships between processes and areas and to rank the importance of the effects derived from various activities on sustainable variables. Consequently, priorities and related degrees of efforts can be individuated, supporting in this way managers in dealing with the large amount of trade-offs that could emerge from indicators analysis.

Lastly, it is important to communicate sustainability policies and progresses both internally to firm's employee and externally to important stakeholders, with the aim of increasing their awareness.

Despite an established CSS certainly helps at providing more rigorous and objective information about corporate environmental performance; social accountability, assessment and disclosure still present trust problems that require audits, verification and validation (Laufer, 2003). Already Greer and Bruno (1996) suggested to look critically at the real environmental behaviors of companies, instead of only read what they write on their websites or CSR reports. Following this recommendation, many environmental NGOs, such as Greenpeace, began to pay attention to this issue, arising a great debate about "greenwashing". This term has often been misused, but actually the phenomenon of intentionally misleading stakeholders by "telling the truth, but not the whole truth" (Lyon 2011, p. 9), has recently diffused, increasing the creation of confusion and deceptions about corporate ethical commitment (Beder, 1997). The strategy of greenwashing concerns eco-products, eco-labels, eco-certifications or other types of environmental communication, that should be read and considered with particular caution.

The final review and eventual corrective actions foster a continuous redefinition of corporate sustainability strategy, closing the loop and letting the process restarting and improving (Azapagic, 2003).

The EU Eco-Management and Audit Scheme (EMAS Website), developed and promoted by the European Commission in 2009, combines together the seven steps just presented and supports all kind of organizations in evaluating, reporting and improving their environmental performance, credibility and transparency. Furthermore, participants of the program could receive expert advice about eco-friendly practices and could obtain the EMAS registration, if they comply with all the required stages. The requirements consist in an initial environmental review, the adoption of sustainability policies and related action plans, the establishment of the environmental management system, a final audit and the provision of an environmental statement about the actual performance, that must be accredited and verified.

1.4 Conclusions

The realization of sustainability principles entails implications on corporate organization, management and strategies. Prompted by different motivations, nowadays companies have taken on their share of environmental and social responsibility adopting different approaches. At the same time, enterprises need support in integrating and managing the three sustainability dimensions –economic, environmental and social-. The “Sustainable Management Framework” presented above provides the guidelines to create a structured management system that includes also the sustainability perspective.

It seems evident that sustainability issues should be integrated into business considerations and that this requires a "system perspective approach" inclusive of multiple variables deriving from factors both external and internal to the company.

CHAPTER 2. A NEW WAY OF THINKING ABOUT BUSINESS: CIRCULAR ECONOMY

"System perspective approach" is necessary not only for strategy and management of a single enterprise, instead it should be expanded to the whole product or service life. Enterprises are facing new challenges regarding sustainability and competitiveness in today's global context, where competitive advantage stands on a broader and more complex range of external variables, that are determinant for pursuing success and long-term firm survival. Therefore to define business strategies, companies should embrace a common basic approach, which should involve both internal mission and vision and external relationships among economic actors. This is the case for a relatively new way of thinking about economy and consequently business: circular economy.

In the past, "Circular economy", meaning natural resources' efficient use, renewable energy utilization and no waste creation, was not a concept, but a practice, often even the only possible way to survive. The Industrial Revolution changed substantially the way of conducting business, thanks to technological innovation and petroleum usage. Furthermore, industrialization, in association with correlated phenomena like massive urbanization and rural population decrease, accelerated the process of humans detachment from environmental ecosystems perspective, while linear industrial model developed and became predominant. Today the world is experiencing an "advanced return to the past", in the sense that Circular Economy has brought back to the top issues, but this time as a conscious and concrete way of thinking, supported by advanced technologies and better tools that could help people and economic activities to "be less dependent on primary energy and material inputs and be able to regenerate natural capital" (WEF 2014, p. 10).

Hereafter, the emerging model of circular economy will be presented as a possible strategic way for firms to manage sustainability aspects from a broader point of view. Then, the European strategic and legislative framework related to circular economy will be summarized in order to give a panorama about European efforts towards a more circular economic system. Finally, possible managerial tools, useful to comprehensively analyze business activities, will be described and will constitute the essential models for the further textile and clothing sector in-depth analysis.

2.1 Drivers that Push to Change

The actual background, observed and reported by the World Economic Forum in collaboration with the Ellen MacArthur Foundation and McKinsey & Company (2014), presents two main trends. On one side, pressure on resources is seriously increasing, since world population is growing, expected to reach 9 billion people by 2030, meaning more 3 billion of middle-class consumers; moreover resource extraction costs are rising and consequently commodity prices are higher (from 2002 to 2010, prices increased overall by 150%) and more volatile. Furthermore competition among industries to get finite resources is exacerbating, while recycling levels are still inadequate. On the other side, manufacturing processes are fragmented, as globalization openness has allowed supply chains to spread all over the world, missing important resource and energy saving opportunities. Additional factors to consider are also the rebound effect[2] of eco-efficiency, that accelerates energy consumption and resource depletion; slower agricultural productivity growth; decreasing soil fertility and food nutritional values and the robust urbanization phenomenon.

The linear model that have dominated industrial processes until now failed to respond to these alarming problems and it is showing all its limits in effectively contrasting negative trends. The linear pattern of production and consumption refers to the mechanism in which resource are extracted and transformed in goods, products are sold and they finish their life as wastes, incinerated or disposed (WEF, 2014). This "take-make-dispose" system is no longer sustainable and needs global collaboration between companies and institutions to change in the right direction.

At the same time, four crucial enablers are facilitating the necessary transitional process. First, today's consumers prefer accessing services over owning products, meaning a shift to "sharing economy" that considerably modify lifestyle choices towards collaborative consumption models. Second, urbanization, known as the massive people move to cities, is expected to increase, causing on one hand more resources use and waste collection costs, but on the other hand interesting economies of scale to exploit because of the higher density, such as easier logistics management or more convenient service provisions. Third, advanced industrial and information technologies improve material tracking procedures, knowledge sharing and loop-close

[2] Rebound effect refers to a behavioral or systemic response to the introduction of new technologies, that increase resource efficiency. Indeed responses, such as energy consumption or natural and other inputs (i.e. labour) usage, could offset the beneficial effects of the new technology, by intensifying even more resource consumption.

possibilities. Last, regulators are paying attention and encouraging business model innovations to realize circular economy. Therefore this is the right moment to act toward.

2.2 Conceptual framework: Industrial ecology, Circular Economy and Global Value Chain Theory

In order to better understand circular economy principles and their evolution, the preliminary approach to consider is "Industrial Ecology", which has been the first science developed to create a more sustainable industrial system, by fostering resource minimization and cleaner technologies adoption (Andersen, 2006). According to Industrial Ecology principles, circularity is implicit, but the subject focus is mainly on production-consumption processes and their environmental impacts, while Circular Economy aims at spreading circular thinking into the economic system and in particular into business strategies and practices. On the other hand, the common basis for Industrial ecology and Circular economy is the inclination for a preventive approach, that acts in advance by addressing systemic problems, instead of following the incremental approach, which tends to gradually reduce or solve single symptomatic events of problems (Greyson, 2006).

Finally, a different, but significant perspective is the "Global Value Chain" theory, that is fundamental to represent the current international context in which companies operate and to analyze implications of spreading value chains on closed systems structuring.

2.2.1 Industrial Ecology

In the last part of 20th century Industrial Ecology has developed as a multi-disciplinary subject that links environmental science, engineering, business and policy. For this reason, it combines different point of views to create a system perspective where each element contributes to its peculiar goals by providing tangible solutions, at the same time being part of a wider plan that consists in realizing sustainability principles, (Chertow, 2008).

Industrial Ecology uses nature as a model and attempts to reproduce ecological mechanisms in industrial processes. Indeed, natural ecosystems tend to work circularly, by absorbing only solar energy to function and recycling materials through biological transformation, without generating wastes (Frosch and Gallopoulos, 1989). Moreover, the two law of thermodynamics should also be considered as driving principles. According to the first one, in a closed system, such as the planet or an ecosystem, the total amount of energy and matter remains constant, thus it could be only

converted through recycling or dissipated, not destroyed. As a consequence, the degree of waste generation equals the degree of resource depletion. Whereas, the second law of thermodynamics states that the better energy and matter are organized, the lower entropy (i.e. the degree of disorder) is. Therefore, resource extraction entails increasing entropy, while recycling and circularity helps in maintaining equilibrium among substances (Andersen, 2006).

The main concern of industrial ecology is the study of physical, chemical and biological material interactions and energy flows through industrial and natural systems at different spatial dimensions (Chertow,2000). For Esty and Porter (1998), the principal goal of this field of research is to enhance resource productivity, consisting in the difference between the value added and indirect opportunities of a product and its direct and indirect costs, to reach competitive advantage or improve market position, even if benefits do not occur every time, because of the high costs of closing the industrial system loop.

The actions promoted by industrial ecology methods can be implemented at three different levels (Chertow, 2008).

The first and closer to company's interests is the "firm level", that refers to initiatives which remain within enterprise boundaries, such as:

- Green-full cost accounting, that internalizes direct and indirect environmental costs;
- Cleaner Production or Pollution prevention, approaches that attempt to eliminate, prevent or reduce impacts of pollutants or their sources;
- Eco-efficiency, previously discussed (see paragraph 1.3);
- Design for environment or Eco-design, meant as the product or service design-process that optimize environmental-friendly characteristics to affect as less as possible on the different stages of product or service life cycle;
- and Waste management, referring to practices that minimize waste generation during production processes (waste minimization) or follow the "zero waste" principle, which implies recycling the greatest amount of waste (Glavič and Lukman, 2007).

Consistent with firm-level actions, the "lean production" paradigm represents one of the most diffused and implemented managerial approach to foster manufacturing enterprises' efficiency and effectiveness (Resta et al., 2015). Indeed, the lean thinking, originated from Japanese production practices, aims at avoiding wastefulness among operations (i.e.: transportation,

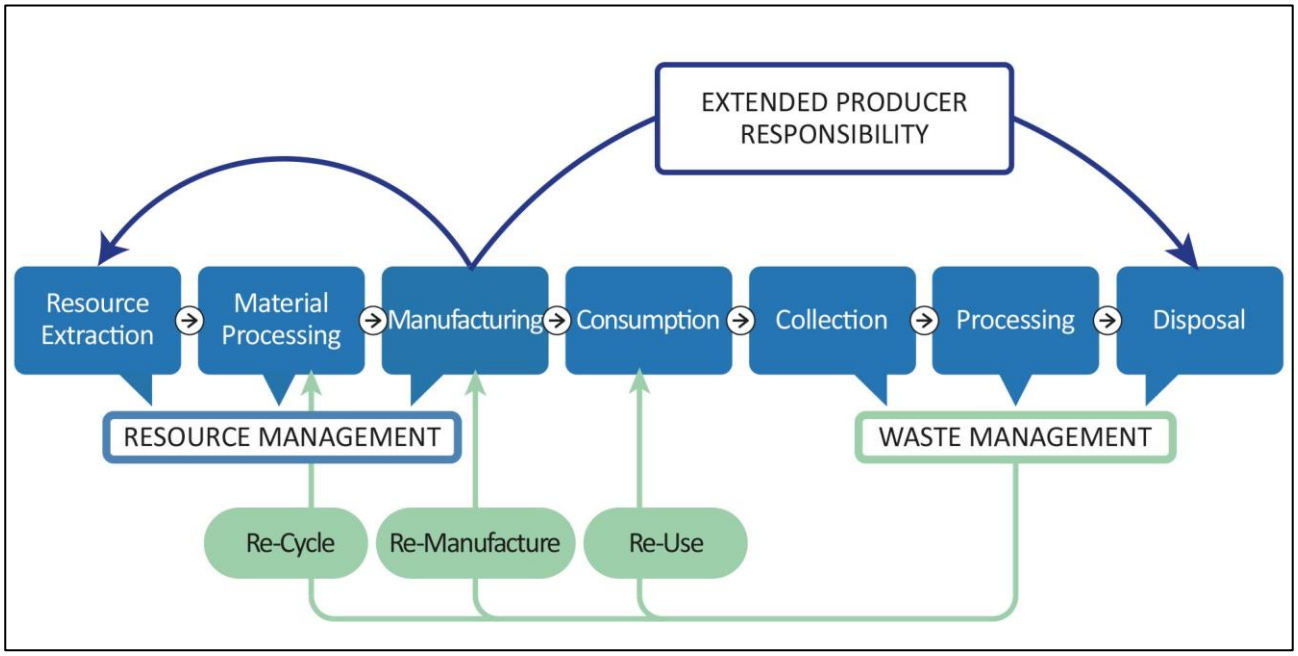
inventory, motion, waiting, overproduction, over-processing and defects (Ohno, 1988)) and at standardizing processes in order to ease systems management. Consequently, its principles' implementation could entail both economic and environmental benefits (Kurdve et al., 2014). In the last years, lean manufacturing was considered a necessary, strategic business philosophy to adopt, instead of a mere set of techniques (Liker, 2004).

The second action-level enlarges the perspective to the entire value stream of the product and even beyond sectorial production-consumption chain, thus concerning "across firms and organizations" activities. In relation with the value chain, Product Life Cycle thinking and analysis have extensively diffused. The underlying model concerns all stages of a product or service life, including both suppliers and customers sides, and it basically consists in: resource extraction, material processing, manufacturing, consumption, collection, processing and disposal.

Another fundamental concept at this level is Extended Producer Responsibility (EPR), a particular decline of Corporate Social Responsibility. It was born as a policy strategy that aims at shifting responsibility for negative environmental consequences derived from business activities from public administrations and taxpayers to companies and consumers, by incentivizing good practices such as eco-packaging or waste management improvements (OECD, 2001; Lifset et al., 2013). Thus, EPR goes beyond a single firm's burdens, it focuses on end-of-life management and attempts to close the loop of products life, intercepting materials after the collection-phase and processing them through particular procedures of waste management (EEA, 2014; Chertow, 2008):

- Re-use, which means to use wastes without any transformation just re-selling them for the same scope (i.e. second-hand market) or as a raw material in a different process;
- Recovery or Repair, referring to restoring or improving material characteristics with the aim of extending for longer their use possibilities;
- Re-manufacture, that entails a substantial transformation of waste to become new products (by-products);
- Re-cycling, as the conversion process which permits wastes to return raw materials and inputs for other usages.

Figure 6 Product Life Cycle. (Source: Chertow,2008).



From the business point of view, end-of-life products' treatment and flow management have been recently recognized as revenue opportunities, instead of mandatory, legislative obligations or cost-minimization approaches (Guide and Van Wassenhove, 2009). Indeed, the reverse stream of finished goods from consumption phase back to inputs, known as "Reverse logistics" (Rogers and Tibben-Lembke, 1998), could provide economic benefits in terms of competitive advantage, value retention and corporate social image (Kannan et al, 2012). Reverse logistics, which refers to the planning and the implementation of the sequence of activities required to recapture value from used or returned products (i.e.: collection, sorting, reuse, repair, remanufacture, recycle and disposal), represents the specular, managerial tool of waste management (Agrawal et al., 2015).

A different approach refers to enterprises located in the same place but operating in different sectors, that is called "Industrial Symbiosis". Exploiting geographical proximity, one firm's wastes can be diverted from disposal to re-enter in the system as input or by-products for nearby companies or residences (Esty and Porter,1998), fostering resource sharing, beneficial utilities synergies and productive collaboration (Posch, 2010). The resulting "Industrial Ecosystem" should thus group together firms that utilize each other's by-products and materials and optimize resources consumption (Manahan, 2004). Whereas some descriptive analysis of important experience of industrial symbiosis networks, like the most famous case-history of Kalundborg, Denmark (Ehrenfeld and Gertler, 1997), have been conducted, empirical studies show that these systems are still exceptions rather than rules in industrial systems or that patterns are waiting to

be uncovered with specific tools (Boons et al., 2014), since there is often a lack of awareness among organizations which already follow ecosystem principles, but underestimate industrial symbiosis potentialities (Posch, 2010).

"Regional and Global level" is the third and last level at which industrial ecology looks. The focus in this case is on "industrial metabolism", that studies material and energy flows across region and economies and tries to find innovative ways to integrate economic activities with social and environmental contexts. For instance, there are interesting case studies about urban metabolism.

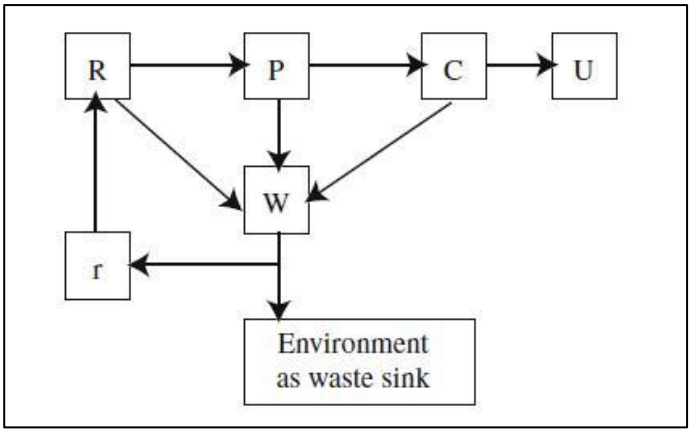
2.2.2 The plus concepts of Circular Economy

Many aspects of previously presented concepts regarding industrial ecology are actually similar to the "Circular Economy Idea" and indeed they have been the basis from which Circular Economy derived. Nevertheless, the circular economy framework includes some additional points of view that can be considered an evolution towards simpler application and diffusion of important environmental sustainability principles.

Boulding (1966) was one of the first economists who presented the paradigm of Circular Economy, as a long-term economic system that pursues growth, sustainability and zero-waste-creation at the same time. Hereafter, O'Rorke (1988) refined the concept, following preventive approach principles, by formulating the term "pre-cycling", which refers to all the actions implemented at the initial phases of the product life (i.e. resource management and consumption) in order to avoid waste generation, instead of focusing on waste management.

A simplified model of Circular Economy was explained by Andersen (2006) as showed in the figure to the side. Economy is described as a system in which natural resources ("R") are transformed by production processes ("P") into goods to be consumed ("C"), thus creating utility ("U") and wealth. Raw materials extraction, manufacturing and consumption generate wastes ("W"), that could return to be inputs through recycling ("r"). It should be acknowledged however that "perpetual recycling" is

Figure 7 Simplified Circular Economy. (Source: Andersen, 2006).



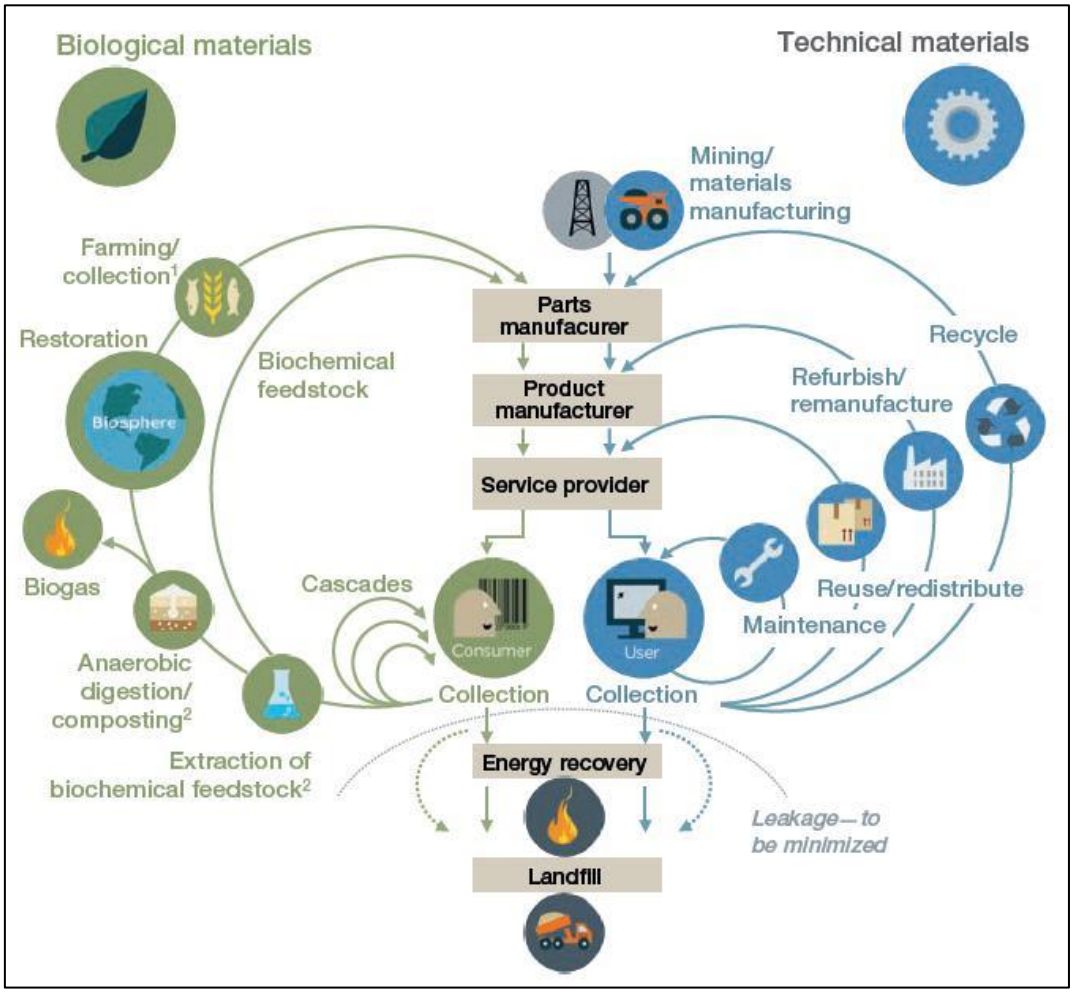
utopian: a fraction of wastes will always be unrecyclable, because of missed opportunities, technological limits or concrete difficulties at certain stages to actually get benefits from too costly recycling procedures.

Recently, the Ellen MacArthur Foundation (2012, 2013) formulated a more sophisticated model of Circular Economy, that systematically combines the different, above described research contributions. The pattern is based upon three fundamentals. The first objective is to eliminate wastes, thus meaning to design products optimizing both material, non-toxic composition and reusability through disassembly.

Second, a distinction between consumable and durable goods has to be done. Consumable products, for instance food, are made of biological nutrients, whose discharge in the biosphere could be non-polluting and even beneficial, with consecutive returns to consumption. On the other hand, durable products, like household electrical appliances or IT devices, are made of technical nutrients, which include metals and plastics that, once transformed, are not suitable for the natural ecosystem anymore. This kind of goods can be used, not consumed by humans, therefore their usage- and recycle-abilities have to be improved to last longer.

Third, the only sources of energy necessary to conduct economic activities should be renewable, thus letting the system become more resilient and less dependent on oil stocks.

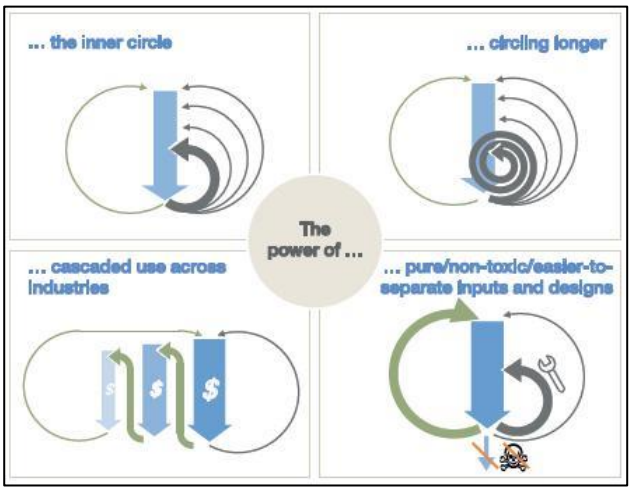
Figure 8 Circular Economy Model. (Source: Ellen MacArthur Foundation team; drawing from Braungart & McDonough and Cradle to Cradle).



This system demonstrates that arbitrage possibilities related to choices between the use of virgin or used material exist. Moreover the Circular Economy model is characterized by four lasting powers, that contribute both to change the rate of material requirement and to generate added value:

- the power of the inner circle, meaning less transformation stages for products to be reused;
- the power of circling longer, referring to maximizing the number of cycles in a row and the time of utilization;
- the power of cascaded use, which implies reusing materials and

Figure 9 Powers of Circular Economy. (Source: Ellen MacArthur Foundation team, 2012).



products in many different ways, from the most efficient and effective, to the less ones;

- and finally the power of pure inputs, that suggests the use of not-mixed materials which can be easily reused, maintaining quality at the same time.

Thus, following circular perspective allows to reach better performances, by optimizing the entire system instead of a single enterprise or individual behavior. At the end, the WEF and Ellen MacArthur Foundation Report purposes some possible solutions that should accelerate the progress in the circular economy direction, which consist in: setting up global reverse networks to reuse, refurbish and recycle products and components, reorganizing pure materials flows and innovating business models.

2.2.3 Global Value Chain Theory

One of the aspects observed by the World Economic Forum (2014), is the growing fragmentation of product value chains, which has to be considered when talking about circular economy, since it certainly impacts on business activities.

Indeed, because of markets globalization, companies and consumers, especially in western countries, have benefited of cheaper inputs and final goods, new growing market opportunities and facilitated access to global suppliers. In particular the last element permitted the development of a special practice, known as "Offshore Outsourcing" (Mankiw, 2006; Blinder, 2006; Contractor et al., 2006), that refers to the relocation of one or more production activities used to be performed in-house to an external independent enterprise located in a foreign country. This phenomenon enabled multinational corporations to fragment production processes, establishing Global Value Chains (GVC) that have changed trading and ownership patterns. Research related to GVC field tries to explain value chain dynamics at the international level, concerning in particular inter-firm linkages, business activities coordination and governance across different geographic spaces and organization structures (Gereffi et al., 2005; Gibbon et al., 2008).

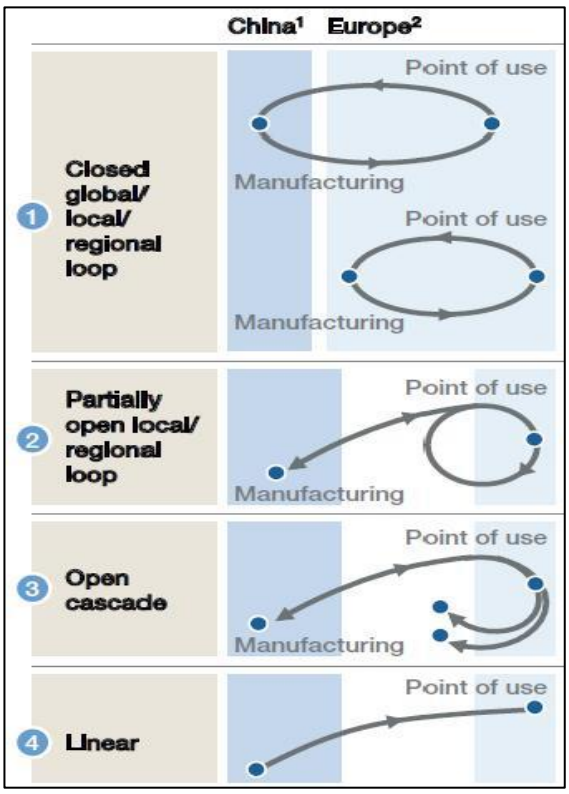
The "Global Value Chain" theory is a recently developed field of study, based on the "competitive-advantage theory" formulated by Michael Porter in 1985, that affirmed that "competitive advantage cannot be understood by looking at a firm as a whole. It stems from the many discrete activities a firm performs in designing, marketing, delivering and supporting its production" (Porter, 1985). Therefore, Global Value Chain research focuses on competitiveness of a given

company by describing the entire set of activities involved in the process of value creation and by individuating which elements and connections give power control on the chain to the enterprise.

In the report "Towards the Circular Economy" (2014) the World Economic Forum affirms that actual production-consumption processes cause losses due to geographic dispersion of manufacturing sites and due to materials proliferation and complexity. The latter factor refers to the fact that products are increasingly made by mixed raw materials and complex, multi-layered components and sub-components, each of them extracted and manufactured in different places around the world.

The WEF and Ellen MacArthur teams individuated four useful archetypes of supply chains, based on geographical considerations that matter particularly to current global, trade-grounded economic system:

Figure 10 Supply Chain Archetypes. (Source: WEF and Ellen MacArthur Foundation team).



1) Open Linear materials "take-make-dispose" model, where there are multiple manufacturing tiers and products are fabricated, used and disposed in different countries;

2) Geographically Open Cascades model, in which materials, components and final goods are moved after their first usage cycle to other scopes and markets;

3) Partially Open geographical loop model, that refers to mixed supply chains, in part linear, in part regionally or locally closed for maintenance or recycling;

4) Closed geographical supply loop model, where large amounts of materials and components return from the point of use to point of production.

Instead, concerning Materials Proliferation and Complexity, important factors to consider are: the possibility of products and materials separation; reliability on supplier's way of manufacturing; materials composition and purity degree (the purer a compound is, the higher reuse opportunities exist) and finally materials identification.

2.3 European Union Attention to Circular Economy

The European Commission recently acknowledged the importance of circular economy in keeping product's added value for longer time and in striving to eliminate waste generation (EC COM, 2014). But the transition to circular economy entails changes and innovations throughout the entire value chain, from product design to waste transformation in resources, that consequently requires systemic coordination for improving not only technology, but also policy effectiveness, organizations, financial methods and consumer behavior.

Therefore, the European Circular Economy strategy is embedded into the broader framework of actions towards sustainable development, developed to foster an integrated environmental policy system among European States. Indeed, many national initiatives derive from European directives and their objectives are just the reflection of the European Union ambitious commitment in multilateral agreements.

2.3.1 European Environmental Institution and Strategy

In this paragraph will be presented a brief description of the European background that deals with environmental issues, in order to contextualize in which dimension circular economy principles should be integrated.

Institution

The central body that guides environmental policies in the European Union is the Environment Directorate General of the European Commission (DG Environment). Its action covers different themes, concerning natural capital, health and green economy (EC Website (a)):

The DG Environment formulates recommendations, such as green papers, action plans or communications to the European Parliament; it proposes legislations that have to be approved by the European Parliament and converted into national norms (directive) or adopted (regulations) by National Governments; it makes sure that legislations are implemented and it monitors their application (Musu, 2008).

In the environmental field, the Commission is supported by the European Environment Agency (EEA), which acts as the operative branch, whose main tasks are to keep member countries informed about new Environmental policies and to coordinate the observation network, by collecting data, indicator measurements and by releasing updated publications (EEA, 2015b).

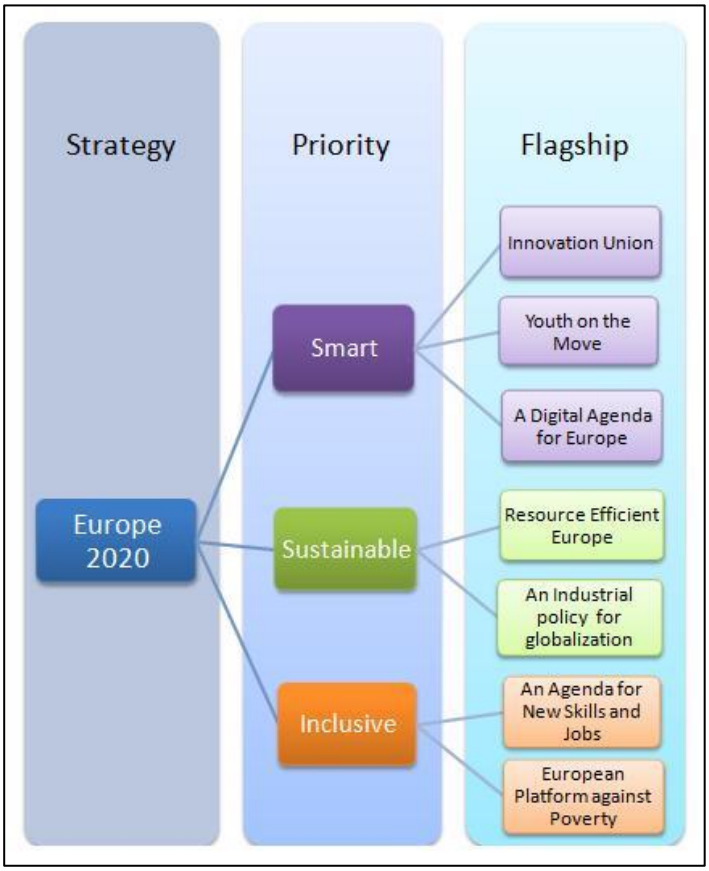
Directives and regulations (legal approach) impose quantitative-qualitative standards and pollution thresholds that directly or indirectly influence economic activities through prices and costs to internalize (economic approach). But the DG Environment is also trying to encourage voluntary participation by enterprises and citizens (voluntary approach), that should be complementary with the other two approaches and even more effective (Musu, 2008). Some examples of voluntary-based initiatives are: the EMAS system, Research and Development collaboration projects, Small and Medium Enterprise financing, Green Public Procurement programs and environmental-aware information diffusion for consumers.

Strategy

Sustainability and green economy topics are included in the broader European strategy and are considered fundamental principles for future generations. Moreover, analyzing the general framework to which environmental regulations refer is important because many DG Environment directives substantially depend on the guidelines that will be explained in this paragraph.

To face environmental problems and the particular moment of economic transformation and global challenges, the European Union has formulated the "Europe 2020 strategy", that aims to achieve economic growth in a smart, sustainable and inclusive way (EC COM, 2010). The three priorities imply then: more investments in education, knowledge, research and innovation (smart); a greener, more resource-efficient economic system (sustainable) and more efforts to increase employment rates, social and territorial cohesion and to tackle poverty (inclusive).

Figure 11 European 2020 Framework.



Furthermore, related to each priority theme, the Commission has developed seven flagships initiatives, that should support effective implementation of the "2020 Strategy" both at the EU and national level.

For smart growth, the first initiative regards innovation (Innovation Union) and aims to catalyze R&D and innovation projects on modern society challenges, such as environmental problems, energy or resource efficiency and demographic changes. The second action refers to young students education and training (Youth on the move), and the main goals are to enhance European higher education organizations performances, mobility opportunities and attractiveness and to improve overall educational quality. The last smart-flagship promotes digital responses to improve economic and social conditions (A Digital Agenda for Europe), through a digital single market based on fast internet and applications use.

Respect to sustainable growth, the Commission has fostered two main initiatives. The first one (Resource efficient Europe), supports the transition to a low-carbon economic system, that should use limited resources efficiently, in this was enhancing competitiveness. The second one (An industrial policy for the globalization era), aims at drawing up an industrial policy framework, which should guide business activities towards sustainable ways to compete globally.

The two last flagships are related to inclusive growth and they aim to modernize labor market by boosting new skills development (An Agenda for new skills and jobs) and to ensure economic, social and territorial cohesion (European Platform against Poverty).

Another very important and strategic decision of the European Union, dedicated in particular to the environmental issue, is the "7th Environment Action Programme" (7th EAP), a programmatic plan for the period up to 2020. Indeed, in the Article 2 of Decision n° 1386/2013/EU, where EAP priority objectives are listed, the program's purpose has been defined as "to turn the Union into a resource-efficient, green and competitive low-carbon economy".

Referring in particular to resource-efficiency and green economy, the 7th EAP stresses the importance of the two flagships that should bring powerful and effective improvements throughout the transition to a sustainable business system: Resource Efficient Europe and Innovation Union. Both initiatives and their implications have also fundamental influence on circular economy development.

2.3.2 Attention to Circular Economy

European strategies go in the direction expressed in the Vision for Europe, that states (EC, 2014):

"In 2050, we live well, within the planet's ecological limits. Our prosperity and healthy environment stem from an innovative, ***CIRCULAR ECONOMY*** *where nothing is wasted and where natural resources are managed sustainably, and biodiversity is protected, valued and restored in ways that enhance our society's resilience. Our low-carbon growth has long been decuple from resource use, setting the pace for a safe and sustainable global society".*

Actually, Germany has been the first European Country that have fostered circular thinking, by promulgating an "Ordinance on the Avoidance of Packaging Waste" (VerpackVo) in 1991 and the " Closed Substance Cycle Waste Management Act" (KrW- AbfG) in 1994 (Davis and Hall, 2006). These laws have been the basis for European legislation towards circular economy. Moreover, many concepts and issues correlated with circularity have been already discussed and presented in past programs promoted by the EU. For instance, in 2011 the "Roadmap to a Resource Efficient Europe" has been an initial attempt to coordinate actions and to integrate approaches among different policy areas towards sustainable economic activities (EU COM, 2011a). Then, the principal ideas of this Roadmap have been recalled and further developed in the 7th EAP.

Nevertheless, the first formal Communication from the European Commission about the theme of "circular economy" has been formulated in July 2014. In the Communication is recognized and argued the importance of moving towards a more circular economy to meet resource-efficiency objectives under European 2020 strategy.

Other countries are focusing their attention to circular economy as well. For example, Japan promulgated the "Basic Law for Establishing the Recycling-based Society" in 2000 and China's government is working to endorse circular economy concepts through legislation and economic initiatives (Davis and Hall, 2006). This aspect should encourage even more European actions.

2.3.3 European Action Points for Circular Economy

In the Communication "Towards a circular economy" (2014), the European Commission has set up some action points that have to be developed. These actions are both guidelines to follow and opportunities for green businesses, since enterprises will have to comply with derived directives, but at the same time they will take advantage from potential improvements.

Often, companies lack information, technical knowledge and managerial capacity to change existing business models or production technologies. Moreover, investments in innovation are perceived as complex and risky because outcomes are uncertain and customers are used to their traditional habits, that are barely modifiable. Another barrier consists in price distortions given by wrong reflection of resources real value.

For these reasons and in order to reduce investment risks, the European Union is unlocking financial assets and has also developed new financial tools, like the "Natural Capital Financing Facility", the "European Investment Bank" and the "Sustainable Process Industry through Resource and Energy Efficiency Private Public Partnership", that are concretely contributing to circular economy implementation.

Furthermore, since businesses and consumers behaviors during production, distribution and consumption phases remain the key elements to realize circular economy, the Commission is trying to develop an effective secondary materials market, to incentivize small and medium economic activities related to circular economy and to address consumer choices. Thus, the European Commission is involving and coordinating different institutions and plans, such as the "European Institute of Innovation and Technology", the "European Structural and Investment Funds", the "Eco-innovation Action Plan", the "Green Action Plan for SMEs", and the "European Consumer Agenda".

Regarding resource efficiency, the European Union is establishing specific targets and indicators that should act as impulses to activate Member States commitment, by using the European Resource Efficiency Platform, which provides important data to formulate recommendations for setting and measuring goals.

A very relevant issue for circular economy is then "Waste management", that includes separate collection, reuse and recycling processes. The Commission acknowledges the necessity to simplify and improve the actual waste legislation, integrating waste management into the wider perspective of circular economy. Particularly significant in this field is the "Waste Framework Directive" (2008), which has been based on two principles: first, wastes should be managed without harming human health and environment, and second, waste hierarchy should be taken into account when trade-offs entails priority decision (EC Directive, 2008).

Figure 12 Waste Hierarchy. (Source: Waste Management Directive, 2008).

The waste hierarchy refers to the "3 Rs": reduce, reuse and recycle. It classifies waste management strategies according to their desirability in terms of waste minimization. The waste hierarchy is represented as an overturned pyramid: the most significant progress could be done at the prevention stage, managing the generation of waste. The successive preferred actions to reduce generation of waste are re-use and recycling. The next step, is material recovery and waste-to-energy. The final possibility is disposal, in landfills or through incineration without energy recovery. This last solution is the final resort for waste when alternative treatments are not available, but, following the circular economy approach, disposal will not be supported anymore in future. On the contrary, “Zero-waste” and “Waste to resources” principles will be pursued.

2.3.4 Eco-innovation

As previously mentioned, circular economy approach touches different fields and business sectors; therefore the related policy framework includes directives regarding eco-design, waste prevention, recycling and many other areas.

To effectively realize circular economy, the turning point is eco-innovation, thus meaning the exploitation of technological knowledge to improve all stages of the product life cycle, from material extraction to waste management.

Eco-innovation has been defined as every kind of product, service or process innovation developed to obtain progress towards sustainability (EC DEC, 2006). This process needs to be accelerated and is particularly crucial for circular economy.

Eco-innovation combines together principles and ideas of four flagship initiatives (EC COM, 2011b). First, “Innovation Union” should focus research on analyzing and exploiting technological and innovation opportunities to achieve environmental improvements. Second, with “Resource Efficient Europe” scientific and technical knowledge should be transferred and supported by investments. Third, through “Industrial Policy for a Globalized Era” progresses and discoveries in

environmental technology should be diffused and implemented among different business sectors and small and medium enterprises. Fourth, “Agenda for new Skills and Job” should boost new and appropriate competences necessary for sustainability jobs.

Therefore, Innovation Flagship committed EU to set up an “Eco-innovation Action Plan”, that complements Europe 2020 Initiatives. The Plan comprises integrated actions to support research, industry, policy and financial solutions. Then, the Commission has established seven key actions to drive the market towards eco-innovation solutions (EC COM, 2011b):

1) Promoting eco-innovation through environmental policies and legislation,
2) Fostering and funding demonstration projects and collaboration among different organizations, that could be used as models for further developments;
3) Setting standard and performance goals for key products, services and processes to decrease their environmental impact;
4) Creating financial instruments to support SMEs, by boosting in particular public-private partnerships;
5) Facilitating international cooperation, by working to establish common benchmarks or requirements, to harmonize market systems and to capitalize emerging economies opportunities;
6) Mapping actual and future skills and jobs needs and training labor force with relevant knowledge;
7) Aggregating resources and networking actors under “European Innovation Partnerships” which should contribute to eco-innovation by exploiting economies of scale and larger markets potentialities.

Eco-innovation development and implementation require thus particular attention and adequate investment support, that could be provided by “Horizon 2020”, the financial and operational instrument of the “Innovation Union Flagship” created to manage funds and capitals towards innovation.

Horizon 2020 is the European Union Research and Innovation Programme that allocated nearly 80 billion euro for the period 2014-2020 to fund innovation research and projects, which are aimed at pursuing important breakthroughs and at disseminating them from laboratories to market. Horizon goal is to ensure world-class science, innovation barriers demolition and public-private

collaboration by combining research and innovation and emphasizing on excellent science and industrial leadership. Furthermore, everyone could access to this program benefits, since its structure is very simple and helps at saving time and money. The general approach attempts to realize project objectives quickly and consequently to achieve results in a faster way (EU website).

The program should demonstrate which possibilities exist and could be implemented to move towards a more circular economy; it should establish solid partnerships between research organizations and business sector and should facilitate the diffusion of circular patterns for production and service delivery (EC, 2014).

2.4 Micro-level Tools for Circular Economy Strategy Creation

Integrating above described circular economy principles and intentions into business strategies requires firstly an in-depth analysis of a company or a product value chain. Indeed, only knowing economic, environmental and social impacts of a business activity, it is consequently possible to improve strategies towards sustainability, to define reasonable objectives and to implement appropriate initiatives.

Therefore, in the following paragraph will be presented three practical tools, one for each sustainability dimension, that systematically analyze all implications of business activities at the different product life stages. The three models are based upon Product Life Cycle thinking, thus they consider the entire product chain, but they could be used to examine a product life, a company business or a sector structure. These analysis instruments' aim is to support enterprises improving their strategies towards more sustainable and circular approaches or even uncovering unexpected market opportunities.

Notice that, these tools have been selected among various because of their effectiveness in explaining production-consumption patterns and dynamics. In particular, they are in line with circular thinking for conducting business, are appropriate for the actual global context and would be useful for having a systemic idea of factors that influence sustainability driven strategies.

2.4.1 Economic dimension: Global Value Chain Analysis

The Global Value Chain Analysis examines and describes the five most important moment of a product life, i.e. Design, Components, Assembly, Distribution and Retail, from the company

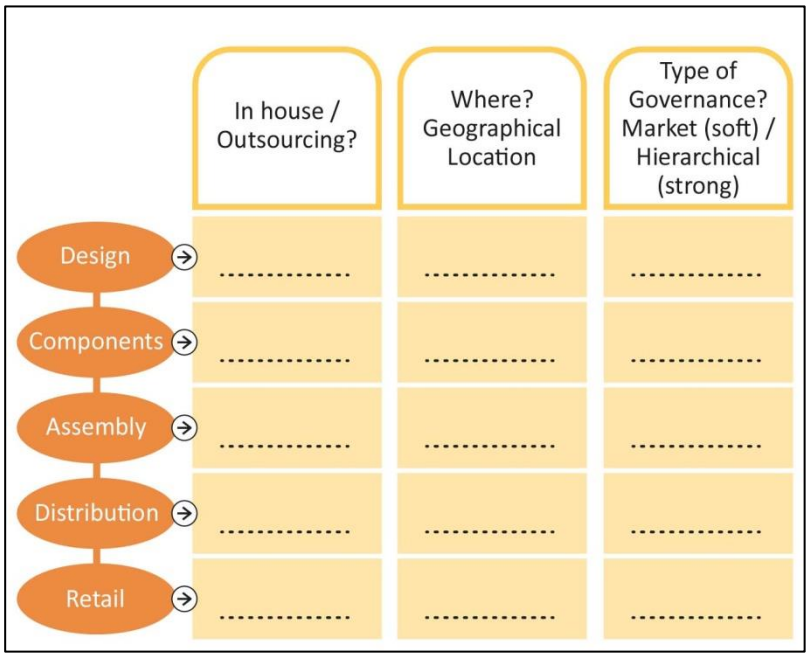
perspective. In particular, this tool helps in understanding which activities represent the core business and which ones are under direct control of the enterprise (who?), where are located the different operations geographically (where?) and how strong are the linkages with main suppliers and customers.

Initially, GVC analysis individuates which peculiar competences distinguish a firm respect to the others. The consecutive step consists in addressing the company efforts to specialize the business in activities where the firm has superior competences, gaining thus more value. Respect to the activities that the enterprise cannot easily develop or efficiently perform, the choice is between outsource them or vertically integrate organizations that already own specific competences. Finally, depending on the importance of the function for the company or on the economic convenience, different types of governance bonds could be established with external actors, in order to obtain the greatest competitive advantage.

There are five types of relationships among a firm and its suppliers (Gereffi et al., 2005):

1) Market typology refers to commercial rapports with weak interrelation, since requested products are easily available and do not require particular specifications;
2) Modular value chains provide products more or less in line with customer's specification, but still standardized;
3) Relation type entails complex and often mutually dependant interactions between customers and suppliers, since product characteristics are very specific;
4) Captive relationships consists in a structured network where small suppliers practically work only for one or few larger buyers, building strict linkages;

Figure 13 Global Value Chain Analysis. (Source: own adaptation from Gereffi et al. 2005).



5) Hierarchy type refers to vertical integration and it is the strongest possible way of interaction.

As a result, a GVC analysis provides a basic idea of which are the essential elements that characterize a firm specific competitive advantage and of how a company could be structured to pursue the highest obtainable added value. Moreover, knowing which activities could be directly or indirectly controlled and modified and which levers could be activated by enterprise decision, could be a good starting point to define proper business strategies .

2.4.2 Environmental dimension: Environmental Life Cycle Assessment

The "Life Cycle Assessment (LCA)" methodology has been developed to measure, compare and assess environmental impacts of human economic activity throughout the different production-consumption moments, extended in space and time (Rebitzer et al., 2004; ISO 2006; Finnveden et al., 2009). Thus, this tool main focus is on linkages between economic and natural dimensions, from resource extraction to disposal. Notice that the design phase is usually excluded from the LCA, since its contribution to environmental impacts is considered not significant. However, it is important to remind that design is determinant for and highly influences other life cycle stages impacts (Rebitzer et al., 2004).

Negative environmental impacts correlated with a product life usually concern: air, water or soil pollution due to toxic substances emissions, high resource extraction, intensive energy use, land occupation, water consumption and waste generation. These aspects contribute to climate change, resources and ozone depletion, acidification and health problems for humans and ecosystems, therefore it is fundamental to systematically monitor them (Rebitzer et al., 2004).

The International Standard Organization (ISO, 2006) has formulated a theoretical framework of four phases for LCA studies (ISO 14040), upon which firms should base their environmental impacts analysis.

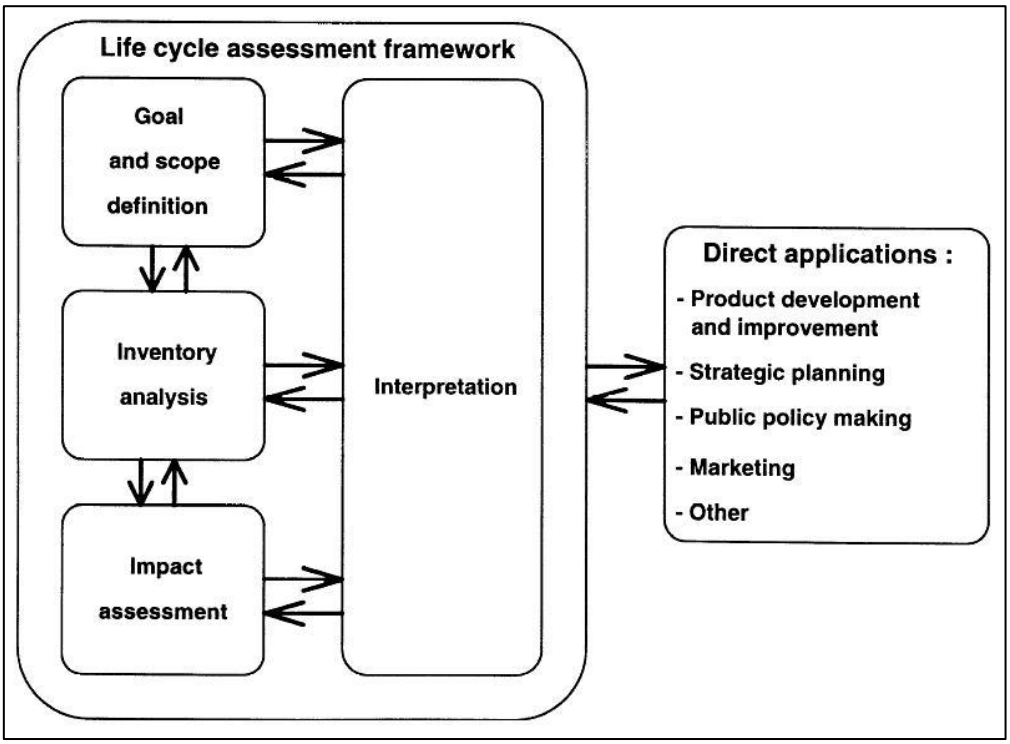
First, the LCA Goal and Scope should be defined. On one side, the goal should explain the reasons for carrying the study and state the intended application and audience. On the other side, the scope should describe the functions of the product stream, their related functional units (i.e.: a quantitative measure of the performance of the outputs that the goods or service provide) and the system boundaries. The Goal and Scope Definition is a crucial moment, since it determines what will be the appropriate LCA method to apply to meet the initial purpose. Indeed, there are

two LCA types: the attributional LCA restricts the search to the description of environmentally significant physical flows and provides a panoramic idea of the principal product life stages, while the consequential LCA tries to forecast possible environmental changes in response to different decisions (Finnveden et al., 2009).

Second, the Life Cycle Inventory (LCI) analysis has to be conducted, consisting in data collection and elaboration to quantify individuated relevant material and energy flows. Usually indicators are used to better represent quantitative results, that will be the input of the Life Cycle Impact Assessment (LCIA), the third phase of LCA in which the importance of potential environmental impacts is evaluated. The latter analysis could help to characterize and classify impact categories and to weight aggregated outcomes in order to individuate priorities.

The last phase, Interpretation, aims at combining together LCI and LCIA findings in relation to the research goal and scope and consequently at providing conclusions and recommendations, that should also be clearly and completely reported to the intended audience.

Figure 14 Life Cycle Phases. (Source: ISO 14040, 1997).



LCA study results could be very useful for companies decision-making process towards sustainability, since they could be important input for direct applications, such as product development or improvement, market opportunities individuation, strategic planning, environmental performance communication and green marketing (ISO, 2006). LCA could also

serve as a scientific assurance for the enterprise declarations and it demonstrates that the firm is paying attention to the environmental issue.

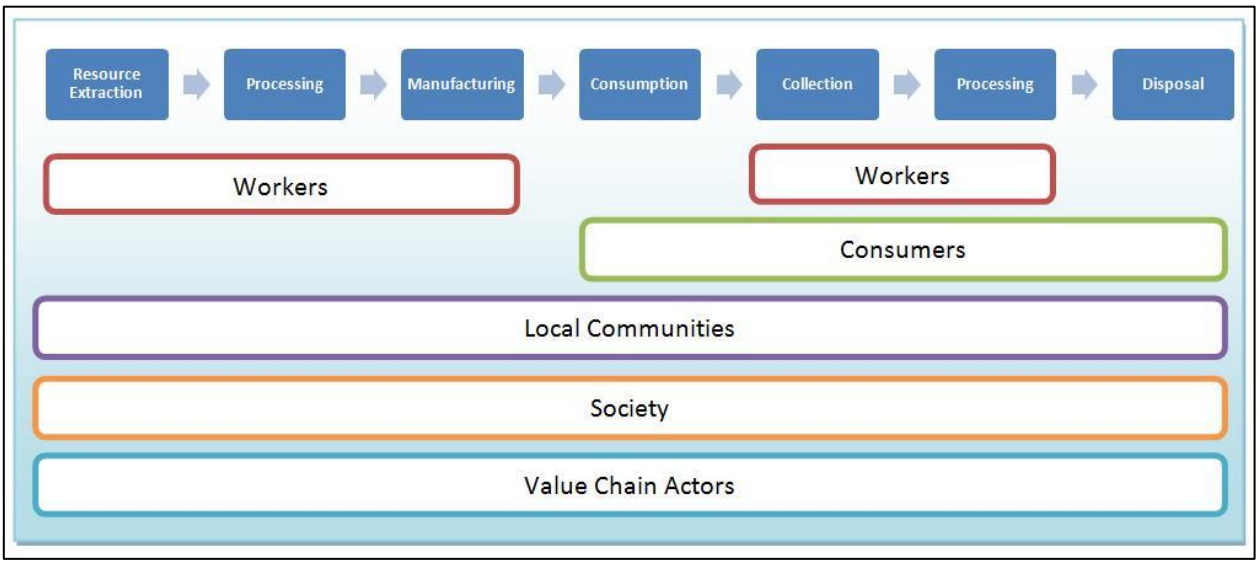
2.4.3 Social dimension: Social Life Cycle Assessment

Production-Consumption activities impact on the social dimension as well. Consequently, social impacts, defined as "the consequences of social relations and interactions weaved in the context of an activity and engendered by the activity own or preventive actions taken by stakeholders" (UNEP 2009, p. 43), should be also analyzed and assessed. Research, studies and methodologies provide different approaches respect to the relationship between the social/socio-economic issues and product life thinking, thus a standardized, integrated solution still lacks and common techniques are in the development phase. The main problem concerns the intrinsic nature of social aspects, which are very subjective and difficult to quantify. Indeed, in this case qualitative data would be more appropriated respect to quantitative ones, but they are also more complex to measure and to evaluate.

Actual tools tend to follow the environmental LCA framework, referred to ISO 14040, but discussions about which social aspects and indicators should be included in the analysis are underway (Jørgensen et al., 2008).

Each production-consumption stage could contemporary involve different stakeholders categories, represented by employees, local communities, consumers, society and value chain actors (Benoît et al. 2007; UNEP 2009).

Figure 15 Social Life Cycle Assessment' Stakeholders Categories. (Source: own adaptation from UNEP 2009).



Moreover, social impact implications could concern various aspects, such as human rights respect (i.e.: gender, disability and children), working conditions (e.g.: wage levels, equity, training and learning opportunities, work-life balance degree), health and safety (e.g.: morbility rates or toxicity levels), cultural heritage, governance and socio-economic repercussions (Norris, 2006; UNEP, 2009).

The "Guidelines for SLCA of Products" (UNEP, 2009) provides a list of social impacts subcategories in correspondence with each stakeholder typology, that is presented in the table below.

Table 2 Social Subcategories. (Source: UNEP 2009, p. 49).

Stakeholder categories	Subcategories
Stakeholder "worker"	Freedom of Association and Collective Bargaining; Child Labor; Fair Salary; Working Hours; Forced Labor; Equal opportunities/Discrimination; Health and Safety; Social Benefits/Social Security
Stakeholder "consumer"	Health & Safety; Feedback Mechanism; Consumer Privacy; Transparency; End of life responsibility
Stakeholder "local community"	Access to material resources; Access to immaterial resources; Delocalization and Migration; Cultural Heritage; Safe & healthy living conditions; Respect of indigenous rights; Community engagement; Local employment; Secure living conditions

Stakeholder "society"	Public commitments to sustainability issues; Contribution to economic development; Prevention & mitigation of armed conflicts; Technology development; Corruption
Value chain actors* not including consumers	Fair competition; Promoting social responsibility; Supplier relationships; Respect of intellectual property rights

At the moment companies tend to report data or performance outputs about employees characteristics, stakeholders relationships or charity initiatives, but still without a structured product life thinking background.

2.5 Conclusions

Circular economy represents one of the possible strategic ways that enterprises could adopt to integrate and manage the three sustainability dimensions. It expands the "system perspective approach" presented in the first chapter from a managerial dimension to the whole product or service life cycle. Circular economy aims to replicate the circularity of natural ecosystems in the economic world, by promoting the efficient use of natural resources, renewable energies utilization and zero-waste generation. The implementation of circular economy principles through innovative business strategies and practices could thus improve economic, environmental and social performances.

European institutions acknowledged the importance of circular economy by mentioning it in the "Vision for Europe in 2050" and by promoting related programs and actions in the "European 2020 strategy" to promote its principles. In particular, eco-innovation, that is, the exploitation of technological knowledge to improve all stages of the product life cycle, was identified by the European Commission as the key point to develop in order to concretely implement circular economic systems.

Three managerial tools were considered particularly appropriate to represent sustainability dimensions of a business or a product through circular economy lenses: Global Value Chain analysis and Environmental and Social Life Cycle Assessment. They could support companies in effectively analyze and monitor the different implications of their business activities.

CHAPTER 3. CIRCULAR ECONOMY WITHIN THE TEXTILE AND CLOTHING SECTOR

The transition towards a more circular economy will probably become a key issue for the majority of industry and business sectors within a few years. Circular economy mentality should be embraced by all companies at the global level, considering that product value chains have spread among different countries, beyond national borders.

An interesting and developing field of study concerns value chain analysis and recycling opportunities in the textile and clothing (T&C) sector. Although the sector unifies two main branches, the distinction between the two product areas -"clothing", which refers to wearable garments, and "textile", which includes every kind of product made of textile fibers-, should be kept in mind to understand the two segments' different business dynamics. Indeed, production and market dynamics related to the clothing or the textile segment could be very different, as will be further explained.

The starting point for this specific analysis of the textile and clothing sector was the observation that an increasing number of famous fashion brands, such as H&M, Oviesse and Calzedonia, have fostered recycling initiatives within their business strategies. Many researchers have paid attention to this trend, which is bringing to light interesting technological and business opportunities that are still under evaluated by companies.

For these reasons, this chapter will firstly describe the state of the art of the European and Italian T&C sector, analyzed through circular economy lenses, that are the Global Value Chain Analysis and the Social and Environmental Life Cycle Assessment tools. The second part of the chapter will focus on a more in-depth investigation of sustainable perspectives in used textile and clothing which was conducted in Italy for the purpose of formulating a general model regarding the actual process of reuse and recycling and possible future business developments.

3.1 European Textile and Clothing Sector

The textile and clothing sector provides a relevant contribution to the European manufacturing, accounting for a 3% share of total value added and a 6% share of employment (European Commission Website(b)). Moreover, the European T&C industry is considered a leader in global markets for high-end products specialization and its exports represent more than 30% of total

international trade share. Indeed, despite the actual negative trade balance and the strong competition with emerging countries, in recent years exports have increased by 13%, while imports just by 4% (European Commission Website(c)).

Since the industry could include a broad variety of businesses, the distinction between the two major market systems, which are "consumer markets" and "industrial markets", could help to assess the different dynamics. The first market, composed of individuals served through retailers, represents approximately the 60% of the sector and is generally associated with fashion brands, both haute couture and mass retailers, therefore with apparel products. On the other hand, the industrial market involves companies that provide textiles which are components of other objects, such as car seats, or are used in different contexts, for example in interior design, home furniture, hotels or house building. In particular, in this segment there exists a special and quantitatively relevant category of fibers, defined as "technical textiles", related to materials and fabrics manufactured to have better technical qualities. Potential related applications are: geotextiles (i.e. insulation, thermal protection and filtration materials), bed sheets, healthcare and furniture upholstery, seatbelts and multiple other specialized products (Adinolfi and Andersen, 2011). Besides these two markets, the T&C production and consumption systems involve complementary industries, which are functional to obtaining final products and managing the whole chain. They consist of: textile machinery and technology suppliers, the chemical fiber sector in relation to coloring and dyeing, transportation and logistics, service providers for software or advertisement, consultancy and the recycling sector (Euratex, 2004).

Table 3 T&C sector branches and complementary industries list and related NACE codes[3]

Sector	NACE codes
Apparel products	Section C –Manufacturing-, division 13 –of textiles for wearing apparel- and 14 –of wearing apparel-; Section G –Wholesale and Retail trade-, division 46.16 –clothing trade agents-; and 46.42 -of clothing-.
Technical textiles	Section C, division 13 –manufacture of textiles-; Section G –Wholesale and Retail trade-, division 46.16 –textile trade agents-; 46.41 -of textiles-;

[3] Since 1970, in the European Union, economic activities have been classified through codes for statistical purposes. The NACE (acronym for "Nomenclature generale des Activites economiques dans les Communautes Europeennes") framework has determined statistical classifications for each business activity and its codes' use is mandatory within the European Statistical System (Eurostat, 2008).

	division 47.51 –retail of textiles, specialized stores-.
Textile machinery and technology	Section C -Manufacturing-, division 28.94 –of textiles and sewing machineries-; Section G –Wholesale and Retail trade-, division 46.64 –of machineries for T&C industry-.
Chemical	Section C -Manufacturing-, division 20 "Chemicals", 20.12 –of dyes and pigments-, 20.6 –of manmade fibers-.
Transportation and logistics	Section H –Transportation and storage-.
Service providers	Section J –Information and Communication-.
Business consultancy	Section M –Professional, Scientific and technical activities-, division 70.2 –management consulting-.
Recycling	Section E –Waste management-, division 38 –waste collection, treatment and recovery-

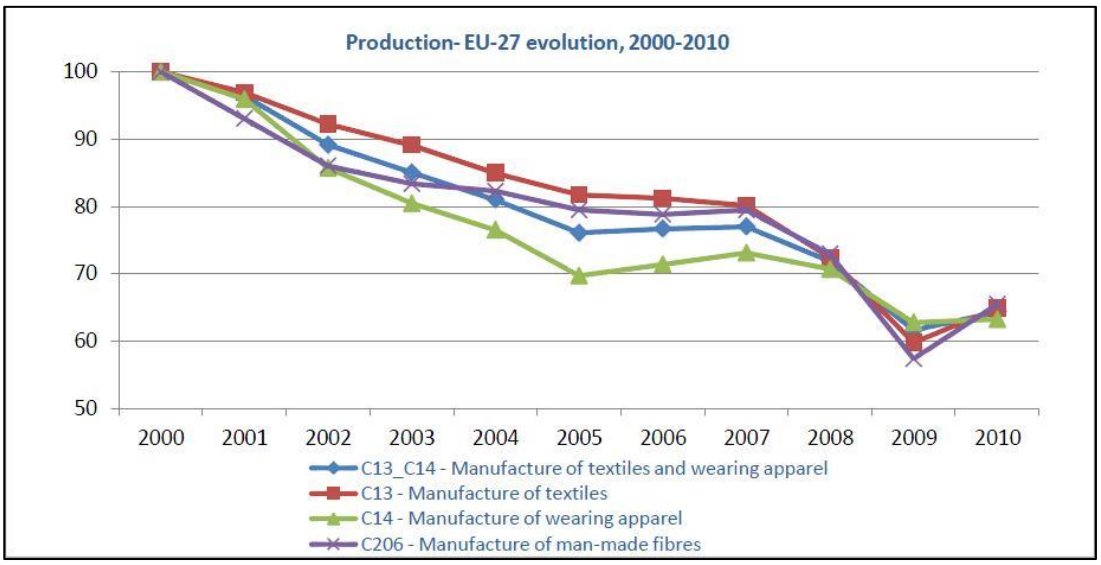
3.1.1 Industry significant indicators and trends

The latest available estimations about the T&C sector in the European Union-28, based on 2012 Euratex members data, show a slight decline of the sector over recent years, which follows the large-scale down-scaling trend of not only the T&C industry, but of the manufacturing sector in general during the last few decades (EEA, 2014). The evolution of the T&C sector has been investigated over the period 2000-2010[4] by the Euratex team, who elaborated Eurostat data and set 2000 as the base year (=100). The study demonstrated the overall decline of man-made fibers, textiles and wearing apparel manufacturing, in relation to:

- Production, which decreased by almost 35%, showing recovery expectations only between 2009 and 2010. An impacting factor in this case is the price of raw materials (flax, cotton, wool) which has been fluctuating and on average rising in recent years, causing instability and uncertainty;

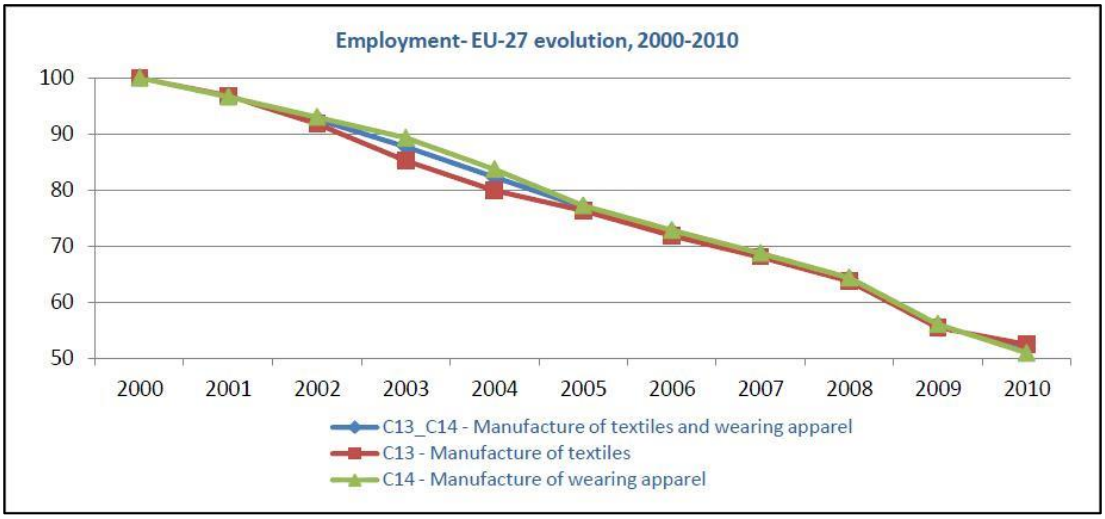
[4] Inevitably, data are slightly distorted by the effects of the financial crisis of 2008-2009, but the overall interpretation of the trends does not change.

Figure 16 Production EU-27 Evolution 2000-2010, Index 2000=100. (Source: Adinolfi and Andersen, 2011).



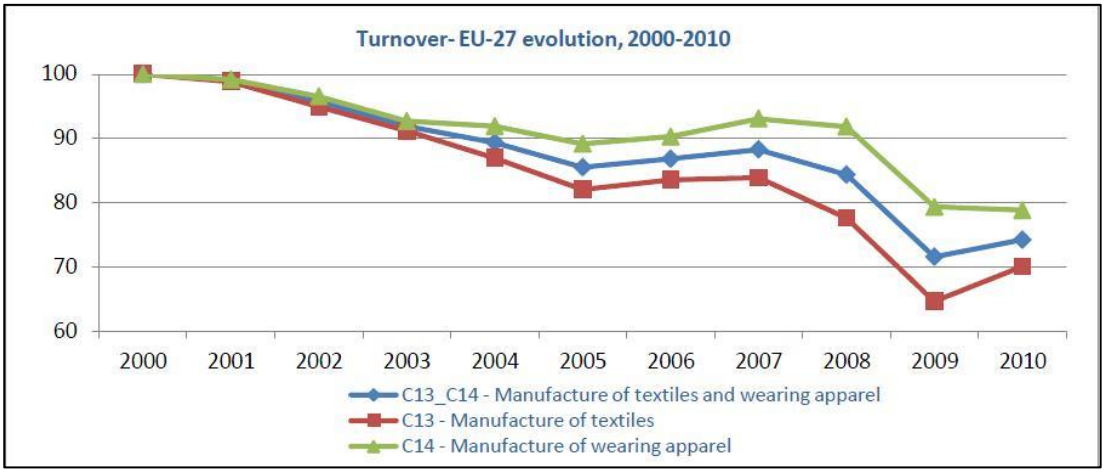
- Employment, which suffered a 50% drop, excluding wholesale and retail trade segments which experienced an upward trend;

Figure 17 Employment EU-27 Evolution 2000-2010, Index 2000=100. (Source: Adinolfi and Andersen, 2011).



- Turnover, which declined by 20% for clothing and 30% for textiles. Here, is important to consider that there exist very different situations among EU countries, since new member states like Romania and Bulgaria registered impressive rises (+250% and +50% respectively), while former EU-15 states, like Ireland and Denmark, experienced a 50% downfall on average.

Figure 18 Turnover EU-27 Evolution 2000-2010 , Index 2000=100. (Source: Adinolfi and Andersen, 2011).



Nevertheless, the total turnover in 2013 was still significant and accounted for 166, 5 billion euro (-1,2% compared to 2012), employing 1.664.000 individuals in 172.662 companies (both -4% compared to 2012), of which 90% consists of small or medium enterprises with less than 50 employees. The clothing segment plays the main role in terms of employment (60% in total) and number of firms (64% in total) (Euratex, 2014a). Considering both the general decline and the economic importance of the European T&C sector, a new strategy to preserve precious knowledge and obtained results and to foster technological and quality improvements is particularly necessary and urgent.

Furthermore, indicators concerning the trade balance are especially significant, since the T&C industry is traditionally considered an export-oriented sector. The extra-EU 28 trade balance in 2013 was negative (-50 billion euro) and the main branch responsible for the imbalance (-46 billion euro) was the clothing branch (Euratex, 2014). In terms of weight, in 2012, 3,8 million tonnes of clothing were imported, while exports consisted of only 300.000 tonnes (EEA, 2014).

Table 4 Key Figures 2013, EU Textile & Clothing Industry. (Source: Euratex, 2014a).

E.U.-28	Unit	2013 e	13/12 %
TURNOVER	**Bil.Euro**	**166,5**	**-1,2%**
- MAN-MADE FIBRES*		10,2	5,9%
- TEXTILES		81,6	-0,1%
- CLOTHING		74,7	-3,3%
INVESTMENT	**Bil.Euro**	**4,1**	**-0,8%**
- MAN-MADE FIBRES*		0,3	6,0%
- TEXTILES		2,5	-0,1%
- CLOTHING		1,3	-3,3%
EMPLOYMENT	**1000 pers**	**1.664**	**-4,0%**
- MAN-MADE FIBRES*		21	-1,0%
- TEXTILES		613	-3,7%
- CLOTHING		1.030	-4,2%
COMPANIES	**Number**	**172.662**	**-4,0%**
- MAN-MADE FIBRES*		77	-1,3%
- TEXTILES		52.690	-3,7%
- CLOTHING		119.895	-4,2%
EXTRA E.U.-28 IMPORTS	**Bil.Euro**	**92,3**	**2,0%**
- TEXTILES		25,3	3,3%
- CLOTHING		67,0	1,6%
EXTRA E.U.-28 EXPORTS	**Bil.Euro**	**42,4**	**2,1%**
- TEXTILES		21,5	0,1%
- CLOTHING		20,9	4,3%
E.U.-28 TRADE BALANCE	**Bil.Euro**	**-49,9**	**2,0%**
- TEXTILES		-3,8	25,9%
- CLOTHING		-46,1	0,4%
Turnover/Employee	EURO/pers	100.050	-0,5%
Investment/Turnover	%	2,5%	-
Exports/Turnover	%	25,5%	-
Employees/Company	pers	10	-

Considering the European sectors evolution over last few decades, the T&C trade imbalance was an exception compared to the extra EU-28 surplus in manufactured goods in 2013, which accounted for 392 billion euro, according to Eurostat data (2014a). Note that the European Union still retains its role of biggest manufacturer and exporter of high-quality products of the world (Eurostat, 2014a), but at the same time the EU has a risky high dependency on raw materials, commodities and energy products, such as oil and gas, from the rest of the world (Eurostat, 2014b). This is also true for the T&C industry when considering the case of technical textiles and luxury clothing, while the situation rather more complicated for garment retailers.

3.1.2 Industry Latest Evolution

The significant data and indicators above presented demonstrate important trends that affected the T&C sector over the past period, prompting structural changes. In a report for the European Commission commissioned by the European Apparel and Textile Confederation (2011), Adinolfi and Andersen have analyzed the situation and have identified five key drivers of change.

First, market trends have generated various stimuli. Since the T&C sector is inherently export-oriented and consequently sales are mainly driven by the growth of export partners, T&C international trade policies particularly affect market trends. Unfortunately, the situation for European countries is quite complicated and presents contradictory sides. Indeed, on the one hand, emerging countries play a determinant role in relation to exports, since their economies and wages are rapidly increasing. But, at the same time, these countries have identified the apparel segment as the starter industry for their industrial development, because it does not require high fixed costs and it is typically characterized by labor intensive production (Adhikari and Weeratunge, 2006). For this reason developing countries have imposed very strict import tariff barriers for clothing, making new markets hardly accessible for European export enterprises. On the other hand, trade liberalization, which followed the WTO Agreement on Textile and Clothing (ATC) phase out in 2005, led to a significant decrease in producer and import prices for European markets, which caused serious drops in consumer real prices to the advantage of global retailers.

The second input of change refers to the need of knowledge and technology investments in products innovation and development. This aspect is particularly related to the industrial market, where technical specifications concerning materials, production processes and system integration with other sectors have to be compulsorily or necessarily considered. Even though technological improvements have been traditionally focused on organic chemistry and ICT integration in manufacturing, interesting new ICT applications, such as web-based communication or digital textile printing, are boosting also non-technological innovation in terms of innovative business models, new ways of interaction with suppliers and customers and collaborative product-development systems.

Third, policy and regulation changes regarding international trade and environmental requirements have influenced the strategic choices of T&C companies, which for instance have moved production plants for intermediate goods to Asiatic countries, while concentrating high

value added production in Europe. Furthermore, government and economic institutions have recognized the priority necessity of specific funding programs to support the sector affected by the continuous decline as described above.

The 2008-2009 economic and financial crisis was the fourth element of change. It negatively impacted on the sector in terms of reduced household expenditure power, increase in payment gaps between producers and retailers and credit lines reduction. It is important to remember, however, that the crisis just exacerbated the general T&C sector decline which was already happening before 2008, as previously mentioned.

The fifth and final driver of change was global competition and T&C value chains' globalization. This aspect deserves a specific analysis, which will be the topic of the next paragraph.

3.2 European Textile and Clothing Global Value Chains

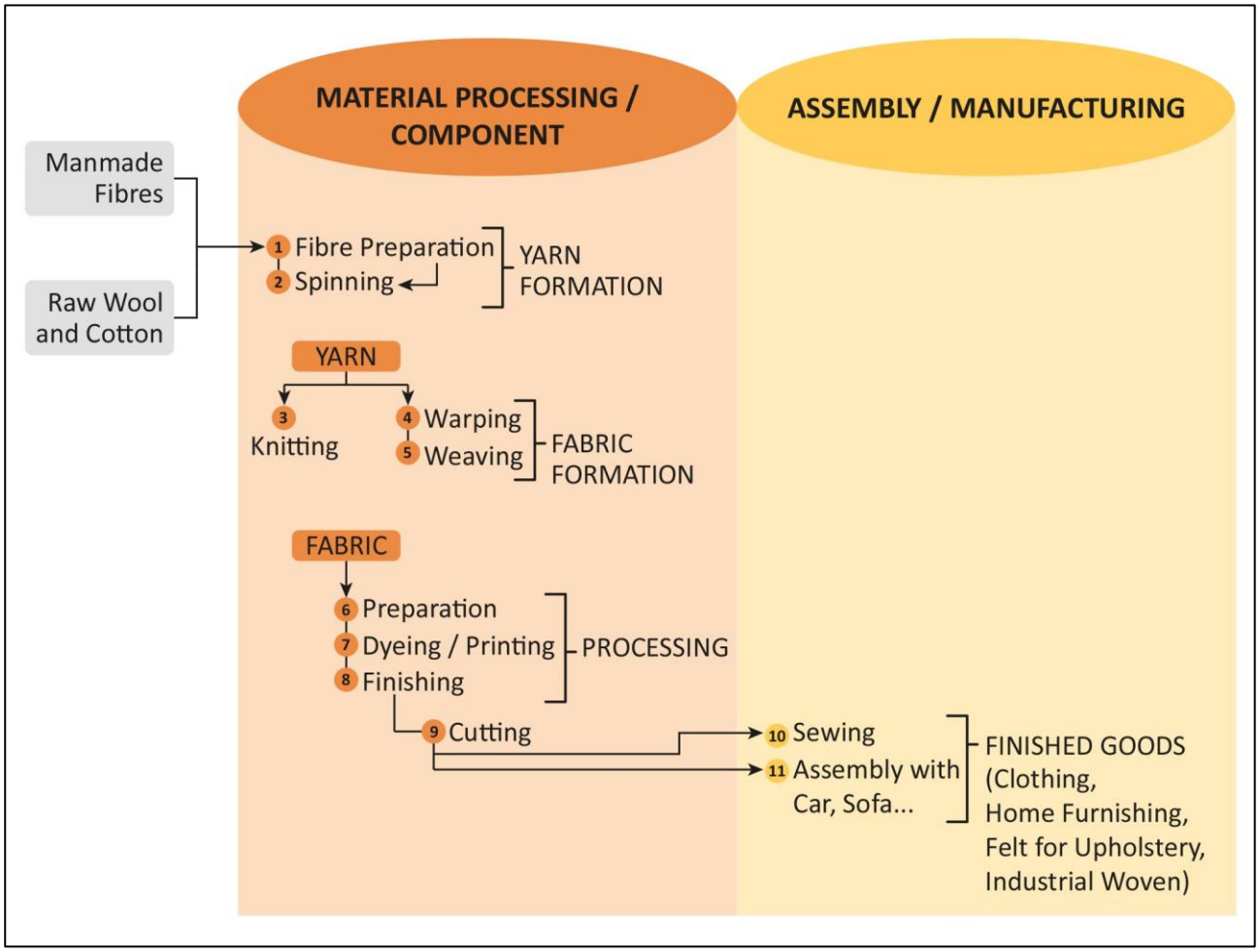
Since the 1960s Western companies have begun a massive disinvestment and delocalization of manufacturing activities towards low-cost countries, giving rise to the globalization and fragmentation of value chains, particularly in the clothing industry (Adinolfi and Andersen, 2011). Referring specifically to the T&C sector, the value chain globalization was fostered in 2005 by the removal of quotas (limits on quantities) on imported fibers and garments, which were imposed by the WTO through the Multi-Fiber Arrangement (1974-2004), and the Agreement on Textiles and Clothing (1995-2005). After the end of the restrictions, retailers and buyers became free to source any amount of clothing and textiles globally. The result was a "tremendous flux in the global geography of apparel production and trade, and a restructuring of firm strategies seeking to realign their production and sourcing networks to accommodate new economic and political realities" (Gereffi and Frederick 2010, p.3).

The global value chain analysis conducted by De Backer and Miroudot in 2013, based on the OECD ICIO model, demonstrated that the T&C value chain is one of the longest and most fragmented chains, ranking fourth out of thirty-six industries.

Actually, the textile and clothing production process is long per se, meaning that several steps are required to manufacture fabrics (roughly five phases) or a single piece of garment (almost eleven phases). Summarizing and focusing only on "components" and "assembly" phases of the GVC

analysis, the production chain initially consists in the transformation of natural resources or synthetic polymers into fibers, which are prepared, bundled and spun in order to obtain yarns. Then, yarn is knitted or warped and weaved and it is converted into fabric. Once the fabric is ready, two possible processes are available: the dry one, which does not use water as a processing compound and refers for instance to printing, and the wet one, which on the contrary involves activities that require water, such as cleaning, dyeing and finishing. Finally, fabrics are cut and sewed, thus components for industrial uses or finished goods for retailers (e.g. clothing or bed sheets) are ready to be sold (Martinez, 2010).

Figure 19 T&C Manufacturing Process. (Source: own adaptation from Martinez, 2010).



Then, considering also the upstream part (design) and the downstream one (distribution and retail, i.e. the service-part) of the value chain and transposing all the phases in the current European context, it is easy to understand that the production-consumption system is quite complex. Moreover, various possible T&C GVC configurations exist, depending mainly on market characteristics or previous existing distortions. Indeed, a bi-polarization of supply has been

observed between the luxury brands and industrial consumers GVC, which require specific technical and original characteristics and still source within Europe, and the mass market retailers one, which exploit a multitude of small and medium enterprises around the world (Adinolfi and Andersen, 2011).

This paragraph describes one of the possible GVC models, which is based on European apparel "lead firms" GVC pattern. "Lead firms" include two types of company (Gereffi and Frederick, 2010):

- Global retailers, which own or license the apparel brand, but often do not possess manufacturing plants, thus sourcing mainly from buying-offices located near manufacturing companies around the world (some examples are C&A, H&M and Mango);
- Brand manufacturers, which own the brand name and are vertically integrated or entertain strict relationships with production factories (e.g. Zara and Benetton). Actually even these enterprises, also known as "retailers with factories", are nowadays specializing more on retail operations rather than on manufacturing.

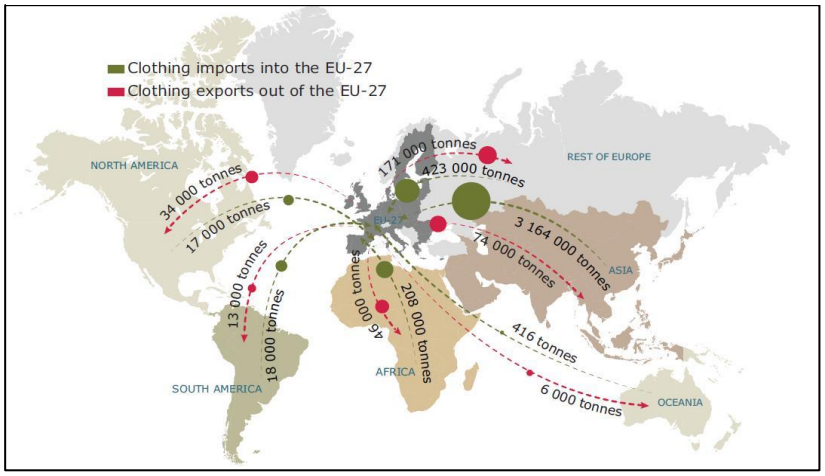
Lead firms were chosen because they have derived the greatest advantages from globalization and at the moment are the most quantitatively significant and powerful firms in the T&C sector, thanks to their direct relationship with mass customer markets. Indeed, retail sales are the driving force behind the T&C industry development, with 28% of turnover increase on average at European Union level over the period 2000-2010 (Euratex data, 2011). Note that the preliminary assumption behind the following model consists in considering the European market system as a whole, meaning that the model will show international exchanges between European countries (EU-28) and the rest of the world, with the related consequences on the European context.

3.2.1 Suppliers

Over the past few years, European lead firms have taken control of the most valuable and profitable activities of the clothing value chain, which are design, branding, marketing and retail (the GVC extremes and intangible aspects), which also make these companies more recognized, visible and contractually powerful. Meanwhile, T&C production (tangible aspect) has been shifted to low-cost developing countries and is almost becoming a "commodity", and distribution has been outsourced to multinational logistic-specialized companies (Gereffi and Frederick, 2010). The value chain evolution follows a general global trend, which tends to concentrate capital-intensive

activities in higher income states and labor-intensive segments in lower income nations (Kilduff and Ting, 2006). With regard to the case of the T&C sector, garment production is the most labor-intensive activity, followed by yarn and fabric manufacturing; while synthetic fiber and machinery production are the most capital-intensive phases (Gereffi and Memedovic, 2003).

Figure 20 Clothing trade flows between the EU-27 and other world regions, 2012 (Source : ETC/SCP and EEA based on Eurostat data).



Therefore, three areas have become the reference apparel supply points: Asia, especially China, India, Pakistan; Eastern Europe, with Bulgaria and Romania, and the Euromed area, i.e. Turkey (Adinolfi and Andersen, 2011).

Indeed, according to C.I.T.H.[5] elaborations of Eurostat data (Euratex, 2014a), in 2013 the five main extra EU-28 textile suppliers were China (8 billion euro), Turkey (4 billion euro), India (2 billion euro), Pakistan (1,7 billion euro) and the United States (1,3 billion euro), amounting to the 70% of total extra EU textile imports.

Table 5 EU-28 Textile Suppliers. (Source: Euratex, 2014a).

TEXTILE SUPPLIERS	Country	2012 (million euro)	Country	2013 (million euro)
1	China	7.864	China	8.009
2	Turkey	3.805	Turkey	4.172
3	India	2.318	India	2.367
4	Pakistan	1.585	Pakistan	1.748
5	United States	1.229	United States	1.231
	1-5 Extra	68,6%	1-5 Extra	69,3%

[5] Textile and Clothing Information Centre

	Extra EU-28	24.497	Extra EU-28	25.300

The five European clothing suppliers were China (26 billion euro), Bangladesh (9 billion euro), Turkey (8 billion euro), India (4 billion euro) and Morocco (2 billion euro), which together amount to almost 80% of total clothing imports.

Table 6 EU-28 Clothing suppliers. (Source: Euratex, 2014a).

CLOTHING SUPPLIERS	Country	2012 (million euro)	Country	2013 (million euro)
1	China	25.517	China	26.481
2	Bangladesh	8.847	Bangladesh	9.332
3	Turkey	8.436	Turkey	8.591
4	India	4.036	India	4.085
5	Morocco	2.171	Morocco	2.096
	1-5 Extra	76,7%	1-5 Extra	76,6%
	Extra EU-28	65.938	Extra EU-28	66.973

From the presented data, it is easy to identify China as the most important European T&C supply partner, even if apparel production is becoming highly competitive, with a growing number of emerging countries fighting to acquire contracts with global retailers and to attract foreign investments (Gereffi and Frederick, 2010).

Indeed, clothing suppliers could play different roles depending on their capabilities and service provision. Gereffi and Memedovic (2003) have analyzed three typologies of suppliers, which represent different development levels along the value chain and consequently upgrading opportunities[6]. In order of lowest-to-highest importance, the categories go from simple assembly or "Cut-Make-Trim" (Assembly/CMT) subcontractors for garment sewing (e.g. Cambodia and Vietnam); to Original Equipment Manufacturers (OEM), which could provide full-package

[6] Possibility to take control of more valuable activities

production services, including packaging and delivery, according to global retailers specifications (e.g. Bangladesh, Sri Lanka), and finally to Original Design Manufacturing contractors (ODM), which offer additional services such as design development or fabric purchasing (e.g. China, Turkey, India, Europe).

Besides the initial distinction between retailers with or without factories, for lead firms having a governance and business relation to manufacturers is fundamental as well as an appropriate method of supply chain management. Nevertheless, control over suppliers could be more or less tight, depending on the final product complexity or technical knowledge requirements, and on the obtainable marginal added value.

3.2.2 Customers

For European countries, T&C manufacturing relocation has been associated with employment losses and substantial knowledge and skills transfer (Adinolfi and Anderesen, 2011). At the same time, production location changes have significantly impacted apparel production costs, which, together with import facilitations due to international trade tariff liberalizations and quotas elimination, have led to a relative price drop in the apparel segment, beyond imports increase (EEA, 2014). Indeed, Eurostat data (2014c) show that the relative price of garments compared to other goods and services declined by 36% over the period 1996-2012 in the European Union's internal market: indeed clothing prices grew by just 3 % during that period, whereas the total European harmonized index of consumer price (HICP) increased by 60%. Moreover, since apparel is perceived as a commodity good rather than a luxury good, on the basis of the economic law which states that an income increase implies relatively less growth of spending on commodities, even the share of total household expenditure reserved to clothing has declined on average in the last two decades (EEA and ETC/SCP - European Topic Centre on Sustainable Consumption and Production- elaborations based on Eurostat data, 2014).

Consequently, the consumption behaviors of European customers have substantially changed. Firstly, the rebound effect of cheaper clothes in Europe was a higher consumption in terms of quantity, reflected by the 40% increase of EU-28 apparel retailers purchases between 1996 and 2012 (EEA, 2014). In effect, the FAO & ICAC survey on "World Apparel Fibre Consumption" (2011) statistically demonstrated that fiber consumption for clothing has been continuously growing over the past few decades worldwide, reaching 10,4 kilograms per person in 2008 and developed

countries are the major consumers. In the specific case of Europe, apparel fiber per caput availability amounted to 17,2 kg, with an increasing use of synthetic fibers (70% of the total), corresponding to decreasing percentages of cotton (29%) and wool (1%) (CIFRS, 2013).

Second, since garment costs, replacement potentialities and repairing skills have diminished, consumers are more motivated to buy new clothes instead of repairing or using them longer. Furthermore, the development of "fast fashion" prompted by lead firms has modified fashion mentality. This new business model is based on few principles: to manufacture smaller amounts of garment pieces, to diversify as much as possible the variety of styles in order to reach a wider range of customers, by taking inspiration from haute couture catwalks trends, and to change collections frequently, going beyond seasonal rhythms (Reinach, 2005). "Offering fewer pieces more often" (Tokatli 2008, p. 23), allows fashion retailers to sell at full price gaining higher net margins on sales. Moreover, no pieces replenishment fosters the willingness to buy as soon as possible "unique clothes" and supports the diffusion of new fashion values, such as "massclusivity". Fast fashion retailers surely benefited from global competition on clothing production because it boosted improvements towards quickly responsive supply chains and more efficient lead times and delivery systems (Tokatli, 2008). On the contrary, the same improved aspects imply the need of proximity among production plants and retail places and the development of vertical integration along the supply chain in order to effectively guarantee quick response and trust relationships with suppliers.

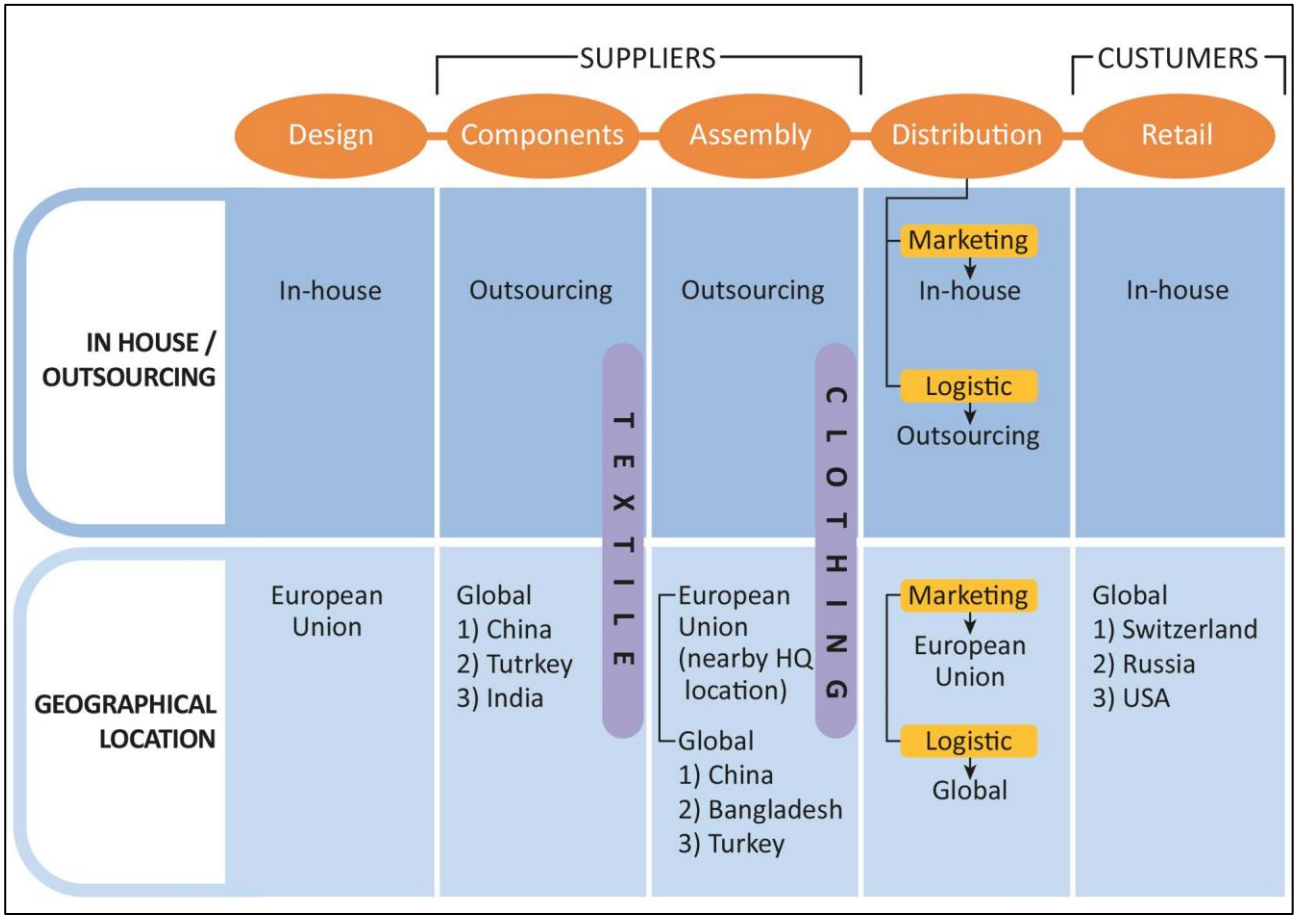
Nevertheless, among European countries differences about consumption choices still persist, because of a wide variety of factors such as income levels, growth rates, social status, historical traditions, business norms, fashion orientation and quality preferences. As an example, despite lower household disposable income level per person, Italian families spend almost 30% more than Germans on clothes (EEA, 2014), allocating €1309 of total household expenditure per year on clothing and shoes (data referring to 2013, Istat 2014b). This aspect implies the necessity for lead firms to constantly monitor different customers' demands and tastes and it also triggers the development of ICT solutions to ensure a continuous connection between clients' requests and GVC upstream activities, from design, to manufacturing and distribution (Tokatli, 2008). Lastly, it is important to notice that, compared to extra EU-28 markets, exports are mainly driven by technical textiles and luxury clothes, which are still mainly produced in Europe (approximately 75%), since they require expensive equipments and creative skilled workers who can contribute to design

innovation and brand development processes. These products also allow more value added retention and are at the moment sustaining the European T&C market, by keeping high level knowledge as the competitive advantage. Compared to the apparel sector, the top five extra EU-28 customers in 2013 were countries with high disposable incomes: Switzerland (3,2 billion euro), Russia (3,1 billion euro), United States (2,2 billion euro), Hong Kong (1,3 billion euro) and Japan (1,3 billion euro) (C.I.T.H. elaborations on Eurostat data, Euratex 2014a).

Table 7 EU-28 Textile and Clothing Consumers. (Source: Euratex, 2014a).

TEXTILE CUSTOMERS	Country	2012 (million euro)	Country	2013 (million euro)
1	United States	2.271	United States	2.269
2	Turkey	1.821	Turkey	1.930
3	China	1.718	China	1.743
4	Switzerland	1.399	Switzerland	1.421
5	Russia	1.294	Russia	1.305
	1-5 Extra	39,6%	1-5 Extra	40,3%
	Extra EU-28	21.464	Extra EU-28	21.489
CLOTHING CUSTOMERS	**Country**	**2012 (million euro)**	**Country**	**2013 (million euro)**
1	Switzerland	3.291	Switzerland	3.281
2	Russia	3.023	Russia	3.185
3	United States	2.242	United States	2.280
4	Hong Kong	1.234	Hong Kong	1.356
5	Japan	1.296	Japan	1.312
	1-5 Extra	55,3%	1-5 Extra	54,6%
	Extra EU-28	20.064	Extra EU-28	20.919

Figure 21 European T&C Global Value Chain. (Source: own elaboration).



3.3 The Italian T&C Sector and Value Chain

As previously mentioned, there exist different situations among European countries compared to the T&C industry. This is particularly true for the Italian case, where the T&C sector has substantially contributed to the Italian economic development and it has evolved in a peculiar way. Indeed, when delocalization movements began during the 1960s, Italian T&C enterprises decided to focus on quality and were able to create an integrated and powerful system, called the "fashion industry" (Correani, 2008). From the combination of haute couture creativity and high-quality vision (i.e. immaterial contents developer), and the industrial approach (i.e. functional commodity provider), emerged therefore a new intermediate market: prêt-à-porter. This made it possible to empower the social and cultural meaningful role of Italian fashion and to reach a broader share of customers through more accessible prices, helping the Italian style become recognized around the world (Richetti, 2008).

This evolution was made possible by the existence of the "industrial district", a particular organizational system of multiple, interconnected small and medium companies that for a long time ensured efficient T&C manufacturing supply . Tight value chain relationships fostered strong specialization, technical knowledge and production competences development, which represented the key drivers of the Italian fashion industry competitive advantage. However, industrial districts also led to two problematic developments: first, the total dependency of SMEs on brand designers and retailers and second, the "double-marginality" phenomenon (i.e. each single firm tended to apply a price increase related to its activity) caused by the many intermediate exchanges (Correani, 2008).

Therefore, when, in the early years of the XXI century, manufacturing delocalization became massive, tariff liberalization exacerbated global competition and fast fashion developed, the Italian fashion industry was damaged as well as the whole European T&C sector, disclosing the industrial system's inability to adapt to new economic conditions and to compete with global competitors. According to Istat data (Istat database, 2015), over the period 2000-2010 Italian T&C production decreased, with -46% employees and -15% enterprises. Besides this data, the turnover slightly increased (4%), demonstrating that Italian brands were able to preserve their high-value consideration. After 2010, the declining trend was reversed showing positive recovery signals, which unfortunately are still weak and fluctuating up and down. Latest available data refer to the year 2012, when the industry value added amounted to 12.281 million euro, there were 47.667 companies and the number of employees accounted for 354.447 people, 15 workers per firm on average (Istat, 2014a). The last figure is significant, since it demonstrates that the manufacturing panorama is still grounded on small and medium enterprises, an aspect which could prevent large R&D investments and consequently technological innovation.

Table 8 T&C Sector in Italy. (Source: Istat, 2014a).

Indicator (2012)	TEXTILE	CLOTHING	TOTAL
VALUE ADDED (€)	5.457.160.000	6.823.963.400	12.281.123.400
EMPLOYMENT (N°)	136.429	218.018	354.447
COMPANIES (N°)	15.291	32.376	47.667
AVER. EMPLOYEES (N°)	9	7	16

As far as trade is concerned, the T&C sector is one of the Italian productive industries that maintains a positive and growing trade balance, which accounted for 9.496 million euro, with 27.185 and 17.689 exports and imports respectively (Ice data, 2014). In particular, Italian textile exports still rank fourth compared to competitor exporters, representing the 4,4 % share of the world total textile exports; while the clothing segment ranks second (5,4% share) among the world largest clothing exporters.

From the recently released Ice report (2014), it appears that intra EU-28 trade accounts for 42% of total imports and 53% of total exports, thus considerably contributing to the positive trade balance. Considering then extra EU-28 trading partners, Italian suppliers are mainly located in Eastern Asia (e.g. China, Vietnam), Central Asia (e.g. Bangladesh, Pakistan and India), and Turkey; while customers groups are: Turkey, Russia and Swiss amounting together to 4.506 million euro, eastern Asia with 3.862 million euro exports and United States accounting for 1.896 million euro.

Table 9 Italian T&C Trade data. (Source: Ice, 2014).

Indicators (2013)	TEXTILE	CLOTHING	TOTAL
TRADE BALANCE (Million €)	3.244	6.252	9.496
IMPORT	6.156	11.533	17.689
EXPORT	9.400	17.785	27.185
SUPPLIERS			(Million €)
UE-28	2.575	4.933	7.508
China	1.767	3.181	4.948
Central Asia (India, Pakistan..)	523	1.451	1.974
Turkey/Russia/Swiss	811	1.139	1.950
North Africa	220	707	927
Central-South America	92	38	130

U.S.A.	52	51	103
CUSTOMERS			(Million €)
UE-28	5.539	9.000	14.539
Turkey/Russia/Swiss	1.075	3.431	4.506
China	1.195	2.667	3.862
U.S.A.	462	1.434	1.896
Middle East	173	589	762
North Africa	546	172	718
Central-South America	165	179	344

3.4 Social impacts of T&C industry evolution

In the last decades, T&C sector development had important social consequences regarding employment migration, labor conditions and competencies changes. Nowadays, T&C market is highly competitive: since predictability and profit margins are generally low, value chain actors are constantly looking for cost decreases and operation efficiency in order to meet high flexibility, delivery and speed levels and low prices required by consumers demand (International Labor Organization, 2014). Therefore, the following paragraph aims at giving a brief, panoramic idea of relevant social aspects related to the current status of the T&C industry.

One of the main concern refers to employees' working conditions in T&C production plants, especially the ones located in emerging countries. Indeed, manufacturing is usually subcontracted by multinational retailers to suppliers in various states, where environmental and social legislations are less restrictive than in Western countries (ILO Website). Many institutions and no-profit organizations have focused their attention on problematic situations linked with wage levels, women and child labor, working hours and workplace safety in recent years. Despite technological advances in the high-end products segment of the T&C sector, low-end and value

apparel productions are still characterized by labor-intensive processes in poor working conditions.

For instance, a recent International Labor Organization study (2014) has demonstrated that many of the top textile and clothing manufacturer countries in the world, such as Bangladesh, Vietnam, India, Pakistan and Cambodia, have the lowest levels of minimum wages in the sector. Moreover, even if national laws set minimum wage rates, very low compliance with legislations has been observed, in particular in Asia. With regard to this aspect, a research carried out in ten Asian countries showed that more than half of analyzed suppliers underpaid employees, often asking them to work overtime, and did not pay social security contributions (Vaughan-Whitehead, 2011). The Better Work Programme (IFC and ILO, 2013) have also proved the existence of persistent problems related to excessive working hours and to suppliers' resistance in guaranteeing adequate rest periods in developing countries' T&C companies. Consequently, excessive time spent at work impacts workers' health, fatigue and workplace safety and could cause higher frequency of accidents or injuries and lower productivity (Seo, 2011).

Two tragic and emblematic episodes particularly shocked public opinion and prompted T&C sector players to improve working conditions. The first fact refers to the Rana Plaza textile factory's collapse (Bangladesh) due to the construction's structural problems on 24th April 2013, in which 1.129 employees died during working hours. The second one regards a plant fire in Pakistan, where almost 70 people died. Following these episodes, governments, workers' organizations and retailers' buyers agreed on common standards for the structural integrity and safety of buildings and on strengthening labor inspections (ILO, 2014). Furthermore, private companies' initiatives, such as H&M and Inditex's Supply chain monitoring and collaboration programs (H&M Website; Inditex Website), were also implemented.

At the same time, production delocalization has affected the European and Italian T&C industries over the past decades, as previously mentioned, in terms of significant job losses, accounting for almost 50% of employment decrease, and of changes in workforce composition. The latter aspect refers to the simultaneous increase of the share of high level education employees and reduction of low skilled workers observed among Euratex member companies, in particular the ones that deal with fashion, clothing and manmade fibers sub-sectors (Adinolfi and Andersen, 2011). Despite occupational problems, these data highlight social developments related to human capital

modifications regarding specific European T&C sector know-how and competences, which should be preserved and developed.

Indeed, in order to adapt to changing trends in market, supply chain and distribution channels, European and Italian firms are nowadays focusing on product and process innovation by exploiting high technologies and know-how, since this is seen as the only possibility to boost the industry competitiveness and to capture more value (Adinolfi and Andersen, 2011).

Consequently, new and different skills are required and they will be crucial for future T&C sector evolution. Technologies, such as automated knitting, ink-jet printing on fabrics, body scanners for design and smart clothes, are developing and they could represent interesting business opportunities. These new applications imply the necessity of creative and versatile high-skilled workers, who need proper education and training programs (De Brito et al., 2008). Euratex is collaborating with the European Commission to foster and promote initiatives and projects that should solve the current mismatches between job profiles offer and demand (Euratex, 2014b).

3.5 Environmental impacts of the T&C industry

The previously illustrated European and Italian T&C global value chain configurations illustrate current European and Italian production-consumption patterns, which lead us to consider related environmental issues, hereafter analyzed by a simplified Life Cycle Assessment.

According to the EEA report (2014), each phase of the product life cycle exploits raw or transformed natural resources, which determine various repercussions on the ecosystem.

First, resource extraction, in this case meant as natural and manmade fiber production. Natural fibers mostly derive from vegetal plants or animals, while manufactured ones require more complex material mixes obtained through chemical transformation of plant parts (e.g.: cellulose to produce viscose) or inorganic substances, or of previously synthesized polymers, which generate synthetic polymers (Fletcher, 2014). Natural resources production needs land, biomass, water and energy use, which respectively imply land use, pesticides usage and water, soil and air pollution. On the other hand, manmade fibers, which represent the largest percentage of utilized textiles, entail chemical compounds usage, thus huge water and air emissions, oil extraction and energy use.

Second, the transformation of fibers into textiles and finished goods requires chemicals, such as dyes agents, energy and water for wet processing, consequently releasing toxic pollutants in the environment and contributing to greenhouse gas emissions.

Production phases of the T&C industry, both regarding fibers preparation and textiles or apparel manufacturing, are the most environmentally impacting, together with the use phase, which will be further analyzed (European Commission, 2014). Main concerns related to production are often liked with chemicals use and they refer to freshwater eutrophication[7] and terrestrial eco-toxicity, but agricultural land occupation could be a problem as well. For this reasons and because of the aggressive "Detox Campaign[8]" launched by Greenpeace in 2011, the European Commission has promoted the REACH (acronym for "Registration, Evaluation, Authorization of Chemicals") regulation, which limits hazardous chemical preparations' use, also in the T&C sector (European Chemicals Agency Website). Unfortunately, restrictive chemical standards in Europe have accelerated manufacturing delocalization and geographical dispersion. Indeed, many T&C companies have decided to move production plants abroad in order to avoid pollution restrictions (De Brito et al., 2008).

Third, distribution and logistics, which involve transport fuels use and land consumption, cause air and acoustic pollution and soil erosion and depletion. These functions, generally marginally considered, are becoming crucial aspects to manage both because of value chain fragmentation and flexibility and quick response consumers' requests. In order to pollute less, value chain actors should optimize and consolidate textiles and garments flows by integrating the various players through better relationship management and they should also search for clean transport model alternatives, such as rail, maritime or inland waterways (De Brito et al., 2008).

Fourth, the use and consumption phase requires electricity for washing and ironing and water and chemical compounds for detergents. It implies pollution related to energy production and surfactants and phosphates release to water, consequently causing air, freshwater and marine pollution or human health problems (i.e. allergic reactions to chemical substances used during the

[7] ISECA (Information System On Euthropication of Coastal Area) Definition: An enrichment by or excess of nutrients to the water is called **eutrophication** and may result in an explosive growth of algae. Depending on the environment (quiet bay or rough seas) and the type of algae (microscopic or macroscopic), a 'bloom' can be observed in different forms: foam or a green tide on the beach. Available from < http://www.iseca.eu/en/science-for-all/what-is-eutrophication >

[8] The "Detox Campaign" is a voluntary initiative prompted by the environmental NGO Greenpeace that aims at diminishing or eliminating toxic substances use in the fashion industry.

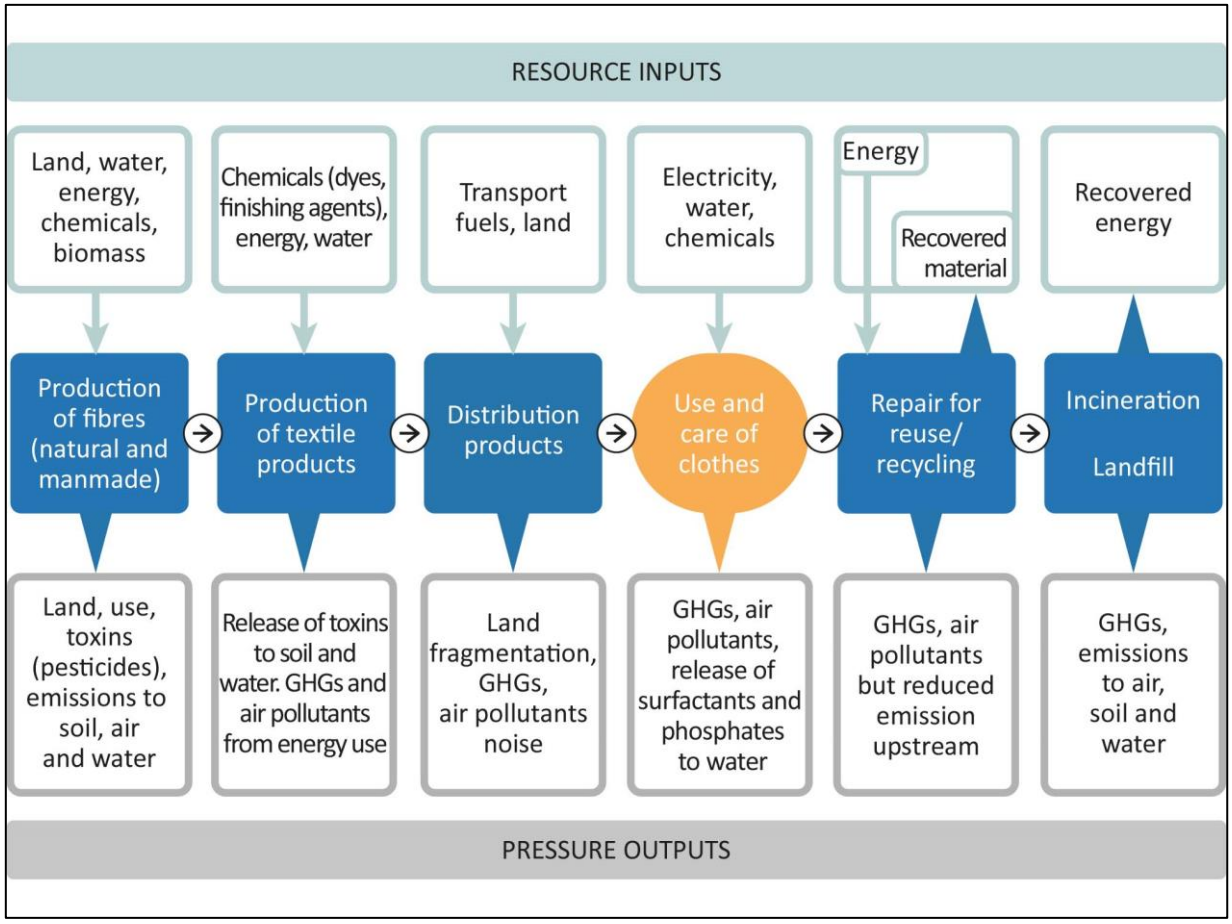
manufacturing phase). Levi Strauss & Co. has conducted the environmental LCA of a pair of jeans, which confirms that the use and consumption phase is the second most environmentally polluting stage of the T&C sector (EEA, 2014). Indeed, results show that consumer care represents the 23% of total water consumption along the jean life cycle (fiber production is 68%) and it is responsible for the 37% of total climate change impact in terms of emitted CO2 (highest level). Clothing consumption impacts depend on individual habits in each country (the LCA considered USA, United Kingdom, France and China's consumer~~s~~ behaviors) related to average wash frequency, cold or warm water usage and dryer use. For example, it was estimated that wearing a pair of jeans 10 times before washing it could reduce water consumption by 71% (Levi Strauss & Co., 2015).

Fifth, end of use products collection and processing need mainly energy and chemicals for polymers transformation, with associated emissions, but it is also the first moment in which the process gives back recovered materials, which could be potentially useful inputs to close the loop. In regard to possible environmental benefits related to this phase, Farrant et al. (2010) have demonstrated that collecting and reusing a cotton t-shirt and a pair of polyester-cotton trousers could decrease global warming by 14% and reduce human toxicity by 45%.

Last, incineration could also return recovered energy, even if the process implies greenhouse gas emissions; while landfill can only pollute and deplete soil and it is connected with toxic liquids leaks risk.

Overall, the industry contributes 4-6% of the global European countries' environmental footprint (ETC/SCP elaboration based on JRC/IPTS analysis of World Input-Output Database (WIOD) (EC, 2012d).

Figure 22 Environmental impacts related to T&C Product Life Cycle. (Source: EEA, 2014).



Considering that raw materials are mainly cultivated, bred or extracted outside Europe and that production relocation has been the dominant trend of the T&C sector over the last few decades, it becomes evident that environmental pressures related to European and Italian T&C industries have spread beyond European borders.

Consequently, questions arise about "who is responsible for environmental impacts of the T&C sector between producers, retailers and consumers" and "which criteria should be followed to determine the responsibility". In this case, extended producer responsibility principles could lead to wrong conclusions, since manufacturers and retailers do different activities in distinct locations, but at the same time these two entities work strictly bound through a principal (retailers) – agent (producers) relationship. Furthermore, consumers should take on their part of responsibility, since their consumption actions, behaviors and choices inevitably imply consequences on the ecosystem. Therefore, the three subjects are all mutually responsible for environmental impacts and should collaborate together to make any effort in order to avoid pollution.

3.6 Closing The Loop of Textile and Clothing Value Chain

Even if the end-of-use phase of T&C value chain is less polluting and environmentally impacting compared to other activities, there are some important reasons to consider re-use and recycling as strategic business opportunities, beyond the diffusion of circular economy benefits.

First, as a result of fast fashion stimuli and clothing commodity-prices, people tend to buy and own bigger amounts of clothes, which are generally used for shorter periods. Then, used home textiles and garments are either accumulated inside wardrobes or thrown away. Unfortunately, direct data about retained items are not easily available.

Second, following long-run perspectives and considering global resource limitation and particularly Europe's high dependency on raw materials from other world regions, to find new ways and solutions to transform used textiles and clothing into by-products or inputs for manufacturing would be more reasonable than to landfill them. Indeed, textiles could be nearly 100% recyclable, but their recyclability has become more complex and challenging because of fiber mixes and strength (Hawley, 2006).

Third, textiles and clothing wastes are growing because of both overconsumption and fibers low-quality or inadequate manufacturing processes, which increase the probability of tearing or damaging clothes. Moreover, some items, such as torn or consumed underwear, beachwear and table or bed linen, which represent a big percentage of textile production, are inevitably destined to municipality waste centers, since their reuse or reallocation is difficult.

Furthermore, following the European Waste Directive hierarchy, closing-the-loop initiatives should be part of wider sustainability strategies and should be integrated with upstream-waste prevention actions, such as eco-design and clean production (Bartl, 2011). In this way, they could also be more effective.

3.6.1 Research description

As previously mentioned, the research started after the observation that recycling initiatives seem to be spreading among some fashion brands. This aspect was the starting point for a further in-depth analysis of the different possible alternatives, which are available at the end of a textile or cloth life. For practical reasons, the survey focused on current opportunities existing in Italy, since it was practically easier to get in contact with the analyzed sector experts in order to collect data

and information. Nevertheless, the models hereafter presented could be generally valid for the major part of European Union countries or, at least, they could provide an initial idea of how to close the loop.

3.6.1.1 Purpose and Objectives

The main goal of this research is to demonstrate the economic, environmental and social value of used or discarded textiles and clothes, which can still serve as inputs for profitable economic activities. The underlying assumption is that in the T&C sector remarkable market opportunities related to circular economy thinking exist, but are still under evaluated or unknown. For this reason, companies should include loop-closing initiatives in their sustainability strategies, since they could give benefits to business, nature and society.

In order to understand how to benefit from reuse and recycling possibilities, it is first necessary to describe the actual mechanisms of used textiles and garments recovery and to identify the economic actors involved. Therefore, the objectives of the first part of this analysis are:

1) Mapping the material flow of used or discarded textile products from their end of life to reintroduction into the economic system. The expected result should be a model that illustrates which steps and operations are needed for T&C recycling, explaining also the available recycling technologies and opportunities.
2) Identifying the economic entities, i.e. consumers, companies, organizations, which are responsible for each stage of the material flow. In addition, providing some examples of firm typologies which deal with the specific branch of the T&C sector.

Thus, the intention of the first part is to show that a flourishing economic system already exists and should be valorized and enlarged. Furthermore, people should be aware of the fact that old and consumed textiles and clothes are still valuable.

The second part of the research, which will be presented in the next chapter, will examine how to concretely exploit sustainable market opportunities and to realize circularity in the T&C sector. Indeed, the third research objective is to develop a business plan for an activity correlated to one of the reuse-recycling alternatives presented.

3.6.1.2 Methodology

Initially, specific literature and reports related to used T&C recycling were reviewed, in order to have an idea of how previous studies had been conducted and, consequently, to understand the appropriate research method to follow. The reference literature for this part has been: "Prevention of Textile Waste: Material flows of textiles in three Nordic countries and suggestions on policy instruments" (2012) and "Towards a Nordic textile strategy: Collection, sorting, reuse and recycling of textiles" (2014) both commissioned by the Nordic Council of Ministers, "Textile recycling system: a system perspective" by Hawley (2006), and "Recovery of Apparel Waste" by Haner and Bartl (2011).

The material flow diagram is then the result of a qualitative empirical analysis, based on 16 face-to-face or telephonic interviews, during the period November 2014- March 2015. Interviews were conducted with: representatives of institutions (e.g. Chamber of commerce), industry associations (e.g. Industrial federations), sector experts (e.g. Bureau of International Recycling), manufacturing enterprises managers, charity organizations (e.g. Caritas) and secondhand shops (interviewees list in Appendix). Beyond tailored questions for the different interlocutors, interview topics generally concerned: used textile and clothing flow stages and mechanisms, diffusion of recycling technologies and data or information about related firms or organizations.

In addition, 5 company case studies were analyzed in order to better understand different approaches and strategies regarding used T&C recycling. Moreover, the relative Italian legislation was reviewed.

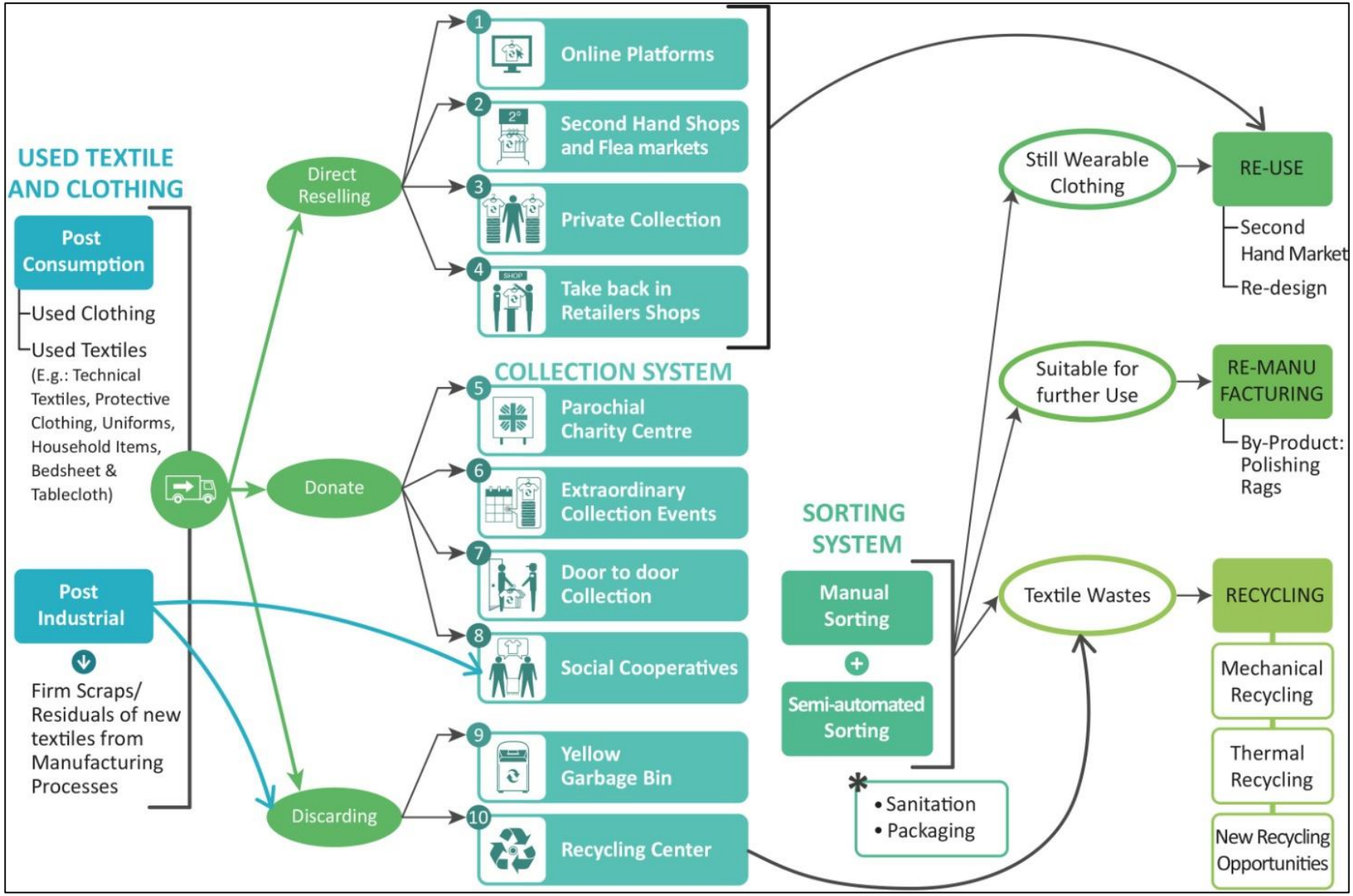
Once the material flux configuration was schematized, related economic actors were identified and assigned to each stage.

The research results consist of two models referring to the above presented objectives – one for the material process and the other for involved parties-, which should be read together and will be described and explained by combining information from both diagrams.

3.6.2 Used T&C flow in Italy

The following part of this work will present the state of the art of Italian used T&C fluxes from end-of-use collection to recycling and the related organizations and enterprises that manage different activities

Figure 23 Used and Discarded T&C Flow in Italy. (Source: own elaboration).



3.6.2.1 Used Textile and Clothing Options and Collection alternatives

Once a subject decides to discard used clothes or technical textiles (post-consumption) or a firm has textile scraps or residuals from the production process (post-industrial), there are basically three options available: to directly re-sell items in the second-hand market, to donate clothes to charity organizations or to throw them away. Therefore, the initial selection is made by the consumer or producer itself.

Direct resell

In the first case, when a garment or a pair of shoes is still considered valuable and suitable to be used, the individual could try to re-sell it in the second-hand market, which nowadays is ~~nowadays~~ a very interesting and growing sector. Indeed, a market research analysis conducted by Doxa (2014) and commissioned by Subito.it, the leading online platform in Italy for used items exchange, confirmed the positive trend of the so called "secondhand economy". The survey demonstrates that 44% of Italians chooses to buy used products, generating a business volume that accounted for 18 billion euro in 2013, of which 47% was finalized through digital media (i.e.: websites, platforms or social media). The report has also identified three principal secondhand market drivers:

1) technological facilities, which favor contacts between privates;
2) the peculiar economic context, which contributes to change saving and consumption behaviors;
3) and the modified value system, which considers reusing a smart and eco-sustainable consumption solution.

Indeed, the easiest way to re-sell used clothing in the IT era is to exploit online market possibilities, which offer free price negotiations between privates, rapid response and a real market approach to determine the actual value of proposed objects. There are several different business models available: there could be a monetary exchange agreed between persons based on price estimations (e.g. Subito.it), or the offer-value could be established through an auction system (e.g. Ebay.it) and there are also forms of barter which substitute money value with credits (e.g. Reoose.it).

Another way to re-sell used clothing is through second-hand or vintage shops, which are also spreading, mainly in cities. Usually people can bring their used clothes to these stores (in-store collection) where the clerks, after a pondered evaluation, register the item as “re-sellable” through the particular contractual system of the “estimated contract” , also called “conto-vendita” (In English: “selling on consignment”). This kind of agreement is disciplined by the Italian Civil Code, articles 1556 to 1558, and it involves two parts: the *tradens* (supplier) that consigns movable items, of which it maintains the ownership, and the *accipiens* (dealer) who receives the objects without immediately paying the cost, but obtaining the availability on the goods for a certain period of time. The seller actually works for the supplier to re-sell used things and, if items are sold, the seller could profit from the differential between the purchase cost and the sale price, otherwise he or she could give back the unsold objects after the agreed period. This contract typology is very widespread in the used clothing market, which includes different types of secondhand shops, depending on used garments characteristics. The range goes from luxury vintage shops that accept only famous and certified fashion brands pieces, to medium quality used clothing shops, to general second hand stores, such as Mercatopoli or any retail chain which deals with any kind of used items.

Unfortunately there are no aggregated data about re-sell rate and profitability of these second-hand shops. Furthermore, large amounts of used apparel frequently remain uselessly accumulated and unsold, and are consequently donated. In order to gain an insight into how the mechanism works, a telephonic interview with the owner of a secondhand store (Bottega dell’Usato, Treviso) was conducted. The clerk stated that he daily receives used clothing, from 5 items per day to peaks of 30 items in one day, validating the hypothesis of increasing business opportunity in the secondhand market. He usually agrees upon a price target, which on average amounts to €5 per piece, with the used-garment owner and, if the garment is sold, they equally share the profit (50%-50%). Each item of clothing is described and registered and every month customers are notified about selling results and receive their percentage.

Occasional or permanent flea markets, which are usually which are usually regulated by municipal authorizations regarding extraordinary events or open-air market rules, are also possible initiatives for direct reselling. There are also private collectors, keen on vintage items, who look for sophisticated, uncommon and special clothes that are very profitable. Being unique pieces, these items are called “diamonds” among sector experts and could be valued up to $50.000 (Hawley,

2006). Sometimes diamonds have high cultural value and could serve as a “historical testimony” of fashion evolution, therefore they could become part of stable vintage archives or museums.

The last option, which is ~~a~~ non-direct reselling, consists in adhering to global retailers’ initiatives to collect used garments in stores. The customer has the possibility to bring any amount of used clothes to the retailer and, in return, he or she obtains a discount ticket on new acquired clothes. For instance, multinational fashion retailers such as H&M, Oviesse, Levi’s and Calzedonia, have promoted “Close the loop” projects, outsourcing the service to I:CO, an international company which provides the infrastructure to ensure that used textiles and clothes will be re-used and recycled (I:CO website). In H&M “Conscious Actions Highlights 2013” Report (H&M, 2014), the company states that 3.047 tones of garments, equivalent to 15 million t-shirts, have been collected through its “Garment Collection” initiative in 2013.

Donation

The tradition of donating used clothes has a long history and is a structured and well established reality in the Italian and European territory. Usually donations have philanthropic and social purposes, therefore the collection is organized by charity organizations, which do not have lucrative goals, supported by private collecting enterprises and municipality recycling agencies.

Caritas is the main charity organization in Italy to organize the collection of used garments through the capillary presence of parochial centers, which are permanently active to help families in difficulty, or through extra-ordinary collecting events, connected to particular seasonal moments. Other associations, which frequently support disabled persons, promote door-to-door collection, by leaving plastic bags to fill with used clothes that are usually picked up after one week. Collected items, which have to be in working order and still wearable, could be directly redistributed to poor people or could be resold to intermediate companies which sort garments and afterwards decide what to do. Thus, clothing collection represents an important source of fund raising for charity organizations.

Unfortunately, doubts about the real activities conducted by associations that support disabled people have been raised by journalists who have investigated them. As a result, some of these organizations have been accused of fraud, since they seem to operate for profit and commercial purposes rather than to concretely help disabled individuals (Il Tirreno, 1996). However, a judiciary inquiry is needed before this information can be confirmed.

A particular and developing possibility to donate textile materials concerns firm scraps from textile and clothing production processes. Some manufacturing companies have decided to donate their textile residuals to social cooperatives which employ disadvantaged individuals or simply believe in sustainability principles and foster re-use and recycling initiatives. These cooperatives then use textile fragments to create unique clothing pieces, avoiding waste disposal and landfill. An interesting example in Italy is "Progetto Quid", a social cooperative that re-integrates in the labor market ex-drug addict or ex-detained women and disabled people as seamstresses, by establishing partnership with textile manufacturing enterprises such as Berto Industria Tessile and retail chains like Calzedonia and Den.

Regarding the latter possibility, an alternative system to donate production scraps and to stimulate industrial symbiosis at the same time is Material Bank, which refers to an online market place where companies with excess textile residuals or a need~~s~~ for textiles could exchange materials for their businesses. This system is in use in Finland, but could be further developed and diffused in Italy, involving especially textile manufacturing firms and districts (Palm et al. , 2014).

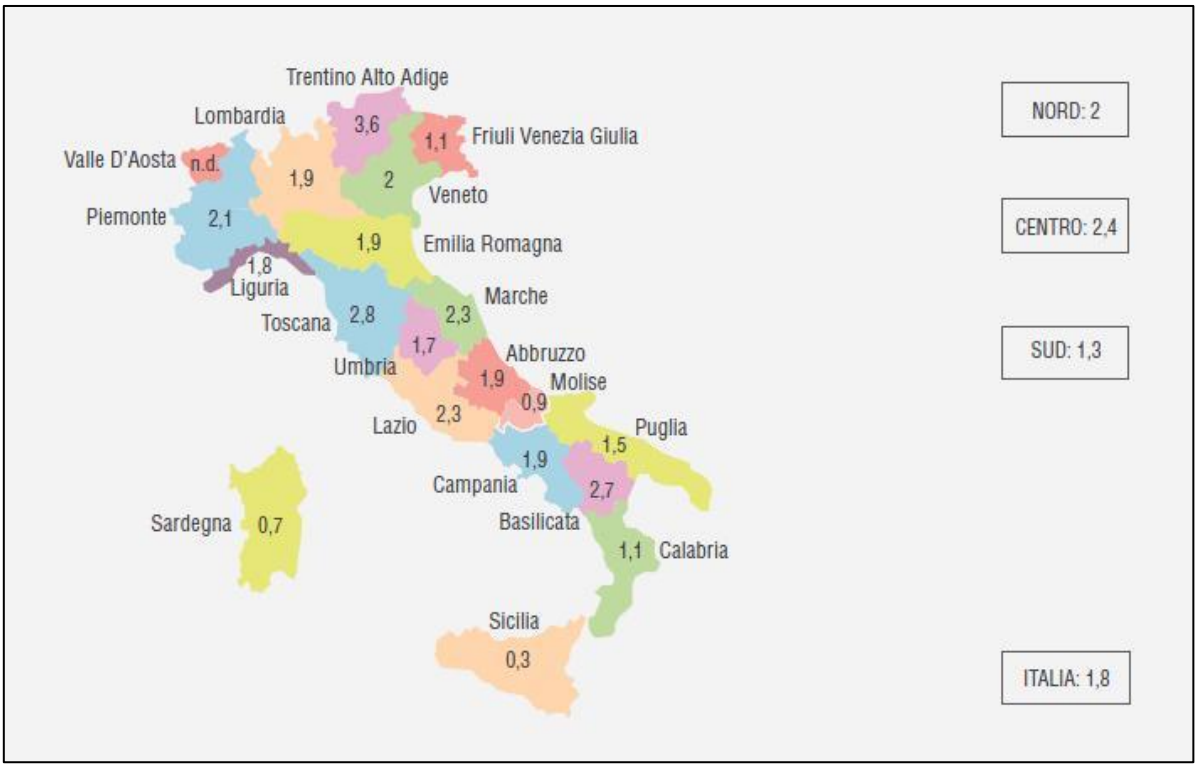
Discarding

When a textile product or garment is no longer wearable or usable, the last option remains discarding it as ~~a~~ waste. According to the Italian legislative decree 152/06, in compliance with the European directive 75/442/CEE, used T&C coming from urban areas are "textile wastes" and are classified into two different categories: "clothing" with CER (Catalogo Europeo dei Rifiuti) identification code 200110 and "textile products", CER code 200111. The possibilities are: yellow garbage bins located along the streets or recycling centers. Since used T&C derive from city containers or separate collection, municipalities and government participated recycling companies are responsible for their management and treatment, but they often act as intermediaries between citizens and external collection organizations, by outsourcing textile waste~~s~~ management. Indeed, clothing collection services are generally managed by subcontracted, previously authorized private companies or social cooperatives, which have to be admitted to "Albo Gestori Ambientali", in collaboration with charity organizations, which act as sponsors.

In 2013 in Italy, 110.900 tonnes of textile wastes were collected by municipalities through separate collection, corresponding to 1,8 kg per capita (Ispra, 2014). Not incidentally, among Italian regions with the highest amounts of textile wastes~~,~~ [togliere la virgola] there are Tuscany

and Piedmont: the reason is the presence of important T&C manufacturing districts (Prato and Biella). Even if the amount of discarded textiles and clothing represents only 0,9% of total differentiated wastes, it has grown by 35% since 2009 and it must be considered that there probably exists an unknown share of used textile and clothing in undifferentiated waste as well. Indeed, looking at Ispra data (2014), Italian citizens produced 487 kg/per capita of urban wastes in 2013, of which 42,3% differentiated (206 kg/per capita); therefore 281 kg/per capita are undifferentiated wastes, and their composition is unknown.

Figure 24 Per-capita kg of textile waste collected by separate collection. (Source: Ispra, 2014).



3.6.2.2 Sorting

Once used textiles and clothes are collected, both by charity organizations or recycling companies, the following step is sorting the items to decide their destination. The sorting process consists in firstly grading collected textiles according to their condition and fabric fiber composition. After this preliminary selection between still wearable and unwearable pieces, used T&C are re-sorted by type (i.e. t-shirts, jackets, trousers..), color, women or men garments and fabric-per-place (e.g. woolen for cold countries and cotton for hot countries) (BIR website). Therefore, from "crude sorts", when coats and blankets are removed, the process becomes more and more refined to better determine what could be the of further use (Hawley, 2006).

The sorting phase basically consists in manual sorting, when people select, classify and address used clothing items to the appropriate destination, frequently supported by semi-automated systems, which include the use of mechanical tools, such as conveyor belts or little cranes which transport collected textiles and clothing (Palm et al., 2014). Sorting is the fundamental and decisive moment of T&C waste management and it requires skilled workers, with experienced sight and sense of touch and high capabilities in recognizing and classifying fabric composition and level of wear. Thus manual sorting ensures better quality in selecting re-usable and recyclable materials, but it also implies high costs for personnel and for packaging or sanitation phases, which could be complementary services (Hawley, 2006; Palm et al., 2014).

In particular, regarding sanitation operations, in Italy the Ministerial Decree 05/02/1998, concerning any waste treatment set specific microbiological requirements for used textiles and clothes if they are going to be re-introduced into consumption or production cycles. As a result, sanitation is compulsory for Italian collecting-sorting companies and this causes a competitive disadvantage compared to other European countries, like Germany, France and the United Kingdom, where hygiene activities are not mandatory, and compared to charity organizations, which are not included under this obligation. Indeed, fulfilling sanitation parameters implies additional costs and the phase is discretionary only if collecting-sorting firms demonstrate that specifications are respected even without treatment, which is also costly (Ronchi and Nepi, 2014). There have been cases of Italian firms involved in judicial investigation and legal process because they did not process the sanitation phase, in order to profit more.

Palm et al. (2014) identified two other possible sorting systems, which are still in the development phase, but could help in the future. The first is RFID sorting, unfortunately still used only for new clothes, which consists in selecting and addressing to the appropriate batch the clothing items by recognizing the unique digital ID of a transponder incorporated in each hanger at different reader checks. The second option, NIR sorting, is quite more sophisticated, since it implies the use of sensors to recognize fiber composition and color of textiles, combined with automated conveyer belts that let garments roll. This system was developed with the Textiles for Textiles (T4T) project, an European consortium of firms that invested in new technologies for recycling.

An effective solution would be to add more information, such as fiber composition, color, year and location of production, on labels and bar codes, in order to exploit given information to do the

crude, preliminary sorting. For instance, the REMO (Recycle Movement) project is fostering a transparent data process that traces fabrics and garments origin, compounds, journey along the value chain and environmental savings. This information is contained in a “mobtag”, a digital code written on clothing labels and readable through smart-phones, which could help both with sorting, reusing and recycling and with improving the customer’s awareness about sustainability (REMO Website).

At the end of the sorting process garments and textiles are divided into three categories (percentages by Haner and Bartl, 2011):

1) Still wearable garments (50%);
2) Still usable textiles and clothes (25%);
3) Textile wastes, suitable for recycling process (25%).

3.6.2.3 Re-Use

Still wearable garments are directly available for the secondhand market. In Italy, on average, 68% of sorted items are destined to reuse (Ronchi, 2012) and, according to BIR estimations (2015), 50% of discarded textiles are donated to charity organizations, while the other half of garments are roughly recovered and distributed as follows: 60% for exports, the remaining part for secondhand shops.

Therefore, enterprises that manage used textiles and clothing commercialization collaborate very often with charity organizations or offer export services to developing countries, where western, old-fashioned clothes are highly valued and represent a flourishing and profitable business. For instance, the BIR (2015) states that in many African countries, over 80% of the people wear secondhand clothes. Regarding this aspect, Hawley (2006) noticed that conflicting social issues should be taken into consideration. On the one hand, clothing exporting could threaten both local T&C industries development, undermining employment opportunities, and the traditional attire of indigenous cultures. On the other hand, western garments often ensure affordable clothing for low-income people, who still strive for potable water and food.

In this phase, enterprises of usually act as intermediaries between collecting organizations and secondhand markets. An example is Tesmapri (Tesmapri Website), a sector leader company in Northern Italy which collects and sorts 30.000 tonnes of used clothing annually through 6.000

units of yellow garbage bins, by availing itself of close collaboration with collecting social cooperatives and Caritas. Sua.co. tex Import-Export S.r.l.(Sua.co.tex Website) is a similar firm, which operates in Southern Italian regions.

A different option for reusing is to re-design used garments, modifying them by cutting some parts or completely changing their shape, with the support of an expert seamstress. This alternative is not well developed and diffused, since consumer mentality has changed over recent decades, as already mentioned, because of the rise of fast fashion retailers that have fostered ever-changing fashion trends and the decreasing of clothes prices. Therefore, buying a new garment could often be less expensive and less time-consuming than redesigning it.

Nevertheless, there could be a sort of emotional bond with certain old clothes, which could thwart items donation or disposal. Moreover, it is often the case that out-of-fashion garments could still be wearable, after little modifications. In these cases, redesign could be a good choice. Unfortunately, highly experienced seamstresses willing to redesign clothes are few and it should be considered that the number of people working as seamstresses is diminishing because of manufacturing delocalization. Furthermore, they often work illegally reaching clients through word of mouth and the resulting situation is the lack of a legal, integrated system to commercialize redesign services.

3.6.2.4 Re-Manufacturing

Textiles and clothes which are still usable but not suitable for wearing usually need some kind of transformation process to be reintroduced as new or different products into the business cycle.

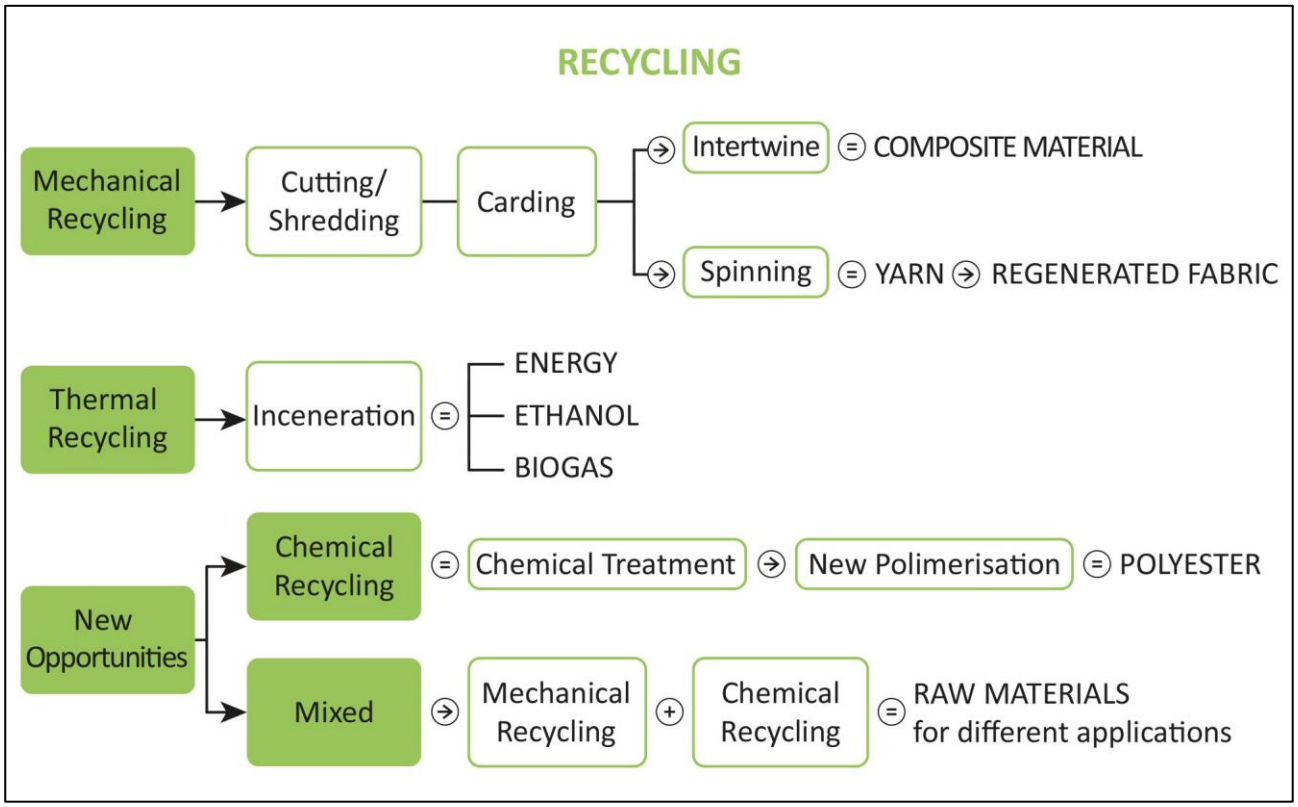
The re-manufacturing option mainly refers to used textile and clothes permutation into by-products, that is, products with a different purpose from the original, such as polishing rags or household items. Transformation possibilities depend on the fabric and the wear level: for instance, cotton fiber has good absorbent capabilities, while synthetic fibers have oleophilic properties useful for firms where oil spillovers are frequent (Haner and Bartl, 2011). The remanufacturing process basically consists in a preliminary phase of preparation, which entails the sanitization of used T&C and the removal of non-textile objects like buttons or zippers, and the subsequent phases of cutting and finishing.

Because of production delocalization and low profit margins, this kind of activity is usually conducted in low-wage African and Asian countries. For instance, Tesmapri sends unsellable clothes to a Tunisian company, which manufactures dish towels, dust mops and cleaning rags for industries, which are further traded in the European market.

3.6.3 Recycling Possibilities

There are different processes to recycle used textiles and clothes in order to obtain raw materials useful for recreating yarns and fabrics.

Figure 25 Recycling Alternatives. (Source: own adaptation from Palm et al., 2014)



3.6.3.1 Mechanical Recycling

Mechanical recycling of used textiles includes/entails various process phases and possible outputs. The preliminary step is to cut or to shred fabrics, thus obtaining well-broken fragments of textile fibers, through machineries that exploit mechanical dynamics (BIR website). This kind of operation is performed by unravel companies, called “sfilacciature” in Italian, which transform used materials into raw materials or inputs for manufacturing companies.

Obtained shreds are carded and then there are two alternatives: either intertwining shredded fragments or spinning fibrous elements (BIR website).

In the first case, it is possible to weave together textile fragments without making yarn, creating "nonwoven fabrics" ("tessuto-non-tessuto" in Italian) which do not have a precise structure and are bonded through specific treatments, such as mechanical pressure or plastic filament insertion that are then heated (i.e. Thermoforming process, Herrero and Luz 2013). As a result, final products are composite materials, which could be used by manufacturing firms to create thermal or soundproof insulation panels, like wall upholstery, roofing felt, furniture padding or car insulation, useful in the building, furniture or automotive sectors. Moreover, construction enterprises, such as the Italian "Manifattura Fontana", frequently avail themselves of used textile fibers to produce "geotextiles[9]", which support civil engineering infrastructural projects.

Nonwoven fabrics can be made of different types of textile fibers, but synthetic materials have often better proprieties compared to natural fibers since they do not putrefy. Furthermore, Herrero and Luz (2013) have scientifically demonstrated that recycled textile panels composed of manmade fibers have fairly good performances in terms of thermal insulation and resistance compared with virgin polyethylene foams, even better if an aluminum foil is added. A different result could be paper, when recycled compounds are cotton or silk.

Alternatively, the second-option process consists in "textile fiber regeneration", which gives yarn as output, which is then used to make fabrics and new clothing or household items. The quality of recycled textiles is generally lower than that of the original ones, meaning less softness and worse aesthetic appearance (Hawley, 2006).

In Italy, in the Prato province, there exists a long manufacturing tradition related to used textiles and clothes. In particular, wool has been the most recycled material for centuries and the recycled "carded wool" is used to manufacture winter coats, blankets or carpets due to inferior quality (Unione Industriale Pratese, 2014). Since the Prato T&C manufacturing district experienced important losses during the last few decades (Camera di Commercio Prato, 2013), the Prato Chamber of Commerce and the Industrials Union of Prato are nowadays promoting actions to

[9] Geotextiles are permeable fabrics which, when used in association with soil, have the ability to separate, filter, reinforce, protect, or drain. Geotextiles and related products have many applications and currently support many civil engineering applications including roads, airfields, railroads, embankments, retaining structures, reservoirs, canals, dams, bank protection, coastal engineering and construction site silt fences or geotube.

reinforce the competitive advantage of companies that deal with recycled textiles. Initiatives have been implemented to preserve competencies, to aggregate and to restructure small and medium enterprises that strive to fight global competition and to reach international markets, to foster technological investments and to develop sustainable production process and auditing methods. An interesting example is the brand "Cardato Recycled", which was created by the Prato Chamber of Commerce. It certificates that products have been made in the Prato district, using at least 65% of recycled material, and that the companies involved have measured their environmental impact through a Life Cycle Assessment analysis. At the moment, the brand-project is in a changing-phase and is going to be refined (Camera di Commercio Prato, Website).

On the other hand , in the Biella district, some manufacturing companies have developed techniques to recycle denim textile deriving from used jeans. In order to obtain recycled denim, however, it is necessary to add ~~a~~ 20% of original cotton (Pinori Filati Interview, 2014), but considering the lack of virgin raw materials in Italy, used denim could be a convenient solution.

3.6.3.2 Thermal Recycling

Thermal recycling refers to the possibility of burning wastes, in this case especially textile and clothing wastes, in order to produce energy, ethanol or biogas (Palm et al., 2014). This option should be actually avoided, since in particular the incineration of dyed or synthetic textiles produces toxic substances emissions, but it is still an alternative to landfill. In Italy, thermo-valorization is usually provided by municipal incinerators, where great amounts of undifferentiated wastes arrive and where it is also likely to find textile wastes.

3.6.3.3 New Recycling Opportunities

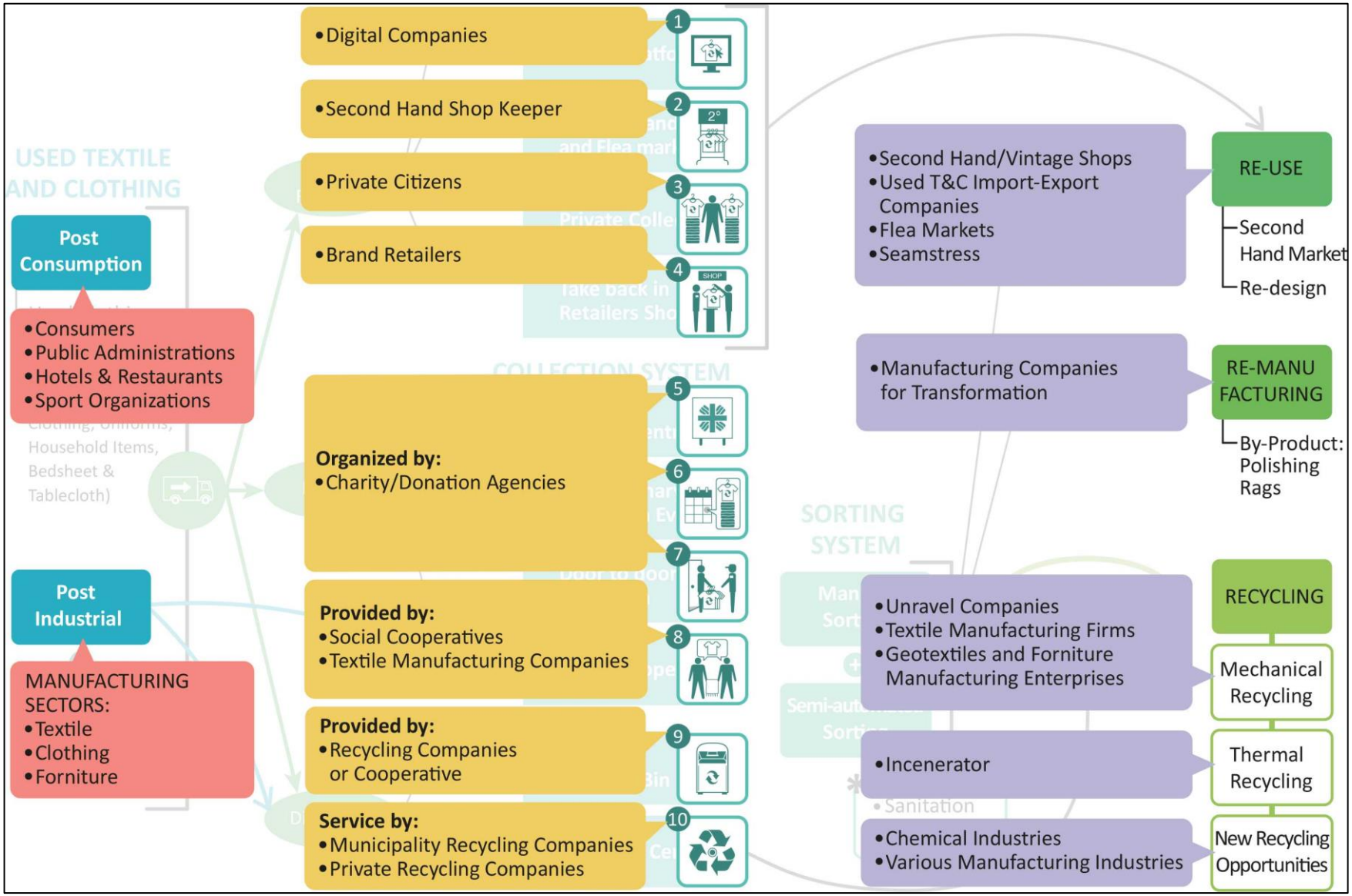
New, different recycling processes exist~~s~~, but are still in the early phase of development and diffusion in Italy.

A first possibility is chemical recycling for synthetic fibers, such as polyester. Nowadays this kind of recycling is mainly used for post-consumption recycled PET bottles, but the opportunity to extend this alternative to textiles should not be discarded. The process consists of an initial chemical breakdown of synthetic materials into monomers through chemical treatments and afterwards molecules are re-polymerisated (Guignier, 2013). The result is recycled polyester fiber, which could be used for sportswear, sofa and car seat upholstery or temporary external covers. Chemical recycling could be expensive and polluting, therefore researchers are studying new technological

solutions in order to improve the procedure. Its application in the T&C sector could uncover interesting scenarios, considering that manmade textiles and clothing represent the greatest amount of total consumed fibers (Palm et al., 2014). Radici Group is an Italian company that operates in this sector and it has developed two types of polyester yarn from pet recycling.

Then, for certain complex products, for instance carpets, a combination of different recycling techniques is necessary. As a consequence, the mixed recycling process entails several steps and makes it possible to obtain raw materials for different applications, similar to the ones described above for mechanical and chemical recycling (Palm et al., 2014).

Figure 26 Involved Economic actors. (Source: own elaboration)



3.6.4 Conclusions

This first part of the empirical research provides an overview of end-of-life textile and clothing management framework in Italy. Even if the initial aim was only descriptive, some considerations and recommendations for further improvements should be provided.

Firstly, the T&C recycling system in Italy is evidently implicitly well established, but its value is under evaluated or even unknown. Therefore, the creation of a structured network that gathers together all the involved private and public organizations could help to maximize this T&C sector branch potentialities. A good example could be SMART (Secondary Materials and Recycled Textiles), the U.S. nonprofit trade association of wiping materials, used clothing and fiber industries, which promotes standards and best practices for fostering circularity throughout the T&C value chain and for reducing textile wastes. Moreover, the organization provides networking, education and business opportunities for its members (SMART, 2015). CONAU, the Italian consortium for used clothing and accessories, could be the designated institution, since it already gathers many companies that deal with T&C recycling, but it also needs to empower its role of aggregator and provider of training and information on the subject. The "Involved economic actors" model could be a useful starting point to identify and contact subjects which are potentially interested in joining the T&C recycling network and also to better organize and collect organizations and trends data. A structured organism could also ensure more transparency along the different stages of the reuse-recycling process, which consequently helps distinguish certified and legal organizations from fraudulent subjects who exploit the gaps in consumers information.

Secondly, recycling initiatives should be more integrated with upstream value chain strategies towards circularity, such as eco-design, in order to enhance textile products recyclability. Indeed, to pursue circular and sustainable economy thinking, collaboration among all the T&C sector industries and integration throughout all value chain functions are essential elements. In this way, additional characteristics and properties regarding fabrics could be available on textile and clothing labels, thus facilitating sorting and recycling phases.

Thirdly, the model "Used and discarded T&C flow in Italy" could be used as informational and educational tool for raising awareness about the value of textile and clothing wastes and for spreading responsible and conscious consumption behaviors.

CHAPTER 4. TAKING ADVANTAGE OF MARKET OPPORTUNITIES IN CLOTHES REDESIGNING: THE "FATA SMEMORINA" PROJECT

The second part of the empirical research aims to explore and to find evidence~~s~~ of the existence of real, profitable and sustainable markets related to circular economy business opportunities. In particular, the business potentialities and size of used or old fashioned clothes redesign will be analyzed more in depth and a corresponding business model will be developed.

According to Humana[10] estimations (Occhio del Riciclone, 2014), from 10 to 15% of clothes[11] in the wardrobes of families are not used because they are old fashioned or people have changed size, although they are in good condition. Reselling these garments could be difficult because of new fashion trends and donating or throwing them away would be wasteful. Redesign could be a possible solution to use high quality clothing items longer, but it is often not considered since it entails efforts in terms of time and money.

Therefore, the objective of this study is to elaborate an effective strategy to foster redesign as a concrete, accessible option for individuals.

This chapter is divided in two parts: the first one will describe the business idea and analyze the target market characteristics and size, from the perspective of both demand and supply, in order to design a solid business model. The second part will try to demonstrate the validity of this activity through the estimation of possible economic perspectives based on the descriptive part findings.

Descriptive part

4.1 Business Idea

The business idea consists in offering a clothing redesign service through the collaboration with skilled seamstresses during itinerant, special events that will be organized in rotation in different places (e.g.: shops, fairs, festivals..). During the event, customers could bring their own selected clothes to remodel and they will pay for the redesign service, which will be provided immediately.

[10] International used clothes collecting non-profit cooperative.
[11] This typology of clothes is usually called "cream" or "first-choice" by secondhand clothing sector technicians.

The service would be supplied in haberdasheries, secondhand shops and makerspaces[12] or in association with clothing collecting organizations, such as social cooperatives, which have agreed to share their locations for the initiative.

A possible additional service would be to offer customers the possibility to learn how to redesign their clothes autonomously: expert dressmakers could support clients during the remanufacturing process throughout the events, in order to pass on and teach them sewing competencies. Moreover, short, specific redesign courses could be organized for secondhand shops or makerspaces owners and cooperatives workers to enable them to guarantee the service when necessary.

A fixed, continuous and autonomous supply of the redesign service was found to be economically and financially unsustainable because of the peculiarity of this activity and its dependence on seasonal trends in correspondence with house transfers or cleaning out and seasonal wardrobe changes. For this reason, it was decided to collaborate and to create virtuous partnerships with subjects that already deal with reuse or sewing activities. In return, haberdasheries, secondhand shops, makerspaces and social cooperatives could participate in taking advantage of this market opportunity in clothing redesign by expanding their solutions supply and could increase their visibility by getting in touch with potential interested customers. In this way, the secondhand clothing market system could develop and integrate multiple reuse and recycle opportunities, improving both reuse efficiency and service quality.

Another aspect to consider concerns the fact that the redesign activity would be convenient only for high or medium quality pieces of clothing still in good conditions, a category mainly comprised of elegant dresses, suits, jackets and coats. Indeed, high quality and expensive items could acquire more value and sometimes emotional significance over the years, contrary to what happens to fast fashion clothes. In particular, used garments manufactured in the past with high quality textiles and production standards often maintain their original characteristics. Usually these clothing pieces are worn less frequently and they are consequently less consumed. For this typology of clothes, little adjustments or changes could easily remodel out of fashion shapes and

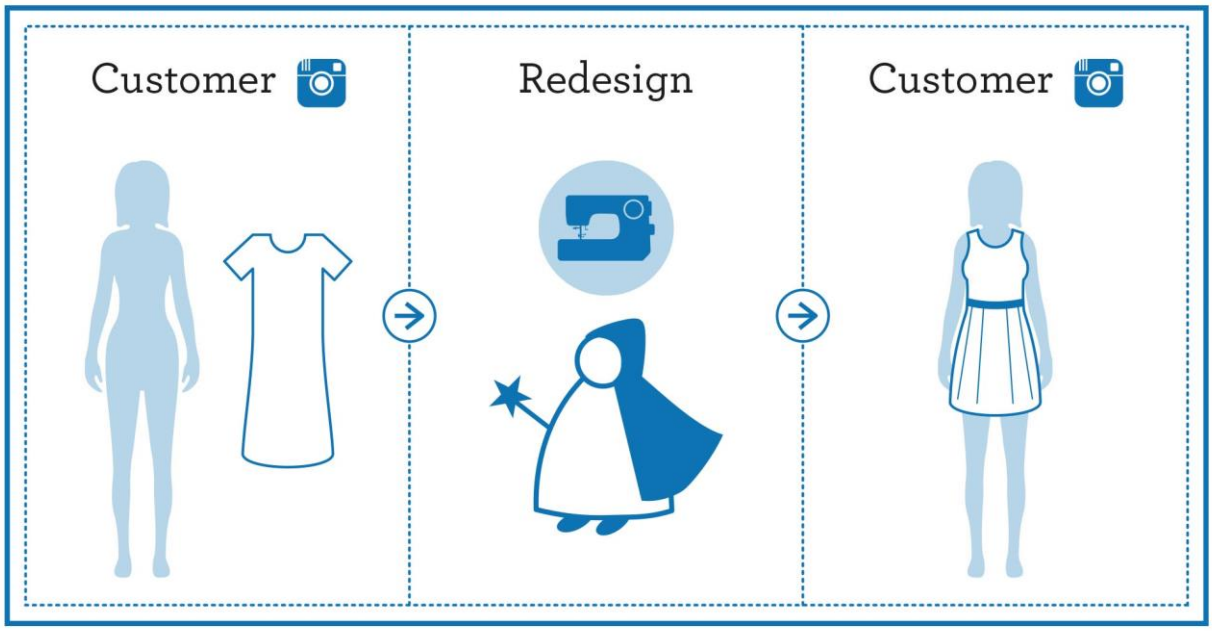
[12] Shared laboratories, managed by "makers" where it is possible to autonomously design, develop and manufacture one's own products through the use of digital and technological tools, such as 3d printers. See definition at page 8 for more details.

also extend their life and usefulness. Therefore, in this case, redesign convenience could be very high.

The redesign service will be offered by a small, independent organization that will collaborate with different subjects through an occasional-outsourcing relationship. The project's name will be "Fata SmemoRina" (*Cinderella*'s Fairy Godmother, whose Italian name means "forgetful"). The name recalls an episode of the fairy tale *Cinderella* in which the Fairy Godmother transforms Cinderella's ripped dress, which she had sewed for the Prince's Grand Ball and which her step-sisters had torn up, into a new, wonderful dress.

Figure 27 Project "Fata SmemoRina" logo. (Source: Own elaboration)

Figure 28 "Fata SmemoRina" Business Idea .



The "Fata SmemoRina" business idea will be developed and clearly configured by following different business plan guidelines. The business model Canvas, created by Osterwalder and Pigneur (2009), will be the main strategy management tool used to design the underlying logic of how the redesign service can generate, capture and provide value. The Canvas scheme presents nine building blocks, which will be described and analyzed step by step in the next descriptive sections. Other literature references are: "Il business Plan" by Ferrandina and Carriero (2010),

“Principi di Marketing” by Kotler and Armstrong (2010), “Guida al piano industriale” by Borsa Italiana (2014).

4.2 Market analysis and definition

The reference market analysis, consisting in an in-depth investigation of both demand and supply, is preparatory and fundamental to design a solid business model (Kotler and Armstrong, 2010). Thus, the following paragraphs will illustrate significant data and elements, which have been determined to be crucial for the redesign service business development.

4.2.1 Demand analysis: Customers segment definition

Customers and their needs and desires are the starting point for a business to be successful. There cannot be a valuable exchange between people without the request to satisfy a desire or the willingness to solve a problem (Osterwalder and Pigneur, 2009). Consequently, the goal of this part of the research will be to identify a potential customers segment that would appreciate and benefit from the redesign service. The analysis first started from indirect data about specific consumer trends, investigating behaviors and interest pertaining to clothing redesign. Then, direct data about real needs, problems or desires linked with clothing overconsumption and reuse and relative consumers behaviors were collected through an online questionnaire, whose results are listed below.

4.2.1.1 Indirect method: Secondary data and Research direction

In order to address and focalize the research direction, three market trends have been selected as particularly linked with the underlying motivations that would prompt consumers to avail themselves of the redesign service.

The recent evolution of consumers’ choices shows interesting tendencies regarding secondhand market development, sustainability awareness and co-creation and craftsmanship issues. Nowadays, these trends still concern only a relatively small percentage of consumers, thus creating niche markets, but consideration and attention to these themes will probably grow.

In this paragraph, a panoramic overview of these three aspects will be illustrated and will provide the basis for the business idea development.

1) Secondhand market

Lately consumers have began to pay attention to the scarcity of economic and physical resources by trying to find new ways to reduce, repair, reuse and recycle things ("4R" concept). In particular, consumers are discovering the potentialities of reevaluating what they already have by reselling or repairing used objects, in order to gain something, save money or extend the life of their purchased products. Consequently, the concept that dismissed materials should be treated as resources rather than wastes is slowly spreading.

Besides the previously mentioned Doxa market study (2014), which states that the Italian reuse sector amounts to 18 billion euro, the Italian network of Reuse Operators -Rete ONU: Operatori Nazionali dell' Usato- affirms that a more realistic and reasonable estimation would account for between 2 or 3 billion euro, excluding online transactions, but by and large confirms the positive trend of the sector (Rete ONU Website). Indeed, the study conducted by the "Economic and social research centre Occhio del Riciclone" (2014) with the sponsorship of the Italian Ministry of Environment noticed that an increasing number of consumers is turning to secondhand market places, both online and not. Secondhand shops, flea markets and vintage fairs or festivals are re-gaining market shares and popularity and are becoming very frequent. The number of activities connected to the "reuse economy" is growing and these activities now employ almost 80.000 people in 3.200 secondhand markets and organizations, located especially in North and Central Italy (Occhio del Riciclone, 2014). Positive economic results and performances obtained by well structured and managed secondhand shops, such as the franchising chain "Mercatino", which is able to reach 9 million clients, boasts 200 shops and has increased its business volume (sales) by 5% in the last year (Mercatino Website), confirm the hypothesis for optimistic future perspectives.

Evidently, consumers are beginning to recognize the benefits that could derive from appropriate market evaluation and exchange of used goods. At the same time, some difficulties arise from people's perception of the secondhand market, which is still seen as linked with poverty, charity or unreliability by the majority of the consumers (Occhio del Riciclone, 2014).

2) Sustainability awareness

The second issue refers to the relationship between reuse ideology and consumers' awareness of sustainability implications. Indeed, reuse mentality is substantially culturally based on sustainability principles and behaviors. According to the survey on "How the attitude of Italian

consumers towards the environment has developed over the last fifteen years" conducted by Ipsos for Conai in 2012 (Comitato Nazionale Imballaggi), attention to environmental issues has generally increased, since 35 million Italian citizens (50% of the total population) consider environmental sustainability a priority. Pollution related problems, resource scarcity, energy efficiency and recycling are the most significant themes (Ipsos Website).

The survey states that young people between 15 and 24 years of age are the most sustainability aware segment of the population. The analysis has also identified five types of possible consumers approaches based on different behaviors:

1) the "Eco-tech" group (16%) is composed of individuals between 25 and 40 years of age, who harmoniously combine passion for high-technology and nature;
2) the "Sustainables" (17%), are people from 15 to 75 years of age, who care about the environment in their daily practices;
3) the "Non Profit" group (20%), refers to environmental activists who buy green products;
4) the "Retrò" group (23%) represents environmentally aware individuals who are over 50 years old, but do not change their habits towards sustainable behaviors;
5) the "Disinterested" people (24%), who do not particularly care about sustainability issues and are lazy about adopting eco-friendly behaviors.

3) Craftsmanship

Redesign activity is inevitably linked with sewing competencies and artisan skills, since to remodel a piece of clothing one must first know how to make it. There is a growing movement of people, called "makers", who are joining the "maker culture" or "do-it-yourself (D.I.Y.) paradigm", which involve ordinary individuals, called "makers" inventing, designing, making and eventually selling physical goods (Fox, 2014). In 2013, Mark Hatch published the "Maker Movement Manifesto", in which the nine fundamentals of this school of thought were listed: to make, to share, to give, to learn, to tool up, to play, to participate, to support and to change (Hatch, 2013).

New ways of producing handcrafted items are developing with the support of open source design projects, elaborated with Computer-Aided-Design (CAD) programs, and manufacturing devices, such as 3d printers or lasers (Fox, 2014). These techniques try to combine innovative technologies and traditional artisan skills. Makers' associations have created spaces, studios and laboratories,

called “FabLab” or “Makerspaces”, where it is possible to share various appliances, knowledge and latest news (Schön et al., 2014).

Recently, the category of “prosumers”, defined as “individuals and communities who produce what they consume” (Ritzer and Jurgenson, 2010), has spread: from the initial focus on food production in little vegetable gardens, the approach is now spreading to any kind of object such as jewels, off-road vehicles and clothes. Hatch (2013), Fox (2014), Schön et al. (2014) and Aldrich (2014) have all confirmed that the interest in learning how to make things autonomously is constantly increasing.

In the case of clothes sewing and redesign, artisan skills have been mainly preserved by professional seamstresses, grandmothers, mothers and aunts, who in the past used to learn how to sew in their childhood and to pass on specific competencies to new generations. This tradition was especially widespread in the Northern Italian regions, near textile and clothing manufacturing districts. T&C manufacturing industrialization and delocalization have caused a drastic decrease of sewing and artisan know-how in Italy and nowadays it is rare to find young girls who can sew. As a result, there is a kind of “competencies-generation gap”, which should be bridged.

By learning how to sew or redesign a piece of clothing, it would be easier to personalize and make unique one’s own fashion style. Personalization is indeed another important aspect to consider in this particular consumer trend analysis. For example, a firm that focused on this issue is Ray-Ban, a famous sunglasses brand, which has recently developed a section on its website where it is possible to personalize sunglasses by choosing the model, color and lenses and even by writing one’s name or a phrase on the rim (Ray-Ban Website, 2015).

Finally, an interesting phenomenon related to handcrafted garments and style personalization has been observed: many young, fashion-keen designers and dressmakers nowadays create their own laboratories inside their houses and sell their products through online platforms, like Etsy.com, all over the world. This recent “House-Maker” movement could also be seen as a sign for a developing interest in making objects autonomously.

4.2.1.2 Direct method: Pilot-Test Questionnaire

In order to better investigate potential costumers needs and desires and to test the feasibility of this business idea, a pilot-survey was formulated (Questionnaire in Appendix). An online

questionnaire was submitted to a representative sample of individuals, who were selected through the non-probabilistic, rational method (Kotler and Armstrong, 2010) among friends, acquaintances and shared contacts. The sample and the questions' contents were based on observed consumers trends described above and on possible customer target characteristics, interests and researched benefits linked with the redesign service.

The survey's structure consisted of four sections:

1) Problem analysis;
2) First solution-Core business investigation, with reference to the attractiveness of the redesign service;
3) Complementary solution proposition, regarding the possibility to learn how to redesign and sew autonomously;
4) Potential consumers' desires, behaviors and hobby preferences during free time.

The questionnaire contained multiple choice~~s~~ questions (i.e. closed questions, predetermined answers), and 1 to 5 scales, graded considering one as the lowest value and five as the highest one, where the interviewees had to choose their position on the presented issues.

Eighty individuals answered the questionnaire, 85% (68) females and 15% (12) males. Females intentionally represented the majority, since the survey had been purposely thought for and submitted to women, following the hypothesis that females would be more interested in clothing redesign. Moreover the respondents were all from Northern Italy, especially from the Veneto Region, since the sample is mainly composed of friends and acquaintances of this work's author. Interviewees' ages ranged mostly from 21 to 35 (69%), and another significant part (28%) included people between 36 and 65 years of age; moreover 75% did not have children. 42,3% of respondents worked in the service industry, 28,2% were students and 16,7% were out of work or inactive by choice. These initial, descriptive data should be kept in mind when results are analyzed, since the age and family status of interviewees, mostly comprised of young women without sons or daughters, certainly influenced answers, habits and behaviors.

1) Problem Analysis

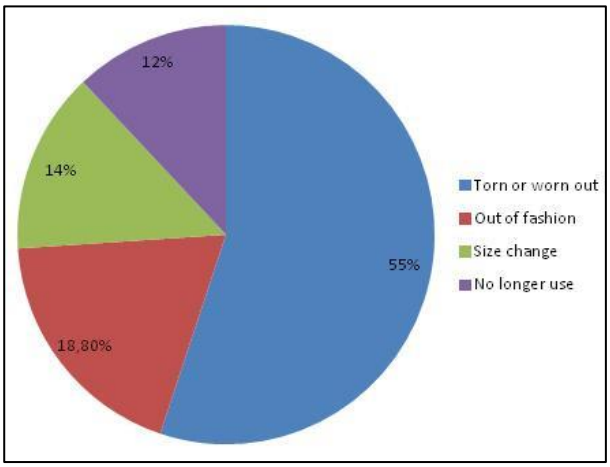
Regarding the first section's results, it seems that 90% of the individuals interviewed think about their wardrobe as full of clothes, both neatly (45%) or untidily (45%) organized, and only 10% think that their wardrobes are empty.

50% of respondents believe that they own an appropriate quantity of garments, while 40% state that they have too many clothes. Generally (57,5%), owning a lot of pieces of clothing is perceived as an opportunity to avoid buying new clothes (30%) or to frequently change outfits (27,5%), while 33,8% of respondents believe that having too many garments represents a problem, since they are worn too rarely. Beyond new purchased clothing, 63,3% of interviewees receives used clothes from relatives, friends or acquaintances from 1 to 3 times per year.

Then, in response to the question on whether the respondents periodically select some of their clothes to discard, 46,8% affirm that they sort their wardrobes once a year, 28,2% twice a year, in correspondence to seasonal wardrobe changes, and14,1% even three times per year. After the selection, 51,9% of respondents choose to throw away from one to three pieces of clothing and 35,1% between four and nine pieces, while 9% state that they usually discard more than ten garments.

Concerning the reasons why interviewees decide to throw clothes away, 55% declare that it is because they are either torn or worn out, thus seemingly confirming that the quality of modern-day textile materials is lower and less resistant to wear than it used to be. Then,18,8% of respondents answer that they discard garments because they are out of fashion, 14,2% affirm that that they do it because they have changed size and the remaining part (12%) say that they just do not use those clothes anymore.

Figure 29 Reason why to throw away used clothes.



Regarding which destination is usually chosen for discarded garments, almost 60% of respondents dispatch clothes to charity organizations, such as Caritas, 20,8% put them in yellow garbage-bins located along the streets and 14,3% pass them on to friends or relatives. No one considers the possibility to directly resell used clothes online or in secondhand shops. The last outcome is also significant: used garments are generally destined to donations and reevaluation is not imagined as a possible option, but this consideration is mostly relative to items of clothing that would not be worn anymore.

Table 10 "Problem analysis" results.

Question	Answer	Result (% of total population)
Wardrobe image	Full	90%
	Empty	10%
Quantity of clothes	Appropriate amount	50%
	Too many	40%
Perception of owning a lot of clothes	Opportunity (to avoid buying new clothes or to change often)	57,5%
	Problem	33,6%
Periodic selection	Once per year	46,8%
	Twice per year	28,2%
	Three times per year	14%
After selection, how many clothing items will be thrown away?	1 to 3	51,9%
	4 to 9	35%
	More than 10	9%
Reasons why to throw away	Torn or worn out	55%
	Out of fashion	18,8%
	Size change	14%
	No longer use	12%
Used clothes destination	Charity organizations	60%
	Yellow-bins	20,8%
	Passed on to other people	14,3%

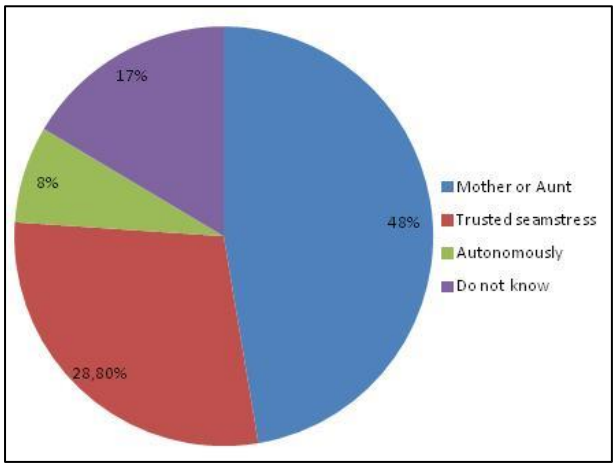
2) Redesign Service

In the second section, the first question asked if respondents had ever thought "I would wear this ~~cloth~~ clothing item, but I should repair or redesign it". 55% of respondents reply "yes, for one or two pieces of clothing", 18,8% "yes, for three to six pieces of clothing", 3,8% "yes, for more than six garments", while 22,5% have never thought about it. It is thus possible to affirm, by calculating the answers' weighted average, that 77,8% of the population has almost 2 clothing items to

potentially redesign. Among different clothes types, Trousers (54%), elegant dresses (43%) (e.g.: wedding or ceremony dresses) and skirts (39%) are usually the most quoted.

Regarding possible motivations which could incentivize the use of a redesign service, the most convincing are: personal satisfaction in reevaluating old clothes or in doing something useful for oneself and potential savings compared to buying a new garment. These reasons are then followed by concern for the environment and emotional attachment to particular pieces of clothing.

Figure 31 Reference person for redesign.



When asked about reference individuals to whom people usually turn when they decide to redesign an old garment, 47,5% of interviewees state that they would primarily ask their mother or an aunt to help, 28,8% that they are in contact with a trusted seamstress, 7,5% that they would do it autonomously and 16,3% that they would not know who to ask. Here, a connection to a previous remark is necessary: since most of the interviewees are young women, it could be expected that they would usually turn to experienced women, who have probably learnt from their grandmothers how to sew. This aspect will certainly affect the definition of the customer target, the identification of effective marketing strategies and the creation of collaborative relationships with women who already have sewing skills.

At the end, in response to the question of how much people would be willing to spend for the redesign service, 30% chose "maximum €10 €", 25% "maximum €15", 17,5% "maximum €20" and 25% say "More than €20, if the result is worth it". Calculating the weighted average, a reasonable price would range around €16,5.

Figure 30 Willingness to pay.

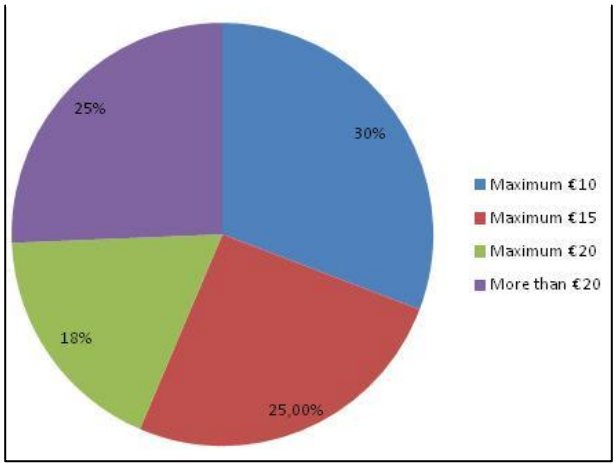


Table 11 "Redesign service" section results.

Question	Answer	Result (% of total population or position)
I would wear this item, but I should repair or redesign it	Yes, for 1 to 2 items	55%
	Yes, for 4 to 6 items	18,8%
	Yes, for more than 6 items	3,8%
Reason to use redesign service	Personal satisfaction	1°
	Save money	2°
	Concern for the Environment	3°
	Emotional attachment	4°
Reference person for redesign	Mother or Aunt	47,5%
	Trusted seamstress	28,8%
	Autonomously	7,5%
	Do not know	16,5%
Willingness to pay for the service	Maximum €10	30%
	Maximum €15	25%
	Maximum €20	17,5%
	More than €20	25%

3) Learning Opportunity

In the third section the attitudes and behaviors associated with the idea of "Do-It-Yourself" were investigated. Outcomes show that 43,8% of interviewees prefer to buy already manufactured products, since they believe that they lack the skills to make new items themselves (35%) or that they do not have the time (8,8%). On the other hand, 45% of respondents attempt to autonomously produce what they can because of personal satisfaction associated with learning and creating something (20%), because of money saving opportunities (12,5%) or because of both (12,5%). Then, when asked about their willingness to collaborate with professional figures to redesign their own clothes, interviewees generally answer "yes" (71,3%), but they consider themselves unable to actually do it (36,5%), or state that they prefer to learn how to do it autonomously (27,5%) or that they already do something (6,3%). Moreover, 75% also seem

interested in personalizing their fashion style, with 60% stating that they would gladly avail themselves of style consulting.

The amount of time needed for redesign is the main obstacle which would prevent clients from using the redesign service, followed by money and the difficulty in finding someone who offers this kind of service.

Table 12 "Learning opportunity" section results.

Question	Answer	Result (% of total population or position)
Attitude towards Do-It-Yourself	Not interested	43,8%
	Interested	45%
	Yes, for more than 6 items	3,8%
Interested in redesign collaboration	Yes	71,3%
	No	28,7%
Main obstacle	Time	1°
	Money	2°
	Difficulty in finding someone who does it	3°

4) Free time activity

Since time was expected to be the main problem for the redesign service, the last part of the survey was dedicated to personal values and behaviors during free time.

Thus, the first question's aim was to identify the most significant values among those suggested, in order to understand how to respond to the needs and interests of the target segment. Self-fulfillment and Artisan Culture, that is a belief in the value of protecting and passing on knowledge from past traditions, are the values that are rated "most important". They are followed by Concern for the Environment and Uniqueness, Self-expression.

Then, respondents were asked to indicate what they like to do during free time, choosing among: shopping, beauty care, spending time with family/partner, total relax, cultivating personal interests, practicing sport, reading books or watching movies and going out with friends.

Interviewees answer that preferred activities are going out with friends and spending time with family or a partner, therefore it will be important to consider relational, social and entertainment dimensions for the redesign business's value proposition. Interviewees also like to cultivate personal passions or hobbies and to engage in cultural activities such as reading books or watching movies –activities which are linked to the individual's private sphere-. Furthermore, preferred activities are also the most practiced during free time, meaning that on average from 30% to more than 50% of available free time is allocated spending time with friends or families, while between 10% and 30% of free time is dedicated to personal hobbies.

Table 13 "Free time activities" section results.

Question	Answer	Result (% of total population or position)
Most significant values	Self-fulfillment	1°
	Artisan Culture	2°
	Concern for the Environment	3°
	Uniqueness, Self-expression	4°
Preferred activities during free time	Going out with friends	1°
	Spending time with family/partner	2°
	Cultivating personal passions	3°
	Cultural activities	4°

4.2.1.3 Customer segment description

By synthesizing and aggregating indirect data considerations and direct data results, it is possible to identify an hypothetical list of the segment customer's characteristics. The target population will be described through demographic, geographic, psychographic and behavioral variables (Kotler and Armstrong, 2010).

Table 14 Segment customer characteristics.

Socio-demographic	Sex	Female
	Age	20-55 years old
	Educational Qualification	High school (Vocational, Technical, Lyceum) University
	Occupation	Student Housewife Unemployed Worker
	Geographic area	North Italy
Psychographic	Interests/Hobbies	Self-fulfillment Do-it-yourself / Co-creation Having fun with family, friends Cultivating personal passions

Since the business idea is connected to fashion, clothes and sewing aspects, which are generally regarded as womanly interests, women would be the most appropriate customer target.

The age range has been chosen to cover the assumed "generational gap" in sewing skills, that is, women who probably did not learn how to sew or repair clothes. The lower limit (i.e. 20 years old) excludes teenagers who still lack awareness about reuse and recycling opportunities and are more attracted by "cheap chic" clothes, mainly retailed by fast fashion brands (Morgan and Birtwistle, 2009). On the other hand, the upper threshold includes women who were born and grew up during the Sixties, when consumerism and automated industrial processes developed rapidly in Italy, thus engendering a slow decrease in the transfer of informal sewing know-how, replaced by specialized dressmakers who worked in plants.

Then, it might be supposed that a particular sensitivity to cultural, artisan, environmental and social aspects is required for a person to use the redesign service. As a consequence, educational

qualifications are an important variable to consider, thus the customer segment includes women with a high school diploma or a university degree.

The occupational status is significant as well: from questionnaire results it emerged that time availability, a desire to save money and a predisposition towards manual and artisan activities are crucial aspects for the service supply. Therefore, students, housewives and unemployed women particularly match the target profile, since they usually have more time or flexible schedules, they do not have a secure income and they are willing to learn and try new experiences. Employed women are generally more busy, but nevertheless they also look for “me time”, in which to explore self-expression and have fun with friends and family. Moreover, they are expected to have more spending power for special occasions, since their free time is more concentrated.

In this case, income level was not considered a significant demographic variable. Indeed, according to questionnaire answers, the redesign service demand results particularly stimulated by personal satisfaction in doing something useful for oneself, environment concern and emotional attachment to special pieces of clothing, although “saving money” was ranked second out of five other motivations to avail of the service. This means that the business would be mainly driven by personal and cultural beliefs and emotional aspects, instead of economic convenience.

Northern Italy was chosen as the geographical perimeter because it is the most reachable market where to begin implementing the activity.

Regarding psychographic variables, peculiar interests and hobbies were investigated in order to properly address the business strategy. Important interests (i.e. self-fulfillment and artisan culture) and main hobbies (i.e. spending time with friends/family or cultivating personal passions) are not quantifiable, but they can be graded as more or less important, thus providing useful indications about how to incentivize redesign service demand.

Potential estimated market in the Veneto Region

The following table presents the estimation of the dimension of the redesign service market in the Veneto region, which will be the initial target territory. The time frame is three years in order to consider also population and market share potential growth.

It is assumed that the expected, initial “Fata SmemoRina” market share would account for 3%, being a start-up initiative.

Table 15 "Fata SmemoRina" potential market size.

	1 year	2 year	3 year	Description
Female Population in Veneto	2.525.556	2.529.204	2.529.204	First year population amounts to women who resided in Veneto at the end of 2014 (Istat database(b)). In the following years, a growth rate of 0,14% was applied* (Istat database(b)).
Percentage of potentially interested women	45%	45%	45%	Comparing education characteristics and age**, it has been estimated that 45% of the female population could be included in customer segment
Total number of potentially interested women	1.136.500	1.138.141	1.138.141	Female population * potential %
People selecting clothes periodically	90%	90%	90%	According to survey answers, see 1) Problem
Individuals who could have clothes to redesign	77,80%	77,80%	77,80%	According to survey answers, see 2) Redesign
Family "cannibals"	-55%	-55%	-55%	Market share cannibalized by family or people who can already redesign autonomously. According to questionnaire answers, see 2) Redesign.
Potential market size (N° of customers)	358.099	358.617	358.617	
Expected initial "Fata SmemoRina" 's market share	3%	4%	5%	General assumptions for young, not already widespread activity (stat-up)
Potential market share' size (N° of customers)	10.742	14.344	17.930	Potential target * % initial market
Items per person (n°)	2	2	2	According to survey answers, see 2) Redesign
Price per item (€)	16,5	16,5	16,5	According to survey answers, see 2) Redesign
Service only	55%	55%	55%	According to survey answers, see 3) Learning opportunity
Price per item + assistance training (€)	20	20	20	Premium price for additional service (learning opportunity)
D.I.Y Interested	45%	45%	45%	According to survey answers, see 3) Learning opportunity
Potential value (€)	388.359	518.560	648.200	Formula: [(2*16.5*55%)+(2*20*45%)]* Potential "Fata SmemoRina" achievable value

* Average growth rate of women population in Veneto during last 5 years (Istat database(b):

Year	N°	(N° year n - N° year n-1)/N° year n-1
Nov-2014 (last available data)	2.525.556	0,25%
December 2013	2.519.366	0,87%
December 2012	2.497.577	0,14%
December 2011	2.493.977	-1,19%
December 2010	2.523.964	0,65%
December 2009	2.507.717	
Average		0,14%

**Comparing women education levels (i.e. achieved educational qualification) and age (from Istat database(c)), it was estimated that 45% of the female population could be included in the customer segment.

Table 16 Women education levels and age range in the Veneto. (Source: Istat database(c))

Education (Veneto 2014)		Education share/ Total women population in the Veneto
Professional high school	189950	7,52%
High school diploma	564830	22,36%
University degree	274600	10,87%
Total women population in Veneto	2.525.556	Selected education level SUM = 40,75%
Women aged between 15 and 65	65%	compare

4.2.1.4 Customer Job

At the end of the demand analysis, the customer jobs of the "Fata SmemoRina" project were identified. By definition, customer jobs are what the customer is looking for to satisfy their desires or to solve their problems. Indeed, there are related gains and pains associated to each customer (Osterwalder and Pignuer, 2009).

Table 17 "Fata SmemoRina" Customer Jobs. (Source: own elaboration)

CUSTOMER JOB	GAINS	PAINS
Re-evaluation and Reuse of unused clothes	New value, usefulness, longer use Reusing something they already have Seems new, better Saving money Avoiding wastefulness Caring for the environment	Fast fashion mentality pushes to buy new clothes, change garments frequently Only wearing each item a few times Accumulation of old or unused clothes in the wardrobe
Co-creation, Do-it-Myself	Self-fulfillment, participation, learning new competencies	Do not have manual capabilities or sew competencies
Taking time for Myself	Cultivating personal hobbies Relaxing	Little time available for oneself
Style Care and Personalization	Self expression Creating something unique Changing look	Do not know how/have personal style

4.2.2 Competitive context analysis

Clothing reuse and recycling has rapidly developed in recent times because of the increasing number of market places, which act as intermediaries where to buy and sell used garments, and because of improvements to the separate collection system.

Concerning the redesign service, on the contrary, potentialities still have to be fully exploited, in particular because this activity needs peculiar, professional sewing competencies, artisan skills, time and patience. Furthermore, the redesign service is based on customers' personal characteristics, therefore at the moment it is very difficult to standardize or replicate the service on an industrial scale.

Consequently, it is normally easier to donate or throw away what is not used anymore. But, at the same time, a different issue could emerge for high-quality pieces of clothing, as previously demonstrated.

4.2.2.1 Porter's analysis

In order to better understand the elements of competitive advantage related to the redesign service in Northern Italy, Porter's five forces (1979) will be analyzed. The principal aim is to define competition variables and intensity and to identify current competitors.

Starting from *threats of new entrants*, two aspects should be considered. On the one hand, materials and instruments to operate are easy to find and not so expensive, therefore it seems that entrance barriers are low. On the other side, the time and efforts needed to learn how to sew and the long process necessary to reach a good level of expertise, competencies and know-how entail difficulties that make redesign service supply hard to provide appropriately.

Then, since deciding to redesign a piece of clothing is a personal choice, there are no possible *product substitutes*, but only potential alternatives, such as buying a new piece of clothing, creating a new model through 3d printing or throwing the garment away as waste. Individuals' decisions depend on time, money and benefits that the service requires or gives and on personal behaviors and culture. As a consequence, the *bargaining power of customers* is highly influential and probably the most risky and threatening element of competition. At the same time, the sewing, manufacturing and artisan competences of current customers are quite poor and underdeveloped compared to the past and this fact represents a weakness of which to take advantage.

Customers are also *crucial suppliers*, since they bring their own used clothes as input for the service. Sewing appliances or materials (i.e.: filaments) are easily available in supermarkets and haberdasheries, thus in this case the relationship with suppliers is driven by normal market dynamics and mechanisms.

Finally, three principal *competitors* have been identified. They will be described in terms of the two most significant variables of redesign competitive advantage: price - low, medium, high- and offered services - low, medium, high-, which include factors such as speed, accessibility, degree of innovation in the adopted business tactics and learning opportunities.

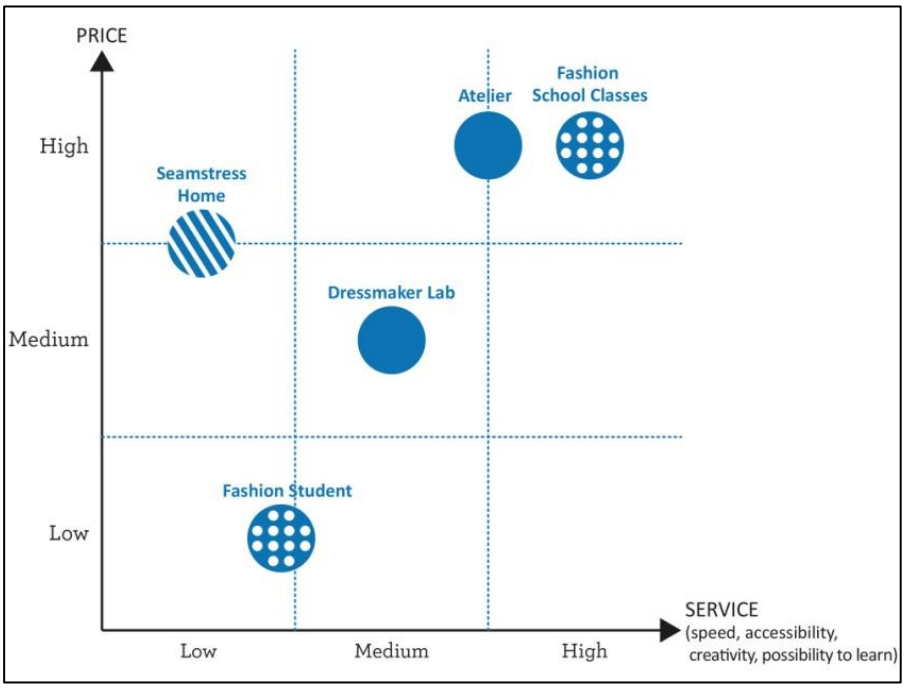
The most notable competitors are tailor's shops or dressmaker laboratories, which usually offer repairing service. The price could vary depending on target clients, on their needs and desires: tailor's ateliers are more focused on luxury, high quality and exclusive products, thus they ask for high prices. Conversely, seamstress labs, managed by professionals or non professionals

dressmakers, could provide the service for medium or low prices. Regarding services, an important aspect to is accessibility: these laboratories are few, mainly located in city centers, with restricted business hours, and appointments are often necessary. Moreover, shops seldom offer immediate service providing, interacting relationships through social media or style consulting and possibility to learn.

Another important competitor to consider are specialized seamstresses, who are usually women between 45 and 75 years of age, and who work at home, often illegally, meaning that they do not declare their activity and income. Many seamstresses used to work for manufacturing factories in the past, but with T&C sector industrialization and delocalization they lost their jobs. The price is generally between medium and high, since they are usually aware of having specific, rare capabilities and of the effort~~s~~ needed for each reparation. The service is very personalized, since they do exactly what the customer asks for, but they often refuse to redesign used clothes, because it could be very time consuming and less profitable for them. They are also very jealous of their expertise and do not usually organize sewing courses (Professional Seamstress interview). Furthermore, since they only advertize their activity by word of mouth, it is difficult to contact them by using current online media (websites, social media).

Finally, design institutes, academies and sewing schools that offer sewing classes could also represent a competitor, both in terms of teaching potentialities and students who need to practice. Young students often work for free or ask for low prices, but they cannot usually guarantee speed, accessibility or learning opportunities to their customers.

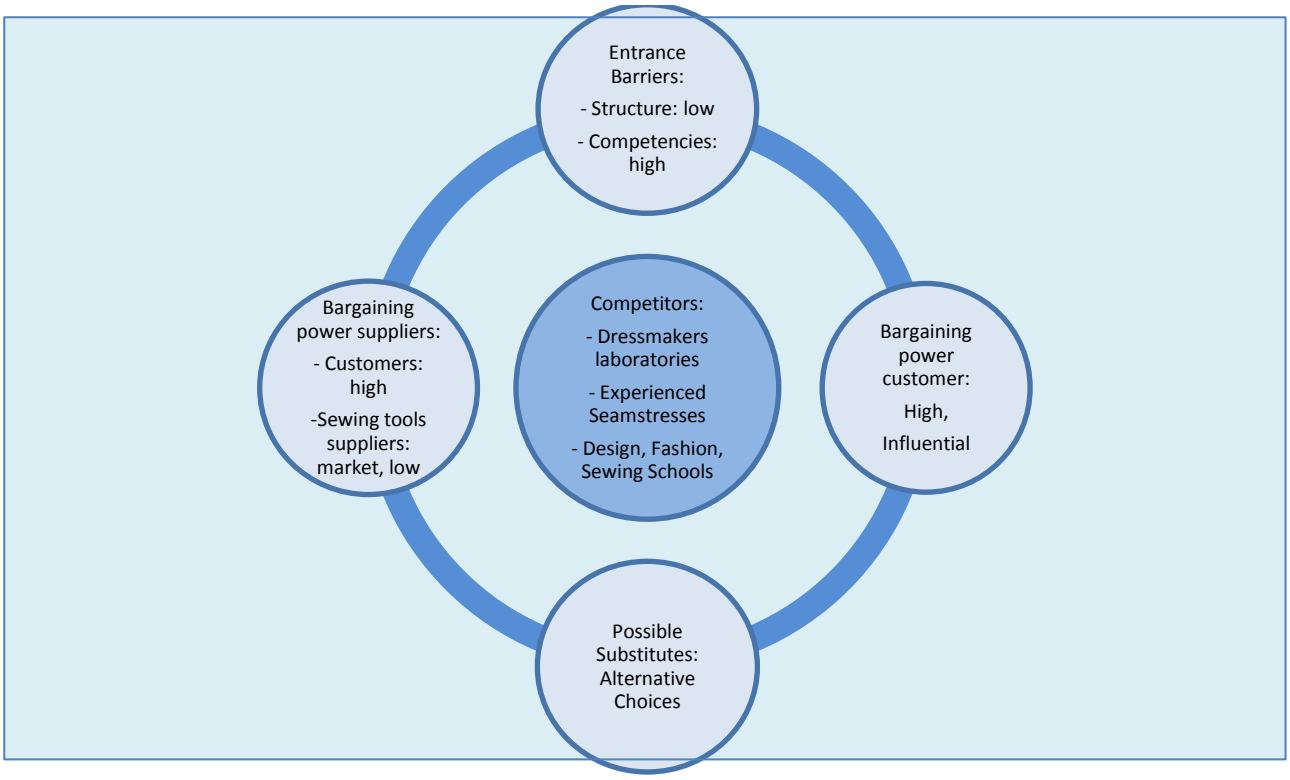
Figure 32 Competitors characteristics. (Source: Own elaboration)



Free online tutorials, that is, e-learning opportunities for redesign, could also be regarded as service competitors, but only for customers who already have at least basic sewing competences. Indeed, learning how to use sewing machines and to redesign is a matter of practice and it necessarily requires support at the early beginning.

Actually, the relationship with identified competitors should be based on cooperation and they should become partners, instead of being seen merely as obstacles. Redesign service, as presented in this dissertation, would be an opportunity for these three subjects (dressmakers' laboratories, experienced seamstresses and design/fashion/sewing schools) to increase their activity and visibility by exploiting an integrated network of reuse and recycling that includes secondhand shops and cooperatives.

Figure 33 Porter's five forces scheme (Source: own elaboration)



4.2.2.2 Value proposition and Positioning Map

The "Fata SmemoRina" redesign service should be different from other options available in the market to meet the need of reevaluating old fashioned or unused clothes and using them for a longer period of time. The organization's image should be associated with the following purpose: to give new value to unused garments through creativity and do-it-yourself processes, with a specific orientation towards fashion and environmental awareness.

The distinctive, innovative peculiarities that will characterize the business marketing mix - i.e. 4Ps marketing- (Kotler and Armstrong, 2010) will be described below in order to position the service in comparison with current competing alternatives.

1) Product

It was decided to adopt a qualitative competitive advantage approach, thus offering higher value in terms of qualitative attributes (Kotler and Armstrong ,2010), such as creative-modern reuse, product reevaluation, important artisan competencies transfer and easier accessibility, since the service per se is very personalized and subjective.

Therefore the redesign service will be provided on the spot, during special events organized in collaboration with key partners, which are haberdasheries, secondhand shops, makerspaces and cooperative shops. The redesign package will consists of:

- An initial evaluation of possible redesign creative solutions;
- Taking a picture of the piece of clothing brought by the customer before the redesign, which can even be modeled by the customer if they agree to it;
- Possibility to have a style consultation regarding the customer's personal fashion look;
- Possibility to co-create and collaborate in the redesign phase;
- Immediate manufacturing process of redesign;
- Taking a picture of the redesigned garment;
- Publication of the pictures on the website, blog and social media pages.

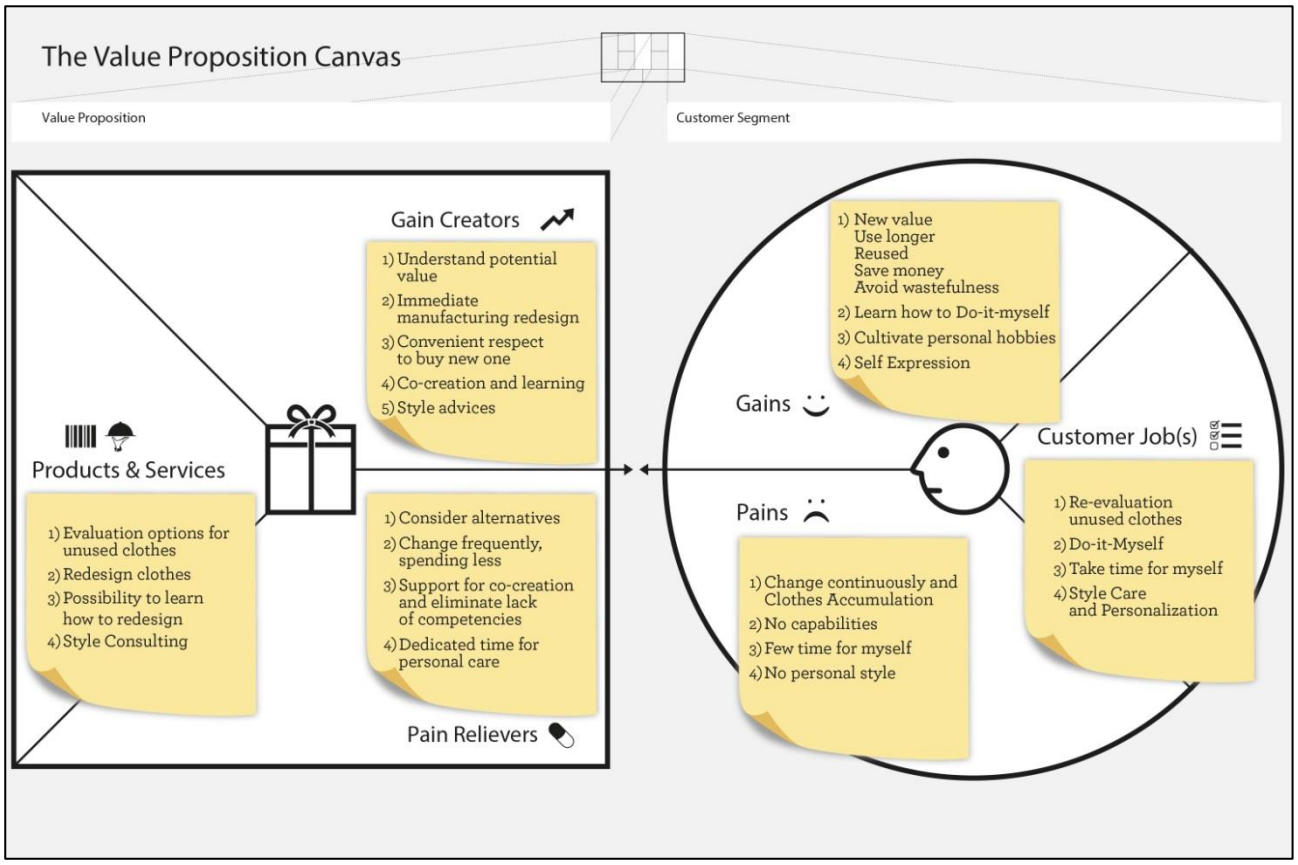
The redesign service value proposition is thus identified in correspondence with customer jobs, in order to meet desires and to relieve real pains (Osterwalder and Pigneur, 2009).

Table 18 Value Proposition. (Source: own elaboration).

SERVICE	GAIN CREATORS	PAIN RELIEVERS
Evaluation options for old, used clothes	Clothes evaluation, Understanding potential value	Considering alternatives
Redesigning clothes	Offered service of immediate manufacturing redesign Convenient compared to buying a new one	Changing frequently, spending less Service provider (reasonable price)
Possible redesign/sewing	Co-creation	Co-creation support

courses	Redesign assistance and learning courses	Eliminating the lack of competencies in order to be able to redesign autonomously (investment convenience)
Style Consulting	Support and advice for new, appropriate fashion style	~~Dedicate~~ Devoting time to personal care and receiving expert advice

Figure 34 "Fata SmemoRina" Value proposition and customer segment. (Source: own elaboration)



2) Price

The price, or fee, will be on average fixed at a “medium level”, with possible variations dependent on the complexity of the redesign process. The price could be higher than that of new low quality clothes, since it is recognized that remanufactured products, when they have the same characteristics and conditions of new items, are valued for the effort required to repair them (Frota Neto et al., 2015). The upper price limit will still be lower than the price paid for the original garment or for a new similar garment, but it could be negotiated with the customer on the spot

taking the required alterations into account. Therefore, there will be an economic convenience both compared to buying a new garment and to throwing away a still valuable and wearable item.

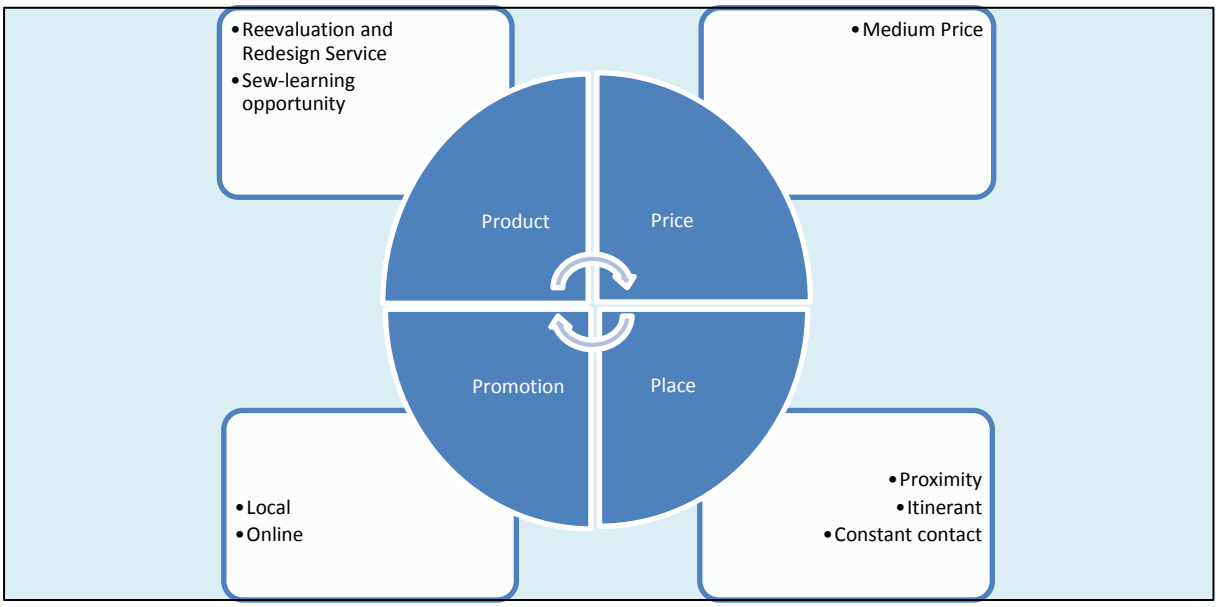
3) Place

The geographic area in which the redesign service will initially be provided corresponds to the Veneto Region. Redesign events will be organized in partners' shops or laboratories, thus the place will be easily accessible for local groups of customers and friends living close to the partners' locations. Furthermore, the co-participation to flea markets and vintage fairs (by means of sharing stands with partner-exhibitors) will allow individuals to see prototype demonstrations of redesigned clothes during the event. If the customer has time, the opportunity to co-create and to learn how to redesign will always be available. It would be a good opportunity to stop for a while, interact with others in a relaxing environment and have fun with friends or family while learning something new. In any case, the organization will always be reachable through the web.

4) Promotion

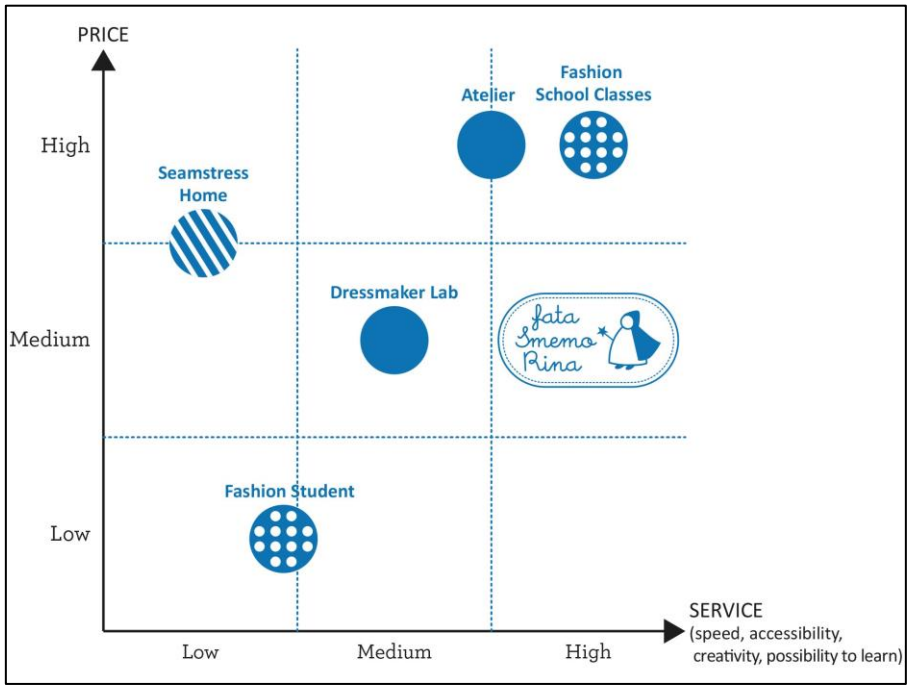
The promotion strategy will have a double direction: on the one hand, a more direct approach will consist of local, face-to-face and paper advertisement through personal invitations and information distribution near the event location. On the other hand, web marketing will be developed through website, social network pages on selected platforms (i.e.: Facebook, Instagram and Pinterest), and a dedicated blog. These online spaces will support information and results sharing and dissemination.

Figure 35 Marketing 4p's for "Fata SmemoRina". (Source: Own elaboration)



As a result, the “Fata SmemoRina” activity will differentiate itself from other available options mainly thanks to its convenient, reasonable prices; its proximity to the customer’s location; its creative, innovative way to redesign; its learning opportunities and the sharing of obtained results.

Figure 36 Positioning Map. (Source: Own Elaboration)



4.3 Business Model Canvas definition and realization

4.3.1 Mission and Vision

After having defined the customer segment and value proposition and prior to describing the other blocks of the business model Canvas, which will show how the activity would create value through a presentation of all the strategic elements in the value chain, it is important to clarify two essential points: the mission and vision of “Fata SmemoRina”.

The mission has been formulated as follows: “Creatively and smartly reevaluate unused clothes to generate new, different garments to wear, gaining great satisfaction with little effort and a low environmental impact”.

On the other hand, the vision that will drive business developments and improvements has been defined as: “To create a virtuous integrated system to reuse and recycle used clothes through different methods and techniques, connecting different sectors and competencies. To support a cultural change towards more sustainable behaviors of both producers and consumers, by

spreading circular economy principles within the T&C sector. To foster actions and practices by exploiting and protecting traditional artisan competences".

4.3.2 Canvas Blocks

1) The **Channels** block refers to the way the redesign initiative will be promoted and communicated to the customers segment. Osterwalder and Pigneur (2009) identified different phases of communication, which require the development of different strategies.

The first step is to find ways to raise "Awareness" about the activity. First of all, a brand logo has been created, therefore the project will have a clear reference image and it will be easier to recognize and remember the initiative. Then, the initial approach will be to try to exploit the partners' network of customers and friends by inviting potential interested people to the event through direct, personal invitations, face-to-face or on Facebook. In order to extend the invitation to a wider range of people, paper flyers and posters will be distributed in the surrounding territory. Curiosity will also be raised during flea market or vintage fairs, while sharing the stand with the biggest partners.

The "Evaluation" phase supports interested customers in gaining a clearer understanding of the value proposition. A dedicated website will be developed and social media pages will be prepared specifically to promote "Fata SmemoRina".

Three social networks have been selected as most effective to reach the targeted segment (Tuten and Solomon, 2014):

1) Facebook, the most popular social network, which makes it possible to invite individuals to events and to share information and pictures on the main wall, thus showing value proposition outcomes. Moreover, it amplifies promotion development thanks to its network of interconnected contacts;
2) Instagram, which makes it possible to share pictures and, in this case, results of redesign work with possible hashtag[13] descriptions;
3) Pinterest is the "hobbies social network", where individuals can find information and inspiration for their passions. It is particularly appropriate for the redesign service, which is connected with an interest in sewing.

[13] Hashtags are words or phrases which make it possible to find images and people similar to the ones posted.

Furthermore, a dedicated, specialized blog, connected with the website and social network pages, will be constantly updated. It will serve as the editorial reference point in which to share "Fata SmemoRina" experiences and development.

The third function of communication, "Purchase", should enable customers to access the service. Redesign services will be provided by direct contact and participation in the events. The permanent online presence will then guarantee the possibility to get in contact with the organization and to ask for a personal appointments if desired.

Delivery, which refers to logistics and transportation issues, will be carried out by going directly close to customers, since events will be itinerant. Finally, "After sales" support should also be granted. As previously mentioned, the value proposition package includes the publication of pictures of redesigned clothes. Naturally, contact information will be exchanged to ensure assistance in case of further issues or if the customer wishes to book an appointment.

2) Customer relationship describes the type of relationship that an organization could establish with customer. The "Fata SmemoRina" project is inevitably based on personal, dedicated assistance, which implies real personal interactions and the necessity to have one-on-one customer relationships. This relationship typology is probably the most difficult and expensive to establish, but it is almost a compulsory choice, since the service is very personalized. On the other hand, dedicated relationships ensure a more trust-worthy and intimate link between individuals. Furthermore, if the client wants to co-create or even learn how to redesign autonomously, the jointly created value will strongly interconnect the service provider and the customer.

The aim of the right-hand side of the Canvas model is to identify the **Revenues Stream**, that is, how the project will generate earnings or cash. In this case, incomes will come from the service sales, determined by charges per redesign and training service. The price will be dynamic, depending on efforts needed and on negotiations between seamstress and customer. Further incomes could derive from specific, short redesign courses supplied to partners, from brand licensing and from the exploitation of network contacts by both seamstresses and partners.

3) Key resources are the assets required to run the business. Human resources will be the fundamental capital. One person is needed to contact haberdasheries, secondhand shops, makerspaces and cooperatives owners, to organize the events and to manage the marketing and administrative issues of the organization. Then, professional, expert seamstresses are

indispensable resources, since they have the specific artisan knowledge necessary to deliver the redesign service. The number depends on customer participation, but initially one or two dressmakers will be enough. Then, partner collaborators are important to ensure the availability of locations and venues. Physical assets are: sewing tools (e.g.: sewing machines, filaments..) and a car to move around. The "Fata SmemoRina" logo will be the initial intellectual asset.

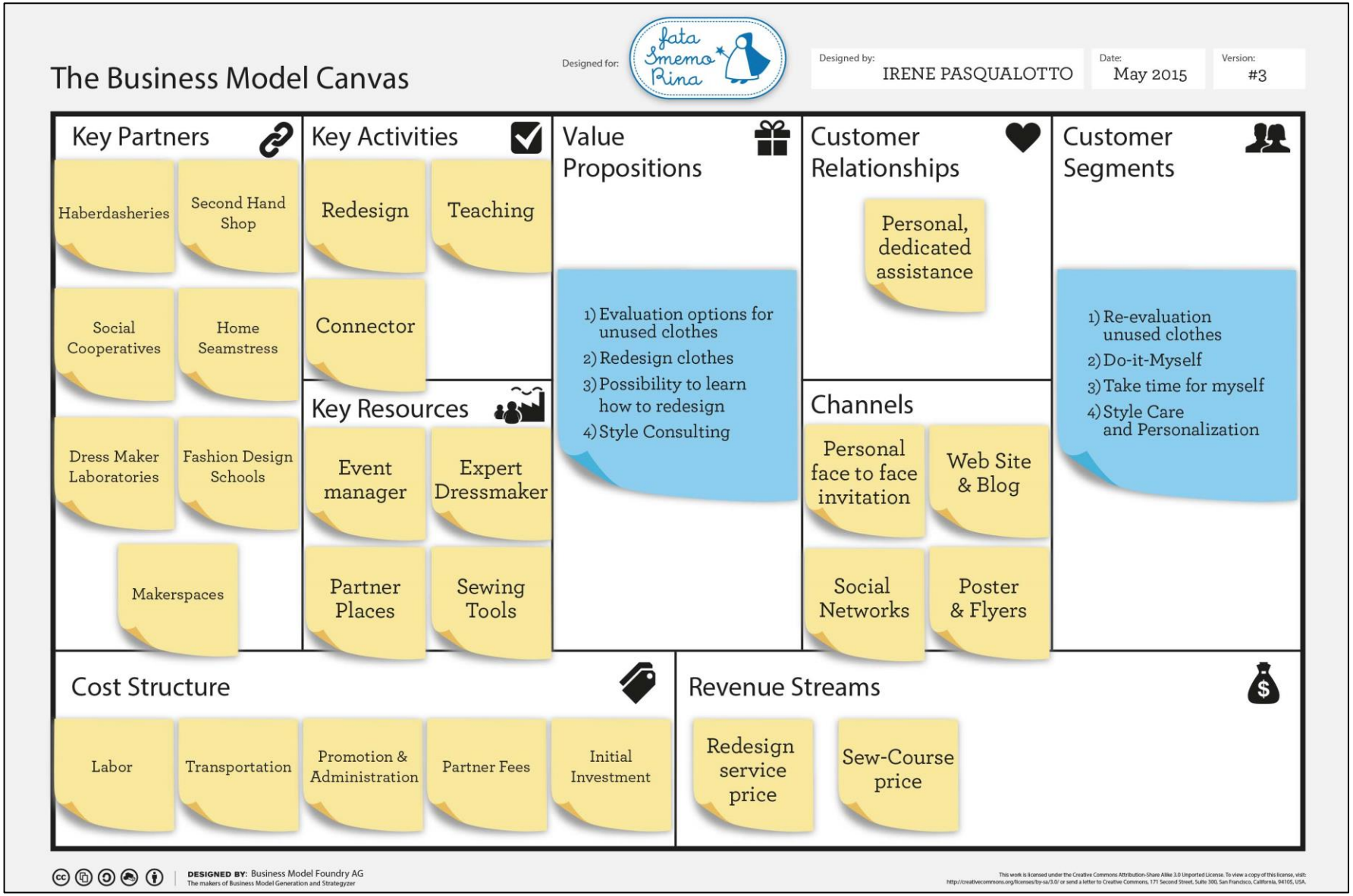
4) Key activities are the core and most important actions the organization does in order to ensure value proposition supply. The main activity consists in redesign, ~~thus~~ that is, a manufacturing activity. The additional possibility to co-create and teach how to redesign is classified as educational activity. Then, the initiative could aggregate all seamstresses -professional and not- who want to offer their services through the online channel: the website could become a platform for dressmakers to achieve greater visibility, to share their works and to promote themselves, giving them the possibility to use the brand, or a contacts provider for all networked partners.

5) Key partners in the case of "Fata SmemoRina" are certainly: haberdasheries, secondhand shops, makerspaces and social cooperatives. The relationship with partners is mutually positive since each party (redesign organization and partners) could benefit from the activity. During the research period, some owners of haberdasheries, secondhand shops and cooperatives were interviewed to investigate their availability to participate and collaborate with the initiative. All demonstrated their willingness and openness to new ways of improving their visibility in the local communities. Moreover, some cooperatives or associations already promote reuse activities involving used products, but not as peculiar as redesign.

The above described competitors (i.e.: dressmaker laboratories, professional seamstresses and design schools) could also be partners, since the idea is to cooperate with them in order to improve their activity too.

Cost stream , the link part of the Canvas business model, identifies which typologies and source of costs are implied by the value proposition. Since this redesign service distinguishes itself for its qualitative attributes, such as a high degree of assistance and personalization, the costs are driven by the offered value. The main costs stem from labor, transportation, promotion, administration, partner fees and initial purchases. They will be better described and analyzed in the numeric part of this dissertation.

Figure 37 "Fata Smemorina" Business Model Canvas. (Source: own elaboration).

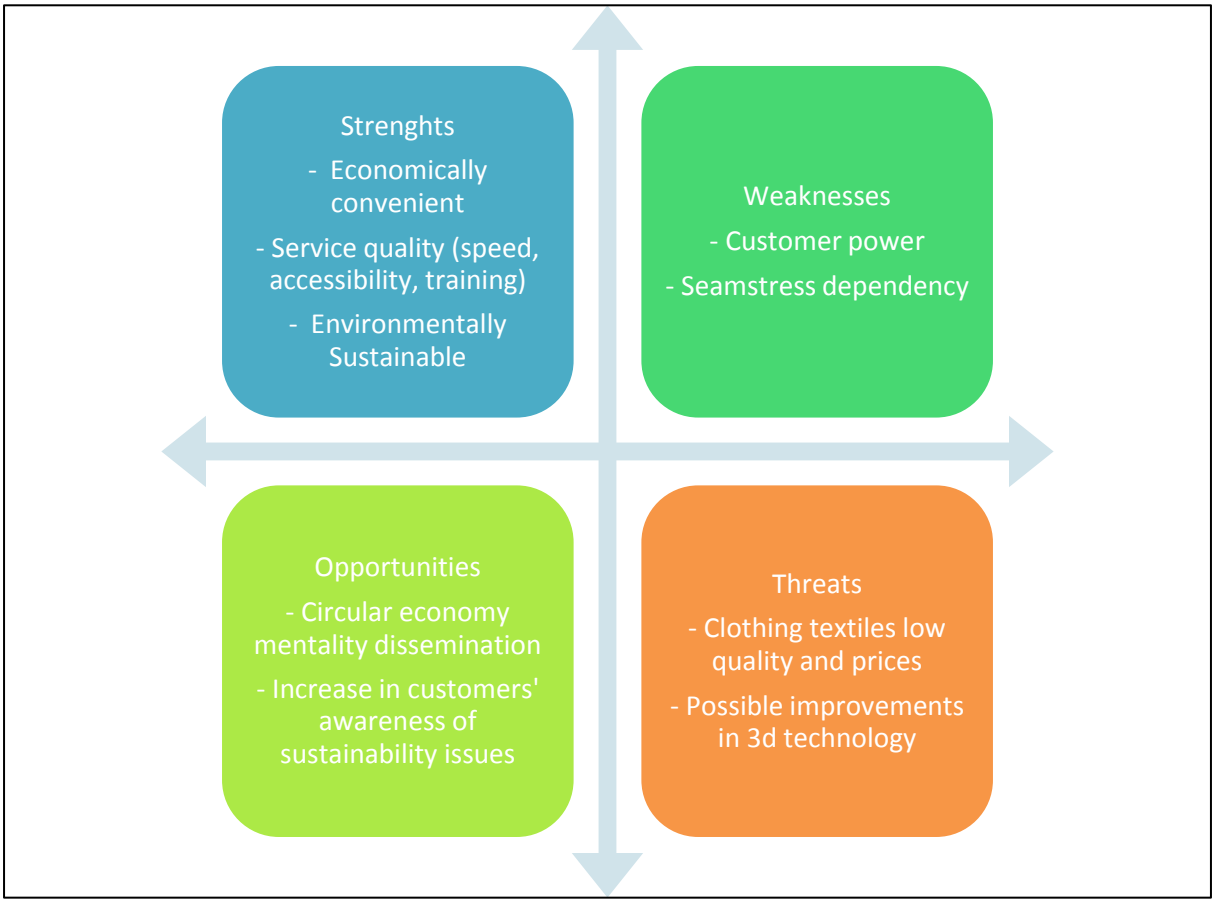


4.3.3 SWOT Analysis

From the internal perspective, "Fata Smemorina" strengths basically consist in: the economic convenience of redesign clothes instead of buying new ones or throwing them away, the particular attention that will be dedicated to the service quality in terms of speed, accessibility and training opportunity and the eco-friendly vocation. On the other hand, customer power and high dependency on seamstresses skills could represent potential weaknesses. In order to minimize these latter risks, strong efforts should be addressed to customer education and awareness and to facilitate know-how sharing.

From the external point of view, interesting opportunities to exploit are circular economy principles' diffusion, particularly promoted by European institutions, and the increase in consumers awareness of sustainability themes, which consequently incentivizes sustainable goods and services demand. At the same time, dropping garments' prices and improvements in 3d technology could boost disinterest in redesign or handmade activities.

Figure 38 SWOT analysis.



4.3.4. Action Plan

The action plan is the management document in which the business goals, targets and actions are determined in relation to a scheduled timetable (Borsa Italiana, 2014). It serves as a roadmap to follow in order to effectively implement and monitor the business idea or investment-initiative evolution.

The suggested time frame for the "Fata SmemoRina" project is three years, during which the business idea should be tested, developed and consolidated (three main phases).

The following table shows:

1) Key value drivers (KVD), which are important goals to achieve and driving forces to activate in order to create value;
2) Key performance indicators (KPI) with related targets, which precisely indicate how to measure KVD performance and which results are expected;
3) and initiatives, meant as actions to be implemented to achieve the KVD.

Figure 39 Action Plan Structure.

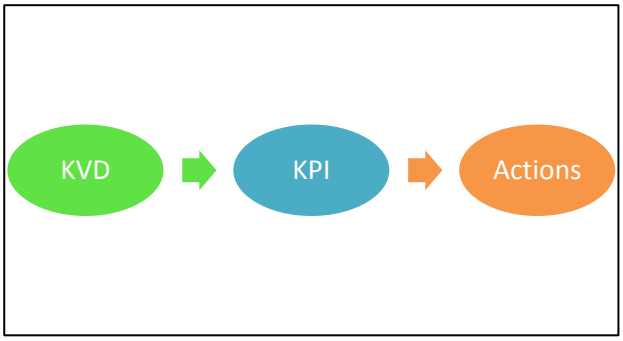


Table 19 Action Plan. (Source: own elaboration).

Key value driver (KVD) / Objectives	Key Performance Indicators (KPI)	Targets (minimum)			Initiatives		
BUSINESS TEST		1 year	2 year	3 year	1 year	2 year	3 year
Task 1:Raise awareness	Preparation concluded	Logo, Social media pages, Website			Marketing initiatives		
Task 2: Ability to supply the redesign service --> profitability	Sales per event	500	525	551,25	Promoting events (advertising)		
	Participants per event	16	16,8	17,64	Implementing Invitation strategy		
	Number of events organized per month	16	16,8	17,64	Organizing pilot events (find/contact partner)	Developing network (online, personal promotion)	Developing network (online, personal promotion)
Task 3: High quality	Speed: Items per	16	16,8	17,64	Incentivize fast	Incentivize	Incentivize

service	event				service supply	fast service supply	fast service supply
	Customer satisfaction: likes on Facebook published pictures	160	168	176,4	Sharing pictures	Sharing pictures	Sharing pictures
	Quick response: Request answer time after first online contact	1 day (maximum)	1 day (maximum)	1 day (maximum)	Constant web check	Constant web check	Constant web check
Task 4: Results monitoring	Report / data elaboration per month	1	1	1	Data analysis and report elaboration	Data analysis and report elaboration	Data analysis and report elaboration
BUSINESS DEVELOPMENT							
Task 5: Business Enlargement --> training	Number of short-redesign courses (for partners) per year		8	10		Organizing courses "creative redesign"	Organizing courses "creative redesign"
						Increase cooperation with key partners	Increase cooperation with key partners
Task 6: Brand recognition	Price, brand licensing per event		10	10		Direct contact with seamstresses	Direct contact with seamstresses
						Brand management	Brand management
BUSINESS CONSOLIDATION							
Task 7: Ensure fixed service	Number of "redesign points"			5			Create Redesign Labs inside partner shops, labs or cooperatives
	Number of sewing machines			5			Purchase sewing machines for Redesign Labs
Task 8: Improve itinerant movement	Mini-van purchase			1			Evaluation

During the initial phase of “Business test”, three main tasks have been identified. The first one refers to “Raise awareness”, meant as basic, preparatory and promotional activities which are necessary before starting business ~~realization~~ implementation. During this stage, which is planned to last one month at the early beginning of the project, the logo, the website and the social networks pages should be ready. The website could then be improved during the third year, depending on the business evolution and different needs.

The second task concerns the “Ability to provide the service in order to reach profitability goals”. Important indicators, in this case, are sales, participants per event and number of events per month. Related minimum targets have been established, considering an average growth rate of 5% for sales, pursuant to secondhand market growth rate (see paragraph 4.2.1.1), and an increase of plus one event per month in the second and third years. To achieve economic objectives, three main actions will be implemented: to find and contact available partners, to personally invite people through face-to-face or Facebook invitation and to promote events with flyers and poster diffusion.

The third task involves pursuing “High quality service”, which will be monitored through a speed indicator (redesigned items per event should at least be equal to the number of participants), customer satisfaction (approximately measured by “number of likes on social networks per picture shared”) and quick response (request answer time after first online contact). Service quality will be incentivized by sharing results and incomes with collaborators.

These activities will continue during the three years of “Fata SmemoRina” project implementation, together with the “Results monitoring” (Task 4), which will be constantly practiced, periodically reviewed (on a monthly base) and annually evaluated for strategy improvement.

During the “Business Development” phase, a bigger effort will be devoted to developing a partner network outside. Then, the supply of specific, short redesign classes to partners or their employees will be promoted to enlarge business activity. The targets are eight courses in the second year and ten in the third year. An additional goal will be to arrange brand licensing with seamstresses who will work thanks to the partners’ network by independently organizing events through direct contact with partners. The aim consists in reserving €10 per event as brand management and association contribution.

Redesign classes will provide the opportunity to create 5 fixed redesign laboratories inside willing partners’ shops, labs and cooperative during the third year, in which the “Business consolidation” phase will be implemented. At the end of the period, the possibility to share the investment for a mini-van to go around with networked partners will be evaluated.

The “Gantt Chart”[14] below illustrates the forecast timetable that should be followed to implement the “Fata SmemoRina” initiative. According to the Gantt model, each objective or activity is represented by a bar, whose position and length reflect the activity start date, duration and end date.

Table 20 Gantt Chart. Legend: Phases = light blue; Tasks/KVD = green; Actions = orange. (Source: own elaboration)

TASKS/ TIME	1 year		2 year		3 year	
BUSINESS TEST						
Task 1:Raise awareness						
Logo/label						
Social media fan page						
Website						
Task 2: Ability to supply the redesign service --> profitability						
Promoting events (advertising)						
Implementing Invitation strategy						
Organizing pilot events (find/contact partner)						
Task 3: High quality service						
Incentivizing fast service supply						
Sharing pictures						
Constant web check						
Task 4: Results monitoring						
Constant web check		M1: Check results		M2: Check results		M3: Check results
BUSINESS DEVELOPMENT						
Task 5: Business Expansion --> training						
Organizing courses “creative recycling”						
Increase cooperation with key partners						
Task 6: Brand recognition						
Direct contact with seamstresses						
Brand management						

[14] The Gantt chart is a commonly used project management tool, developed by engineers Adamiecki and Gantt at the beginning of the twentieth century, which shows tasks against time.

BUSINESS CONSOLIDATION						
Task 7: Ensure fixed service						
Create Redesign Labs inside partner shops, labs or cooperatives						
Purchase sewing machines for Redesign Labs						
Task 8: Improve itinerant movement						
Evaluation					M4: Look for van sharing	

Income estimation

This second part of the chapter will try to quantify the potential profitability of the "Fata SmemoRina" project. The related economic perspectives have been developed both to better identify which significant economic variables should be taken into consideration and to demonstrate the business' economic potentiality. The analysis will focus on the first year of the initiative's implementation: an hypothetical income statement will be illustrated, the breakeven point will be measured and possible future projections will be then simulated.

4.4 General assumptions

In this paragraph the general economic assumptions upon which the "Fata SmemoRina" Income Statement Estimation is based will be described.

Revenues

The price per redesigned item varies in dependence on customer' will to avail of the opportunity to learn how to redesign clothes. The price per item/service only was calculated according to questionnaire answers about customers' willingness to pay. Weighting maximum price and answers percentage (€10*0,3 (30% of answers) + €15*0,25 + €20*0,175 + €25*0,25), the amount results equal to €16,5 (i.e. maximum price). However, in the first year the price/service only was fixed below the maximum threshold price, in order to attract clients. On the contrary, price/learning opportunity would be higher (=20), since it includes a "premium" service.

Pursuant to survey answers (see 3) Learning possibility), 55% of interviewees affirmed that they would prefer to pay for the service only, while 45% would also like to learn how to do it autonomously.

Regarding quantities, it was assumed that each person would redesign two pieces of clothing. The number of participants has been estimated considering that a reasonable number of clients which could be served in one day, on the spot, by two seamstresses. Thus, Sales per event have been calculated as follows: N° of items * (55%*Price/only service+45%*Price/learning)* N° of participants. The number of events in the first year considers KPI2 (i.e.: 16 events per month, on average 4 events per week), consequently in one year (=12 months) organized events are expected to be equal to 176. A staff of 8 professional dressmakers would be necessary to satisfy events' and participants' targets defined in the action plan.

If these initial assumptions will be confirmed, it will be possible to reach 2.816 customers during the first year. This is in line with the potential, estimated market share of "Fata SmemoRina" in Veneto.

Costs

Costs are divided in two sections: "Cost of service provided", which are directly related with the business volumes, and "Operational expenses", which consist of general expenses required to run the activity.

"*Costs of service provided*" include:

- Materials, which refer to yarns of different colors, necessary for the redesign. A starting inventory of threads, amounting to €800 (€100 per seamstress), was allocated. Furthermore, other €5 per event were included in this voice. Finally, it was estimated that materials will not be totally consumed, therefore a consumption rate of 85% was considered.
- Seamstress Commissions: seamstresses are the business' key resource and they will provide the core-service. Therefore, it was decided to give them 60% of total sales, considering also that transportation costs related to the itinerant events will be at their expenses.
- Partner' location fees: this voice stands for a sort of "location rental", since events will be organized in different places, exploiting partners spaces. The percentage of 10% on total sales would then be reserved to partners.

"*Operational expenses*" consist of various elements. First, "Personnel salaries" includes only the "Fata SmemoRina" owner's wage was considered. It was fixed at €1.000 per month.

Second, "Equipments" voice refers both to purchases of durable-goods which are not amortizable and other equipments amortization. Durable equipments consist of 8 sewing machineries (€150 per machine), sewing accessories such as needles and scissors and 4 shooting screens which will serve as background for taking pictures pre and post clothes' redesign (€80 per screen). "Amortizations" were calculated considering a 20% depreciation rate for technological devices (consisting in 4 smart phones, whose single cost amount to €700) and a 10% depreciation rate for a car, which is expected to be bought (car value=€12.000).

Marketing expenses are also divided in different sections. In the "Brand development" section costs related to the creation of "Fata SmemoRina" logo and brand registration were included. "Online advertising" expenses concern: a dedicated website development, internet hosting and domain and social network campaigns. In the "Advertising" section, costs for printing flyers and posters were considered: according to a copy and printing shop interview, an A5 sheet flyer costs €0,28 (28€ per 100 flyers) and an A4 poster costs €0,50 per piece. An indicative number of flyers and posters per event was defined. Finally, €3.000 were allocated to cover expenses in correspondence with "Fata SmemoRina" participation in fairs and festivals.

The voice "Travel" includes costs related to travels to get in contact or to visit partners. While "Vehicle expenses" refer to car insurance and maintenance. "Telephone" costs consist of one cell phone purchase and the activation of a business package subscription.

Finally, administrative expenses are composed of: €2.989 required for the initial activity registration, €3.000 for accountant fees and €300 were allocated to various stationery materials. Note that costs related to the activity registration are based on the hypothesis of constituting a limited company (Ltd) with one associate, who would be represented by the "Fata SmemoRina" founder. Consequently, according to an interview conducted with a professional accountant, the following expenses should be taken into consideration: €200 administration fees, €200 registration tax, €309 government concession tax, €1.259 notary deed and €1.000 for notary's professional service.

Table 21 General assumptions.

	Voice	1 year	Totals
	REVENUES		
Service Price	Price per item/service only (€)	15	
	Price per item/learning opportunity (€)	20	
	Service only	55%	
	Willing to learn	45%	
Quantity	Expected Clothing items (n°)	2	
	Participants (n°)	16	
		Total Sales per event (€)	**552**
	Number of events	176	
	Participants per year	2.816	
Total Revenues		**Total sales revenues (€)**	**97.152**

COSTS			
Cost of Service Provided:			
Materials	Starting inventory (Initial thread stock)	800	
	Material cost per event	5	
	Material purchase	880	
	Consumption rate	85%	
		Total Consumed materials	**1.428**
Seamstress Commissions	Agreed % on sales	60%	
		Staff costs	**58.291**
Partners' location fees	Agreed % on sales	10%	
		Total Partners' location fee	**9.715**
Operational Expenses			
Personnel expenses			
Management salary	Fixed, per month	1.000	
	Month per year	12	
		Total Management salary	**12.000**
Other operational expenses			
Equipment	*Durable equipment purchases (not amortizable)*		
	Sewing machines	1.200	
	Sewing Accessories (needles)	50	
	Shooting screen	320	
		Total equipment expenses	**1.570**
	Amortization:		
	Technological devices	560	
	Car	1.200	
		Total amortization	**1.760**
Marketing	*Brand development:*		
	Logo creation	50	
	Brand registration	500	
	Online advertising:		
	Basic Website	2.000	
	Graphic designer support	1.200	
	Web hosting and domain	50	
	Social network campaign	250	
	Advertising:		
	Flyers price	0,28	
	Flyers number per event	50	
	Flyer cost	2.464	

	Advertising poster price	0,5	
	Adv poster number per event	10	
	Adv sheet cost	880	
	Fairs/Festival participation budget	3.000	
		Total Marketing	**8.394**
Travel	*Visit to partners:*		
	Price per liter of gasoline	0,6	
	Km per liter	18	
	Average distance (km)	70	
	Total distance (km)	12.320	
	Consumed liter	684	
		Total Travel costs	**410**
Vehicle expenses	Insurance	500	
	Maintenance	300	
		Total vehicle expenses	**800**
Telephone	Cell Phone purchase	500	
	Business package subscription (per month)	30	
	Month per year	12	
		Total Telephone	**860**
Administration	Accountant Fees	3.000	
	Activity Constitution and Registration	2.989	
	Office expenses	300	
		Total Administration	**5.289**

4.5 Economic Projections

This part aims at providing indicative quantifications of the most important economic, operative variables that drive the implementation of the redesign activity and which could be the business' future perspectives.

4.5.1 First year Income Statement Estimation

A simplified Income Statement for the first year was developed and is presented below. It was assumed that all general assumptions described above will be verified during the "Business test" phase of the first year.

Table 22 Income Statement estimation.

ESTIMATED INCOME STATEMENT *Fata SmemoRina* *First Year*		
		1 year
Revenue:		**97.152**
	Gross Sales	97.152
Cost of Service Provided:		**69.434**
	Materials	1.428
	Seamstress Commission	58.291
	Partners' location fee	9.715
Gross Profit (Loss)		**27.717**
Operational Expenses:		
Personnel Expenses		**12.000**
	Management salary (Owner salary)	12.000
Other Operational Expenses		**19.083**
	Durable equipments purchases	1.570
	Amortization (equipment + car)	1.760
	Marketing	8.394
	Travel	410
	Vehicle Expenses	800
Services	Telephone	860
Administration	Accountant Fees	3.000
	Activity Constitution and Registration	2.989
	Office expenses	300
Total Operational Expenses		**32.083**
Net Income (Loss)		**-4.366**

In the first year, it results a net loss of €4.366, which is mainly caused by start-up expenses, such as initial marketing costs (e.g.: equipments purchase, brand development, advertising for operating and company constitution).

4.5.2 Break Even Point Analysis

Break Even Point (BEP) analysis makes it possible to understand which is the optimal quantity of products or service supply required to equal total revenues and total costs (Ferrandina and Carriero, 2010).

$$Total\ Revenues = Total\ costs$$

Revenues derive from the multiplication of price (P) per quantity (Q) of products or service provided ($R = P \times Q$). Total costs are generally distinguished into variable and fixed costs. Variable costs depend on volumes ($Vc = Q \times v$), while fixed costs (Fc) remain constant. As a result, Q could be calculated as follows: $Q = \frac{Fc}{(P-v)}$, where (P-v) is called "contribution margin".

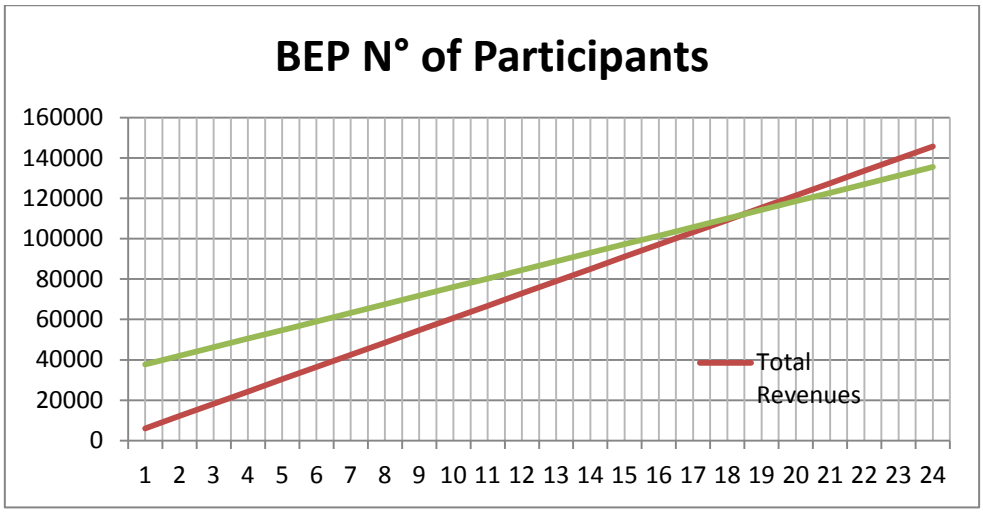
In the case of redesign service supplied by "Fata SmemoRina", the variable that directly influences sales' volumes is represented by the number of participants per event. The table below presents the BEP calculation process.

Table 23 Break Even Point "Number of participants".

Revenues	P * N° of Events * N° of participants	
Price (P)	34,5	
N° of Events	176	
P * E	6072	
N° of Participants (X)	Researched variable	
Sales Revenues (S)	Function of X	
Fixed Costs		
Materials		1.428
Personnel Expenses		12.000
	Management salary (Owner salary)	12.000
Other Operational Expenses		20.083
	Durable equipments purchases	1.570
	Amortization (equipment + car)	1.760
	Marketing	8.394
	Travel	410
	Vehicle Expenses	800
Services	Telephone	860
Administration	Accountant fees	3.000
	Activity registration and constitution	2.989
	Office/Bank expenses	300
Total FC		33.511
Variable Costs		
Seamstress labor	60%	per unit

Partners' location	10%	per unit
Contribution ratio	30%	
Contribution margin (P-V)	1821,6	
Break Even Units (X)	X = TFC / (P-V)	18,39
Break Even Sales (S)	X * Price * N° of Events	111.705 €

Figure 40 Break Even Point.



The Break Even Point is equal to more than 18 participant per event. Thus, the redesign service should have been provided to almost 3.240 (= 18 * N° of Events) customers in order to equalize total revenues and costs. If all assumptions will be verified in the first year, 2.816 individuals are expected to participate to organized redesign events. Hypothesizing that during the following years all economic voices' assumptions will remain constant, it could be possible to achieve the BEP when 203 events had been organized.

4.5.3 Economic perspectives Simulation

Starting from first year estimation, three potential evolutions have been hypothesized for a five years period: positive, optimistic and pessimistic.

The three simulations have some common aspects: first, according to second and third years' phases described in the action plan, it was considered the possibility to provide "creative redesign" courses to partners as additional source of revenues.

Second, seamstress commission and partner' location fees will remain proportional to sales, as agreed in the first year.

Third, start-up costs, which mainly refer to brand development, initial online advertising development and activity registration and constitution, were excluded. Moreover, the voices related to owner's salary, vehicle expenses, telephone, accountant fees and office were expected to remain constant.

In order to better meet market demand, new sewing machineries and technological devices were supposed to be purchased in the following years. Consequently, impacts on amortization amounts were taken into consideration.

Different hypothesis about other voices were formulated as follows:

1) "Positive": sales and costs increase proportionally, at the same, relatively low and constant growth rate of 5% per year, based on secondhand market growth rate (See indirect data). Material costs and marketing expenses grow more than proportionally in the first three years in correspondence to the supply and promotion of "creative redesign" courses (7% and 15% on course sales, relatively).
2) "Optimistic": sales and costs increase proportionally, at the same, relatively high and increasing growth rate, assuming a rapid interpersonal circulation of redesign service demand.
3) "Pessimistic": sales do not grow and remain constant for the 5 years. Material costs increase more than proportionally compared to sales in the first three years (50%) and they then stabilize at a constant growth rate of 10% in the last two years. Also marketing and travel expenses grow substantially (20%) due to more efforts required to develop the initiative, especially in terms of communication and network creation. Furthermore, in this case it was assumed that the organization would not be able to provide "creative redesign" courses.

The tables below show estimated "Income statements" in relation with the three different, possible evolutions.

Table 24 Positive projection.

INCOME STATEMENT Positive projection *Fata SmemoRina*								
			FORECAST					
		1 year	1	2	3	4	5	Growth rates
Revenue:		**97.152**	**110.010**	**115.510**	**121.286**	**127.350**	**133.717**	
	Gross Sales	97.152	102.010	107.110	112.466	118.089	123.993	5%
	Courses sales		8.000	8.400	8.820	9.261	9.724	5%
Cost of Service Provided:		**69.434**	**77.735**	**81.652**	**85.767**	**90.056**	**94.558**	
	Materials	1.428	1.528	1.635	1.749	1.837	1.929	7% (1-3 year) + 5% (last)
	Seamstress Commission	58.291	66.006	69.306	72.771	76.410	80.230	Proportional to sales
	Partners' location fee	9.715	10.201	10.711	11.247	11.809	12.399	Proportional to sales
Gross Profit (Loss)		**27.718**	**32.275**	**33.858**	**35.518**	**37.294**	**39.159**	
Operational Expenses:								
Personnel Expenses		**12.000**	**12.000**	**12.000**	**12.000**	**12.000**	**12.000**	
	Management salary (Owner s	12.000	12.000	12.000	12.000	12.000	12.000	0%
Other Operational Expenses		**20.084**	**13.307**	**13.379**	**13.465**	**13.405**	**13.499**	
	Durable equipments purchase	1.570	300	150	150			
	Amortization (equipment + ca	1.760	2.040	2.180	2.180	2.180	2.180	Based on investments
	Marketing	8.394	6.076	6.136	6.199	6.265	6.335	5% + 15% Course sales
	Travel	411	431	453	475	499	524	5%
	Vehicle Expenses	800	800	800	800	800	800	0%
Services	Telephone	860	360	360	360	360	360	0%
Administr	Accountant Fees	3.000	3.000	3.000	3.000	3.000	3.000	0%
	Activity Constitution and Regist	2.989						
	Office expenses	300	300	300	300	300	300	0%
Total Operational Expenses		**32.084**	**25.307**	**25.379**	**25.465**	**25.405**	**25.499**	
Net Income (Loss)		**-4.366**	**6.968**	**8.479**	**10.054**	**11.890**	**13.660**	
	Revenues/Costs	96%	107%	108%	109%	110%	111%	

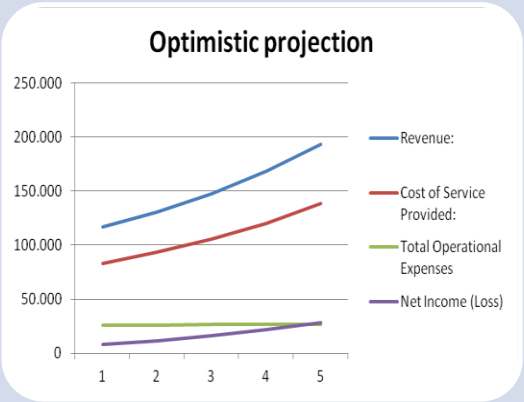
Table 25 Optimistic projection.

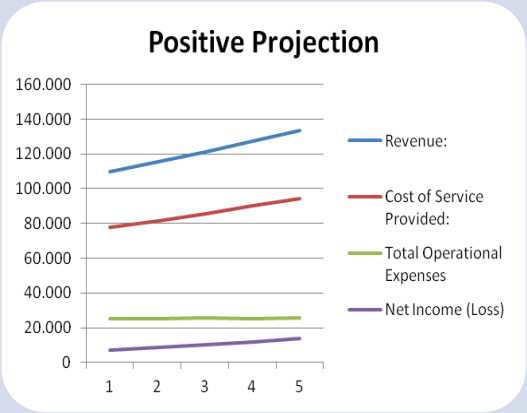
INCOME STATEMENT Optimisitic Projection *Fata SmemoRina*								
			FORECAST					
		1 year	1	2	3	4	5	Growth rates
Revenue:		**97.152**	**116.867**	**130.891**	**147.907**	**168.614**	**193.906**	
	Gross Sales	97.152	106.867	119.691	135.251	154.186	177.314	10%+
	Courses sales		10.000	11.200	12.656	14.428	16.592	10%+
Cost of Service Provided:		**69.434**	**83.378**	**93.383**	**105.523**	**120.296**	**138.341**	
	Materials	1.428	1.571	1.759	1.988	2.266	2.606	Proportional to sales
	Seamstress Commission	58.291	70.120	78.535	88.744	101.168	116.344	Proportional to sales
	Partners' location fee	9.715	11.687	13.089	14.791	16.861	19.391	Proportional to sales
Gross Profit (Loss)		**27.718**	**33.489**	**37.508**	**42.384**	**48.318**	**55.566**	
Operational Expenses:								
Personnel Expenses		**12.000**	**12.000**	**12.000**	**12.000**	**12.000**	**12.000**	
	Management salary (Owner s	12.000	12.000	12.000	12.000	12.000	12.000	0%
Other Operational Expenses		**20.084**	**13.690**	**14.124**	**14.562**	**14.598**	**14.994**	
	Durable equipments purchase	1.570	150	150	300			
	Amortization (equipment + ca	1.760	2.040	2.180	2.180	2.180	2.180	Based on investments
	Marketing	8.394	6.608	6.881	7.146	7.458	7.829	Prop. to sales + 15 % Courses S
	Travel	411	431	453	475	499	524	5%
	Vehicle Expenses	800	800	800	800	800	800	0%
Services	Telephone	860	360	360	360	360	360	0%
Administr	Accountant Fees	3.000	3.000	3.000	3.000	3.000	3.000	0%
	Activity Constitution and Regist	2.989						
	Office expenses	300	300	300	300	300	300	0%
Total Operational Expenses		**32.084**	**25.690**	**26.124**	**26.562**	**26.598**	**26.994**	
Net Income (Loss)		**-4.366**	**7.800**	**11.384**	**15.823**	**21.720**	**28.572**	
	Revenues/Costs	96%	107%	110%	112%	115%	117%	

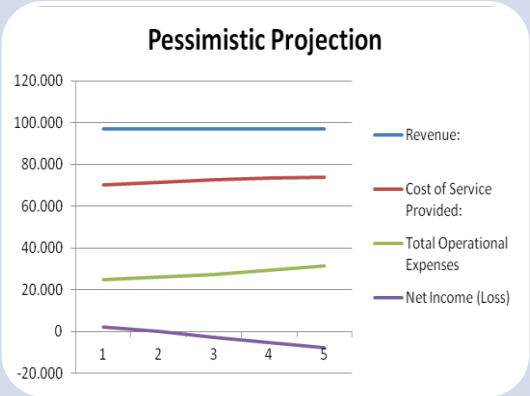
Table 26 Pessimistic projection.

INCOME STATEMENT Pessimistic Projection *Fata SmemoRina*								
			FORECAST					
		1 year	1	2	3	4	5	Growth rate
Revenue:		**97.152**	**97.152**	**97.152**	**97.152**	**97.152**	**97.152**	
	Gross Sales	97.152	97.152	97.152	97.152	97.152	97.152	0%
	Courses sales		0	0	0	0	0	
Cost of Service Provided:		**69.434**	**70.148**	**71.219**	**72.826**	**73.308**	**73.838**	1-3 year
	Materials	1.428	2.142	3.213	4.820	5.301	5.832	0% (1-3 years) + 10 (las
	Seamstress Commission	58.291	58.291	58.291	58.291	58.291	58.291	Proportional to sales
	Partners' location fee	9.715	9.715	9.715	9.715	9.715	9.715	Proportional to sales
Gross Profit (Loss)		**27.718**	**27.004**	**25.933**	**24.326**	**23.844**	**23.314**	
Operational Expenses:								
Personnel Expenses		**12.000**	**12.000**	**12.000**	**12.000**	**12.000**	**12.000**	
	Management salary (Owner s	12.000	12.000	12.000	12.000	12.000	12.000	0%
Other Operational Expenses		**20.084**	**12.866**	**14.069**	**15.374**	**17.121**	**19.218**	
	Durable equipments purchase	1.570	300	150				
	Amortization (equipment + ca	1.760	2.040	2.180	2.180	2.180	2.180	Based on investments
	Marketing	8.394	5.573	6.687	8.025	9.630	11.556	20%
	Travel	411	493	591	710	852	1.022	20%
	Vehicle Expenses	800	800	800	800	800	800	0%
Services	Telephone	860	360	360	360	360	360	0%
Administr	Accountant Fees	3.000	3.000	3.000	3.000	3.000	3.000	0%
	Activity Constitution and Regist	2.989						
	Office expenses	300	300	300	300	300	300	0%
Total Operational Expenses		**32.084**	**24.866**	**26.069**	**27.374**	**29.121**	**31.218**	
Net Income (Loss)		**-4.366**	**2.138**	**-136**	**-3.048**	**-5.277**	**-7.904**	
	Revenues/Costs	96%	102%	100%	97%	95%	92%	

Figure 41 Confrontation between the three projections' simulations







- Positive, increasing growth rates for both revenues and costs
- Highest net income: €28.572 (5° year/forecast)
- Lowest net income: -4.366 (1° year)

- Positive, constant growth rates for both revenues and costs
- Highest net income: €13.660 (5° year/forecast)
- Lowest net income: -4.366 (1° year)

- No growth for sales, and more than proportional growth rates for costs
- Highest net income: €2.138 (1° year/forecast)
- Lowest net income: -7.904 (5° year/forecast)

4.6 Collaterals: Sustainability aspects

4.6.1 Environmental

The redesign service will provide a concrete solution to extend the life of old, out of fashion clothes, avoiding wastes. Moreover, textile swatches and remnants caused by the redesign process will be collected and delivered to appropriate unravel companies.

The partners' network should also foster collaboration between different subjects that deal with used garments, in order to find alternative ways to treat used textiles. For example, a direct connection between secondhand shops and clothing rags dealers should be created, thus wastefulness would be prevented and unwearable, unsold clothing items would be immediately reintroduced into the production process as secondary raw materials.

Creating a virtuous, integrated closed loop system in the T&C sector by involving different organizations could provide a very good opportunity to spread circular economy principles and to exploit the relative potential.

4.6.2 Social

The redesign service could support the preservation of important artisan competencies related to sewing.

Indeed, in the past, reusing and redesigning clothes were very common activities, as well as being necessary chores for many due to widespread poverty. Women used to learn in childhood not only how to sew new clothing, but also how to recover and redesign them. Production automation and industrialization first and delocalization second led to a gradual loss of seamstress artisan competencies. Know-how has not been handed down to new generations, which also have different consumption behaviors (e.g.: young people habitually buy a higher number of garments, usually characterized by low quality and low durability, and change them more frequently).

The "Fata SmemoRina" initiative will allow for and foster the transfer of traditional knowledge, the improvement of individuals' manual skills and a support to local employment through the collaboration with local, expert seamstresses.

4.7 Conclusions

The second part of the empirical research quantitatively verified the existence of a potential market demand for the redesign service, which is one of the business opportunities related to circular economy in the T&C industry.

After the market analysis of both the demand and supply sides, it emerged that there are interesting margins to capture value from the redesign activity. Therefore, a possible business model was formulated, with related strategies, action plan and income estimations.

These analysis and simulations could serve as a guideline on which to base the actual implementation of the “Fata SmemoRina” business idea.

CONCLUSIONS

This work aimed to present the fundamentals of circular economy in relation to corporate sustainability and to explore and find ways to take advantage of market opportunities related to close-the-loop actions in the textile and clothing sector.

The theoretical analysis firstly presented the basic framework for sustainability strategy and management within business. From the first chapter ("The relationship between business and sustainability"), it emerged that nowadays companies need support in integrating the three sustainability dimensions –economic, environmental and social-, therefore a possible "Sustainable Management Framework" based on different literature contributions was presented. A structured management system could ease the development of a cohesive business strategy towards sustainability.

However, in the current global economic context enterprises cannot only consider their internal organization, but they should rather take into account all external variables and different phases of a product or service life cycle in order to be competitive. Therefore, the logic of "system perspective approach" was extended from the managerial dimension to the whole product or service life cycle (in the chapter "A new way of thinking about business: circular economy"). Circular economy represents one of the possible strategic ways that enterprises could adopt to manage and integrate the different aspects of sustainability. Circular economy, that is, the efficient use of natural resources, the utilization of renewable energy and the avoidance of waste generation, derives from and combines different theoretical contributions, such as "cleaner production", "product life cycle thinking" or "global value chain theory". Nevertheless, the circular economy model presented in this work (World Economic Forum, 2014) included additional concepts, such as the four powers related to the implementation of circular economy.

The European institutions' focus on circular economy, especially regarding eco-innovative projects that should actualize theoretical principles, could boost companies' actions towards a more circular approach. In order to do so, enterprises should first analyze their business through circular lenses. Thus, three micro-level tools, one for each sustainability dimension, were identified and presented:

1) Economic - Global Value Chain analysis;
2) Environmental - Environmental Life Cycle Assessment;

3) Social - Social Life Cycle Assessment.

These patterns should support companies in improving their strategies and practices towards more sustainable and circular approaches or even in uncovering unexpected market opportunities.

The theoretical framework and managerial tools were then applied in the third chapter ("Circular economy within the textile and clothing sector"), to analyze the evolution of the European and Italian textile and clothing industry.

Afterwards the qualitative part of the empirical research investigated the current options to reuse and recycle used textiles and clothes. The resulting model "Used and discarded T&C flow in Italy" presents the state of the art of Italian used T&C flows from end-of-use collection to recycling and it could serve as an informational and educational tool for spreading responsible consumption behaviors.

On the other hand, the model "Involved economic actors" could support the creation of a structured network that gathers together all the involved private and public organizations and that could foster contacts creation between the different subjects and business opportunities development. Indeed, from the research it emerged that a flourishing economic system already exists in Italy, but it should be valorized and expanded. The diagram identifies and lists the different subjects which are potentially interested in joining a "T&C recycling network" and could be used as a starting point to create a database that collects information about involved organizations and the evolution of trends in the sector.

The quantitative empirical part of the research explored the potentialities and market size of clothes redesign, one of the reuse-recycling options presented in the model "Used and discarded T&C flow in Italy".

The business idea which was thus developed consists in offering clothing redesign service during itinerant, special events that will be organized in rotation in different places (e.g.: shops, fairs, festivals..) through the collaboration with skilled seamstresses. The project's name is "Fata SmemoRina".

To develop this business idea, market demand was analyzed in order to define a customer segment. Indirect data about secondhand markets, sustainability awareness and craftsmanship were presented. Direct data for this project were obtained through an online pilot questionnaire.

The survey results provided interesting indications about how many clothes a person might like to redesign, customers' willingness to pay, interest in learning how to redesign autonomously and which values should be considered for the marketing strategy. As a result, the market segment was defined and its relative potential market size in the Veneto Region was calculated.

Then, the market supply was investigated in order to identify competitors and to understand where to position the business. After having described the marketing 4Ps, the business model Canvas was formulated. A related action plan and Gantt chart were also developed.

Finally, the start-up income and its hypothetical evolution were estimated. Pursuant to general assumptions based on the descriptive market analysis, the first year income statement was calculated, a break-even point analysis was conducted and possible future economic projections were simulated.

This final part is significant, since it verified that in the T&C sector business opportunities related to circular economy principles entail interesting profitability margins and market demand potentialities. Since it appears that the market has become particularly receptive to sustainability issues, it would be advisable to further explore business strategies to capture the value identified in this analysis. Fashion industry enterprises should be more aware of their sustainability potential in order to uncover and exploit eco-innovative business possibilities.

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Appendix

A) List of Interviews and analyzed Case Studies

Research Typology	Name	Organization Typology	Time	~~Topic~~
Interview	Ufficio Studi, Unione Industriale Pratese	Institution	1 h – Face to face + E-mail exchange	Used T&C Companies in Prato
	Ufficio Relazioni esterne e relazioni, Camera di Commercio di Prato	Institution	30 minutes – Telephone interview	Cardato recycled project
	Ufficio Studi e Comunicazione, Camera di Commercio di Biella	Institution	E-mail exchange	Used T&C Companies and Organizations in Biella
	Ufficio Studi e Territorio, Confindustria Bergamo	Institution	30 minutes – Telephone interview + E-mail exchange	Used T&C Companies and Organizations in Bergamo
	BIR expert member	Institution	30 minutes – Telephone interview	Model review
	Senior expert members, Federazione Maestri del Lavoro d'Italia – Consolato provinciale pratese	Association	2 h – Face to face + E-mail exchange	Wool re generation
	CONAU President, Consorzio Nazionale Abiti ed Accessori Usati	Recycling Consortium	30 minutes – Telephone interview + E-mail exchange	Used T&C System and related organizations
	Museo del Tessuto di Prato	Educative Organization	2 h – Face to face	Textile regeneration and recycling production
	Istituto Tecnico "Buzzi"	Specialized High school	2 h – Face to face	Textile regeneration and recycling production
	Caritas Tarvisiana	Charity Orgainization	1 h – Face to face	Used T&C donation mechanism
	Sector Expert, Director of Ricerche e Servizi S.r.l.	Private service company	Continuous Support (unlimited)	Used T&C System and related organizations
	Pinori Filati	Private manufacturing company	30 minutes – Telephone interview	Recycled denim business
	Commercial Director, Manifattura Fontana	Private manufacturing	30 minutes – Face to face + E-mail	Geotextiles

		company	exchange	
	Quagga	Private manufacturing company	1 h – Face to face + E-mail exchange	Recycled PET used in winter-sport jacket production
	Member, Remo project	Private Initiative	30 minutes – Face to face + E-mail exchange	Project contents
	Bottega dell'Usato	Secondhand Shop	30 minutes – Telephone interview	Secondhand clothes reselling mechanism
Analyzed Case Studies	I:Co (I Collect)	Service company		Coordination of used clothes and material cycling
	Tesmapri	Service company		Coordination of used clothes and material cycling in Italy
	Sua.co.tex	Service Company		Used T&C Import-Export
	H&M	Fashion Retailer		Zero Waste Initiative
	Levi's	Denim Retailer		LCA Initiative
	Smart	U.S. used T&C recycling organization		Recycling mechanism
	Puma	Sport clothing retailer		Zero Waste Initiative + LCA Initiative

B) Questionnaire

Questionario "Lunga vita agli abiti"

Come i gatti, i vestiti possono avere 7 vite ed essere riutilizzati e riciclati in vari modi nel corso della loro esistenza. Una possibilità è quella di rimodellare abiti ancora in buono stato, ma abbandonati in armadio perchè fuori moda oppure difficilmente utilizzabili di frequente (es.;abiti eleganti). Questo sondaggio mira a conoscere quali sono i desideri, le esigenze ed comportamenti attuati rispetto a capi d'abbigliamento inutilizzati.

*Campo obbligatorio

Sesso *

☐ Maschio

- [ ] Femmina

Età *

- [ ] 15-20
- [ ] 21-25
- [ ] 26-35
- [ ] 36-45
- [ ] 46-65
- [ ] Più di 65

Attività attuale *

- [ ] Lavoratore settore primario
- [ ] Lavoratore settore secondario
- [ ] Lavoratore settore terziario
- [ ] Studente
- [ ] Pensionato
- [ ] Disoccupato / A casa per scelta

Dove abiti? (Provincia) *

Hai figli *

- ○ Sì
- ○ No

Hai mai partecipato a corsi per imparare a fare qualcosa (es. cucina, ballo, pittura..)? *

- Sì
- No

Indagine problema

Pensa al tuo armadio...come lo immagini?

- Pieno di vestiti ed ordinato
- Pieno di vestiti e disordinato
- Vuoto ed ordinato
- Vuoto e disordinato

A livello di quantità di vestiti in armadio, approssimativamente, pensi di avere..

- Troppi vestiti
- Il giusto quantitativo
- Pochi vestiti

Avere tanti vestiti in armadio è per me...

- Un problema di spazio e non so che farmene
- Un'opportunità, posso cambiare spesso il mio look
- Un problema perchè alcuni li uso veramente poco
- Un'opportunità per evitare di spendere altri soldi e continuare ad usare quelli che ho

Ricevi vestiti usati da parenti, amici o conoscenti?

- No, mai
- Sì, 1 o 2 volte l'anno
- Sì, periodicamente anche più di 3 volte l'anno

Fai periodicamente una selezione dei vestiti che usi o che non ti servono più?

- Sì, una volta all'anno

- Sì, due volte all'anno, col cambio di stagione
- Sì, anche tre volte l'anno
- No, mai

Quando fai la selezione dei vestiti, indicativamente, quanti capi decidi di dismettere?

- Nessuno
- Da 1 a 3
- Da 4 a 9
- Più di 10

Quando decidi di disfarti di alcuni indumenti è perchè:

- Sono rotti, usurati
- Sono fuori moda
- Cambio spesso stile
- Altro:

Solitamente dove porti i vestiti usati che decidi di dismettere?

- Negozio dell'usato / Vendita online
- Cassonetti gialli / Centri di raccolta
- Caritas od organizzazioni che donano gli abiti ai poveri (centri parrocchiali, raccolte straordinarie)
- Li passo ad amici, parenti
- Altro:

Indagine possibile soluzione - servizio base

Dopo la tua selezione, qualche volta hai pensato "Questo vestito lo metterei, ma dovrei sistemarlo"?

- Sì, per 1 o 2 capi a selezione
- Sì, per 3 o 6 capi a selezione
- Sì, per più di 6 capi a selezione

- ○ No, mai pensato

Se hai pensato di sistemare qualche capo, solitamente era (anche più risposte):

- ☐ Un vestito elegante (da cerimonia, da sposo/a..)
- ☐ Una giacca, cappotto
- ☐ Pantalone
- ☐ Gonna
- ☐ Altro: _____

Cosa ti spingerebbe ad usufruire di un servizio di redesign di un tuo vestito? (dove 1=poco, 5=molto) *

	1	2	3	4	5
Il potenziale risparmio rispetto al comprare un nuovo indumento	○	○	○	○	○
Il valore emozionale che attribuisco ad alcuni abiti che possiedo	○	○	○	○	○
La soddisfazione personale di dare nuovo valore a qualcosa che può servirmi	○	○	○	○	○
L'attenzione all'ambiente, il fatto che non creerei ulteriore materiale di rifiuto	○	○	○	○	○
Dare un tocco	○	○	○	○	○

	1	2	3	4	5
personale e moderno ad un capo fuori moda					

A chi ti rivolgi/rivolgeresti per sistemare o ridisegnare abiti che non useresti più?

- ○ Alla mia sarta di fiducia
- ○ A mia mamma/zia
- ○ Ad una lavanderia
- ○ Non saprei cosa fare ed a chi rivolgermi
- ○ Mi arrangio da solo

Quanto saresti disposto a pagare per risistemare e rivalorizzare un tuo capo?

- ○ Massimo 10 euro
- ○ Massimo 15 euro
- ○ Massimo 20 euro
- ○ Anche più di 20 euro, se ne valesse veramente la pena
- ○ Non pagherei

Indagine possibile soluzione - servizio complementare

Rispetto all'approccio del "fai-da-te":

- ○ Preferisco comprare tutto quello di cui ho bisogno, non ho tempo per fare da solo le cose
- ○ Preferisco comprare già fatto, non credo di possedere capacità manuali
- ○ Cerco di fare quello che posso arrangiandomi, perchè mi dà soddisfazione personale (imparo qualcosa, posso dire di averlo fatto io)
- ○ Cerco di fare quello che posso, perchè si risparmiano soldi
- ○ Solitamente si risparmia e mi dà soddisfazione, quindi è un approccio che adotto spesso
- ○ Non mi interessa
- ○ Altro: _____

Ti piacerebbe collaborare alla sistemazione dei tuoi abiti?

- Sì, ho le idee, ma non le capacità per realizzarle
- Sì, ho le idee e mi piacerebbe imparare a farlo in autonomia
- Sì, lo faccio già
- No, non saprei cosa e come fare
- No, non mi interessa

Se ci fosse la possibilità di imparare a sistemare da sè i vestiti, attraverso l'aiuto di sarte esperte che ti guidano nel procedimento (un mini-corso sul come fare)..

- Parteciperei, dipende dal tempo che dovrei dedicare
- Parteciperei, dipende da quanto costerebbe
- Parteciperei in qualsiasi modo, è un mio desiderio da sempre
- Non mi interesserebbe
- Lo faccio già in autonomia
- Altro: _____

Cosa ostacolerebbe maggiormente l'usufruire di un servizio di redesign? (dove 1=poco, 5=molto)

	1	2	3	4	5
Il tempo da impiegare					
I soldi da spendere					
La difficoltà del processo					
La difficoltà di trovare qualcuno che lo faccia					

Vorresti personalizzare il tuo look per renderlo unico ed esprimere te stesso?

- Sì, ma penso sia costoso
- Sì, ma non saprei come

- ○ Sì e ci sto molto attento
- ○ No, non mi interessa

Parteciperesti ad un evento in cui ti vengono dati consigli sul look e si possono direttamente sistemare dei vestiti che porti?

- ○ Sì, sarei curioso
- ○ No, non mi interessa

Indagine attitudini e comportamenti

Essendo il redesign un servizio particolare e fortemente personalizzato, esso richiede tempo per realizzarlo nonchè una certa predisposizione ed attenzione ad alcuni temi. In questa sezione verranno quindi indagati alcuni aspetti relativi a questa questione.

Indica quanto importanti sono per te i seguenti valori (1=poco, 5=molto) *

	1	2	3	4	5
Bellezza estetica	○	○	○	○	○
Autorealizzazione e soddisfazione personale	○	○	○	○	○
Attenzione all'ambiente (modalità di produzione, riciclaggio)	○	○	○	○	○
Unicità, originalità, espressione di sè	○	○	○	○	○
Tempo dedicato a se stessi	○	○	○	○	○
Cultura del "saper fare", proteggere e tramandare le conoscenze e capacità artigianali diffuse	○	○	○	○	○

	1	2	3	4	5
in passato					

Quanto tempo libero riservi alle tue passioni ed a te stesso/a?

- ○ Mai: Non riesco a dedicare del tempo solo a me stesso
- ○ Almeno il 20% del mio tempo a settimana: E' molto importante per me e cerco di riservare dei momenti solo per me
- ○ Dal 5 al 10% del mio tempo a settimana: Quello che riesco a ritagliare tra impegni vari
- ○ Altro: _____

Cosa ti piace fare di più nel tempo libero? (dove 1=poco, 5=molto)

	1	2	3	4	5
Shopping	○	○	○	○	○
Cura della persona (estetica, benessere, salute)	○	○	○	○	○
Stare con la famiglia / il partner	○	○	○	○	○
Relax senza far nulla	○	○	○	○	○
Coltivare passioni (come cucinare, musica...)	○	○	○	○	○
Sport	○	○	○	○	○
Leggere, guardare tv/ film/ serie	○	○	○	○	○
Uscire con gli amici	○	○	○	○	○

Quanto del tuo tempo libero dedichi alle seguenti attività?

	0%	Da 1 a 10%	Da 10 al 30%	Da 30 al 50%	Oltre il 50%
Shopping					
Cura della persona (estetica, benessere, salute)					
Stare con la famiglia / il partner					
Relax senza far nulla					
Coltivare passioni (come cucinare, musica..)					
Sport					
Leggere, guardare tv/ film/ serie					
Uscire con gli amici					

C) Questionnaire results

80 risposte

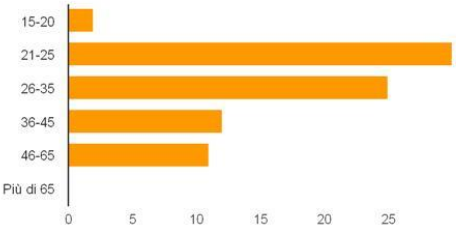
Vedi tutte le risposte Pubblica i dati di analisi

Riepilogo

Sesso

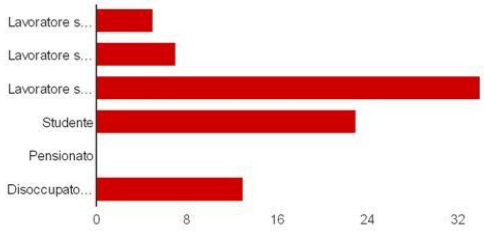
Maschio	12	15%
Femmina	68	85%

Età



15-20	2	2.5%
21-25	30	37.5%
26-35	25	31.3%
36-45	12	15%
46-65	11	13.8%
Più di 65	0	0%

Attività attuale



Lavoratore settore primario	5	6.3%
Lavoratore settore secondario	7	8.8%
Lavoratore settore terziario	34	42.5%
Studente	23	28.8%
Pensionato	0	0%
Disoccupato / A casa per scelta	13	16.3%

Dove abiti? (Provincia)

VE

MN

Treviso

TV

Belluno

ve

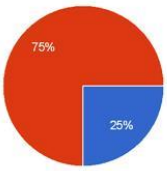
treviso

Lecco

Vr

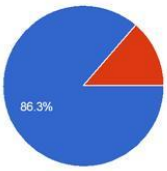
Rovigo

Hai figli



Sì	**20**	25%
No	**60**	75%

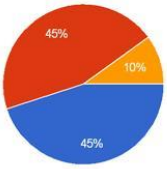
Hai mai partecipato a corsi per imparare a fare qualcosa (es. cucina, ballo, pittura..)?



Sì	**69**	86.3%
No	**11**	13.8%

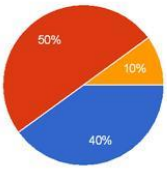
Indagine problema

Pensa al tuo armadio...come lo immagini?



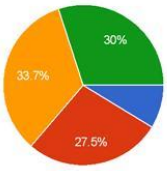
Pieno di vestiti ed ordinato	**36**	45%
Pieno di vestiti e disordinato	**36**	45%
Vuoto ed ordinato	**8**	10%
Vuoto e disordinato	**0**	0%

A livello di quantità di vestiti in armadio, approssimativamente, pensi di avere..



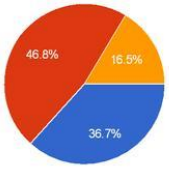
Troppi vestiti	**32**	40%
Il giusto quantitativo	**40**	50%
Pochi vestiti	**8**	10%

Avere tanti vestiti in armadio è per me...



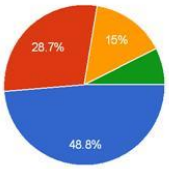
Un problema di spazio e non so che farmene	**7**	8.8%
Un'opportunità, posso cambiare spesso il mio look	**22**	27.5%
Un problema perchè alcuni li uso veramente poco	**27**	33.8%
Un'opportunità per evitare di spendere altri soldi e continuare ad usare quelli che ho	**24**	30%

Ricevi vestiti usati da parenti, amici o conoscenti?



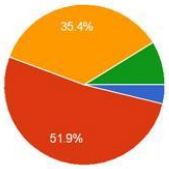
No, mai	29	36.7%
Sì, 1 o 2 volte l'anno	37	46.8%
Sì, periodicamente anche più di 3 volte l'anno	13	16.5%

Fai periodicamente una selezione dei vestiti che usi o che non ti servono più?



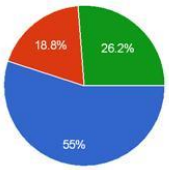
Sì, una volta all'anno	39	48.8%
Sì, due volte all'anno, col cambio di stagione	23	28.8%
Sì, anche tre volte l'anno	12	15%
No, mai	6	7.5%

Quando fai la selezione dei vestiti, indicativamente, quanti capi decidi di dismettere?



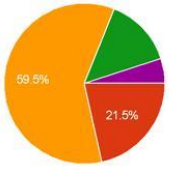
Nessuno	3	3.8%
Da 1 a 3	41	51.9%
Da 4 a 9	28	35.4%
Più di 10	7	8.9%

Quando decidi di disfarti di alcuni indumenti è perchè:



Sono rotti, usurati	44	55%
Sono fuori moda	15	18.8%
Cambio spesso stile	0	0%
Altro	21	26.3%

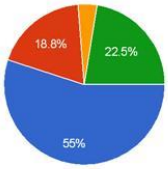
Solitamente dove porti i vestiti usati che decidi di dismettere?



Negozio dell'usato / Vendita online	0	0%
Cassonetti gialli / Centri di raccolta	17	21.5%
Caritas od organizzazioni che donano gli abiti ai poveri (centri parrocchiali, raccolte straordinarie)	47	59.5%
Li passo ad amici, parenti	11	13.9%
Altro	4	5.1%

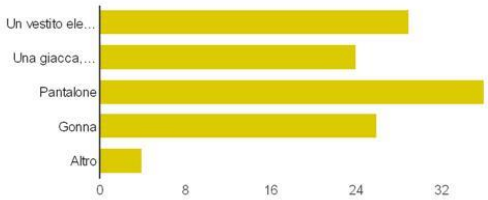
Indagine possibile soluzione - servizio base

Dopo la tua selezione, qualche volta hai pensato "Questo vestito lo metterei, ma dovrei sistemarlo"?



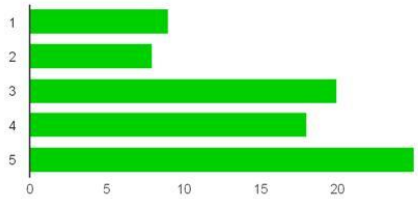
Sì, per 1 o 2 capi a selezione	**44**	55%
Sì, per 3 o 6 capi a selezione	**15**	18.8%
Sì, per più di 6 capi a selezione	**3**	3.8%
No, mai pensato	**18**	22.5%

Se hai pensato di sistemare qualche capo, solitamente era (anche più risposte):



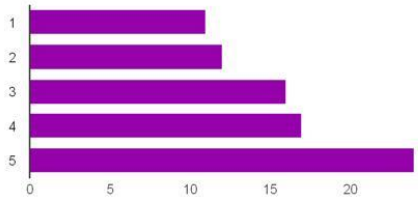
Un vestito elegante (da cerimonia, da sposo/a..)	**29**	43.3%
Una giacca, cappotto	**24**	35.8%
Pantalone	**36**	53.7%
Gonna	**26**	38.8%
Altro	**4**	6%

Il potenziale risparmio rispetto al comprare un nspetto al comprare un nuovo indumento [Cosa ti spingerebbe ad usufruire di un servizio di redesign di un tuo vestito? (dove 1=poco, 5=molto)]



1	**9**	11.3%
2	**8**	10%
3	**20**	25%
4	**18**	22.5%
5	**25**	31.3%

Il valore emozionale che attribuisco ad alcuni abiti che possiedo [Cosa ti spingerebbe ad usufruire di un servizio di redesign di un tuo vestito? (dove 1=poco, 5=molto)]

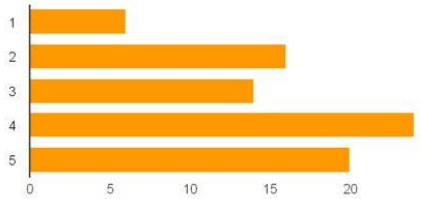


1	**11**	13.8%
2	**12**	15%
3	**16**	20%
4	**17**	21.3%
5	**24**	30%

La soddisfazione personale di dare nuovo valore a qualcosa che può servirmi [Cosa ti spingerebbe ad usufruire di un servizio di redesign di un tuo vestito? (dove 1=poco, 5=molto)]

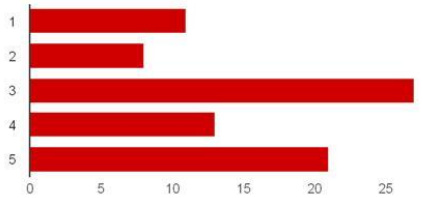
1	**7**	8.8%
2	**10**	12.5%
3	**14**	17.5%
4	**26**	32.5%

L'attenzione all'ambiente, il fatto che non creerei ulteriore materiale di rifiuto [Cosa ti spingerebbe ad usufruire di un servizio di redesign di un tuo vestito? (dove 1=poco, 5=molto)]



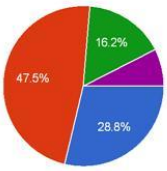
1	**6**	7.5%
2	**16**	20%
3	**14**	17.5%
4	**24**	30%
5	**20**	25%

Dare un tocco personale e moderno ad un capo fuori moda [Cosa ti spingerebbe ad usufruire di un servizio di redesign di un tuo vestito? (dove 1=poco, 5=molto)]



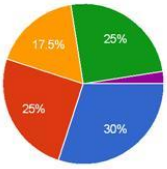
1	**11**	13.8%
2	**8**	10%
3	**27**	33.8%
4	**13**	16.3%
5	**21**	26.3%

A chi ti rivolgi/rivolgeresti per sistemare o ridisegnare abiti che non useresti più?



Alla mia sarta di fiducia	**23**	28.8%
A mia mamma/zia	**38**	47.5%
Ad una lavanderia	**0**	0%
Non saprei cosa fare ed a chi rivolgermi	**13**	16.3%
Mi arrangio da solo	**6**	7.5%

Quanto saresti disposto a pagare per risistemare e rivalorizzare un tuo capo?



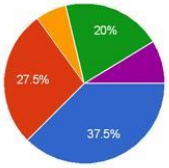
Massimo 10 euro	**24**	30%
Massimo 15 euro	**20**	25%
Massimo 20 euro	**14**	17.5%
Anche più di 20 euro, se ne valesse veramente la pena	**20**	25%
Non pagherei	**2**	2.5%

Indagine possibile soluzione - servizio complementare

Rispetto all'approccio del fai-da-te..:

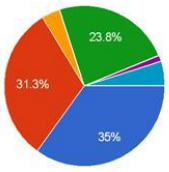
Preferisco comprare tutto quello di cui ho bisogno, non ho tempo per fare da solo le cose	**7**	8.8%
Preferisco comprare già fatto, non credo di possedere capacità manuali	**28**	35%
Cerco di fare quello che posso arrangiandomi, perchè mi dà soddisfazione personale (imparo qualcosa, posso dire di averlo fatto io)	**16**	20%
Cerco di fare quello che posso, perchè si risparmiano soldi	**10**	12.5%
Solitamente si risparmia e mi dà soddisfazione, quindi è un approccio che adotto spesso	**10**	12.5%
Non mi interessa	**4**	5%
Altro	**5**	6.3%

Ti piacerebbe collaborare alla sistemazione dei tuoi abiti?



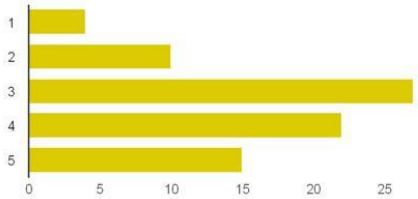
Sì, ho le idee, ma non le capacità per realizzarle	**30**	37.5%
Sì, ho le idee e mi piacerebbe imparare a farlo in autonomia	**22**	27.5%
Sì, lo faccio già	**5**	6.3%
No, non saprei cosa e come fare	**16**	20%
No, non mi interessa	**7**	8.8%

Se ci fosse la possibilità di imparare a sistemare da sè i vestiti, attraverso l'aiuto di sarte esperte che ti guidano nel procedimento (un mini-corso sul come fare)..



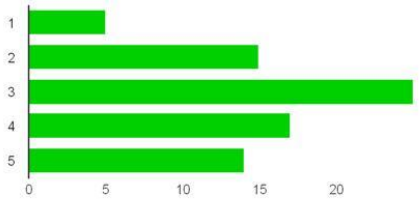
Parteciperei, dipende dal tempo che dovrei dedicare	**28**	35%
Parteciperei, dipende da quanto costerebbe	**25**	31.3%
Parteciperei in qualsiasi modo, è un mio desiderio da sempre	**3**	3.8%
Non mi interesserebbe	**19**	23.8%
Lo faccio già in autonomia	**1**	1.3%
Altro	**4**	5%

Il tempo da impiegare [Cosa ostacolerebbe maggiormente l'usufruire di un servizio di redesign? (dove 1=poco, 5=molto)]



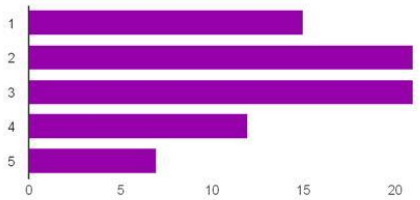
1	**4**	5.1%
2	**10**	12.8%
3	**27**	34.6%
4	**22**	28.2%
5	**15**	19.2%

I soldi da spendere [Cosa ostacolerebbe maggiormente l'usufruire di un servizio di redesign? (dove 1=poco, 5=molto)]



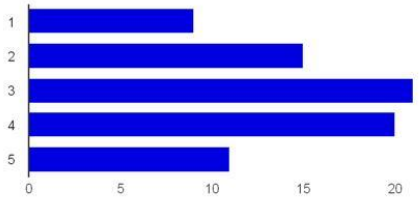
1	**5**	6.6%
2	**15**	19.7%
3	**25**	32.9%
4	**17**	22.4%
5	**14**	18.4%

La difficoltà del processo [Cosa ostacolerebbe maggiormente l'usufruire di un servizio di redesign? (dove 1=poco, 5=molto)]



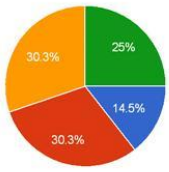
1	**15**	19.7%
2	**21**	27.6%
3	**21**	27.6%
4	**12**	15.8%
5	**7**	9.2%

La difficoltà di trovare qualcuno che lo faccia [Cosa ostacolerebbe maggiormente l'usufruire di un servizio di redesign? (dove 1=poco, 5=molto)]



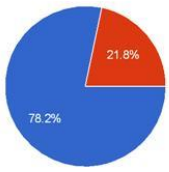
1	**9**	11.8%
2	**15**	19.7%
3	**21**	27.6%
4	**20**	26.3%
5	**11**	14.5%

Vorresti personalizzare il tuo look per renderlo unico ed esprimere te stesso?



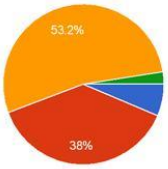
Sì, ma penso sia costoso	**11**	14.5%
Sì, ma non saprei come	**23**	30.3%
Sì e ci sto molto attento	**23**	30.3%
No, non mi interessa	**19**	25%

Parteciperesti ad un evento in cui ti vengono dati consigli sul look e si possono direttamente sistemare dei vestiti che porti?



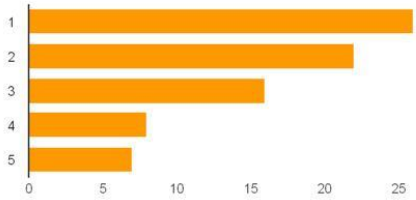
Sì, sarei curioso	**61**	78.2%
No, non mi interessa	**17**	21.8%

Quanto tempo libero riservi alle tue passioni ed a te stesso/a?



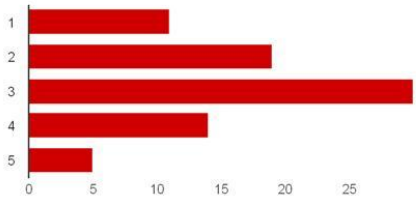
Mai: Non riesco a dedicare del tempo solo a me stesso	**5**	6.3%
Almeno il 20% del mio tempo a settimana: E' molto importante per me e cerco di riservare dei momenti solo per me	**30**	38%
Dal 5 al 10% del mio tempo a settimana: Quello che riesco a ritagliare tra impegni vari	**42**	53.2%
Altro	**2**	2.5%

Shopping [Cosa ti piace fare di più nel tempo libero? (dove 1=poco, 5=molto)]



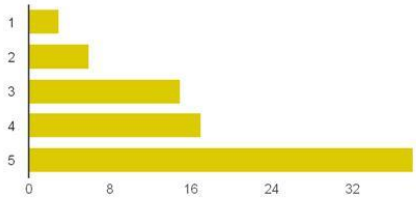
1	**26**	32.9%
2	**22**	27.8%
3	**16**	20.3%
4	**8**	10.1%
5	**7**	8.9%

Cura della persona (estetica, benessere, salute) [Cosa ti piace fare di più nel tempo libero? (dove 1=poco, 5=molto)]



1	**11**	13.9%
2	**19**	24.1%
3	**30**	38%
4	**14**	17.7%
5	**5**	6.3%

Stare con la famiglia / il partner [Cosa ti piace fare di più nel tempo libero? (dove 1=poco, 5=molto)]

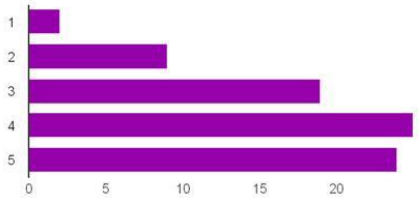


1	**3**	3.8%
2	**6**	7.6%
3	**15**	19%
4	**17**	21.5%
5	**38**	48.1%

Relax senza far nulla [Cosa ti piace fare di più nel tempo libero? (dove 1=poco, 5=molto)]

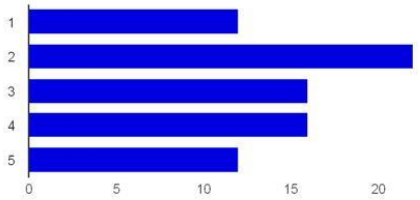
1	**20**	25.6%
2	**11**	14.1%
3	**25**	32.1%
4	**15**	19.2%
5	**7**	9%

Coltivare passioni (come cucinare, musica...) [Cosa ti piace fare di più nel tempo libero? (dove 1=poco, 5=molto)]



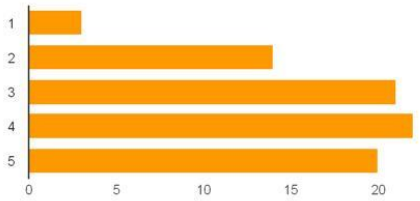
1	**2**	2.5%
2	**9**	11.4%
3	**19**	24.1%
4	**25**	31.6%
5	**24**	30.4%

Sport [Cosa ti piace fare di più nel tempo libero? (dove 1=poco, 5=molto)]



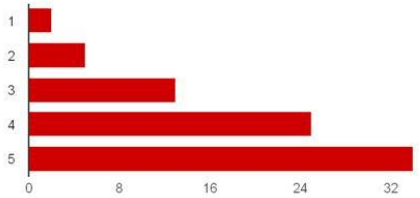
1	**12**	15.4%
2	**22**	28.2%
3	**16**	20.5%
4	**16**	20.5%
5	**12**	15.4%

Leggere, guardare tv/ film/ serie [Cosa ti piace fare di più nel tempo libero? (dove 1=poco, 5=molto)]



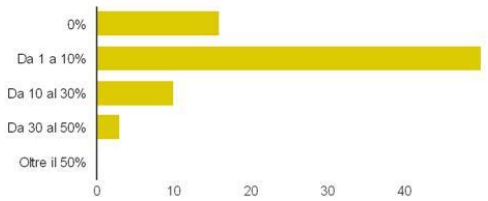
1	**3**	3.8%
2	**14**	17.5%
3	**21**	26.3%
4	**22**	27.5%
5	**20**	25%

Uscire con gli amici [Cosa ti piace fare di più nel tempo libero? (dove 1=poco, 5=molto)]



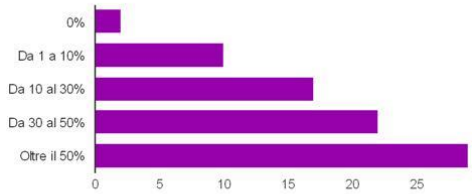
1	**2**	2.5%
2	**5**	6.3%
3	**13**	16.5%
4	**25**	31.6%
5	**34**	43%

Shopping [Quanto del tuo tempo libero dedichi alle seguenti attività?]



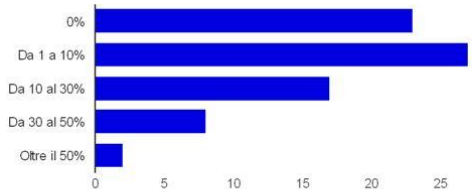
0%	**16**	20.3%
Da 1 a 10%	**50**	63.3%
Da 10 al 30%	**10**	12.7%
Da 30 al 50%	**3**	3.8%
Oltre il 50%	**0**	0%

Stare con la famiglia / il partner [Quanto del tuo tempo libero dedichi alle seguenti attività?]



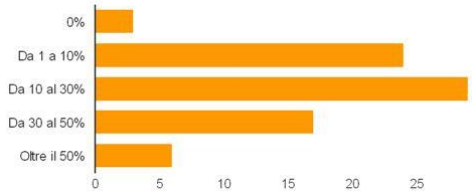
0%	2	2.5%
Da 1 a 10%	10	12.5%
Da 10 al 30%	17	21.3%
Da 30 al 50%	22	27.5%
Oltre il 50%	29	36.3%

Relax senza far nulla [Quanto del tuo tempo libero dedichi alle seguenti attività?]



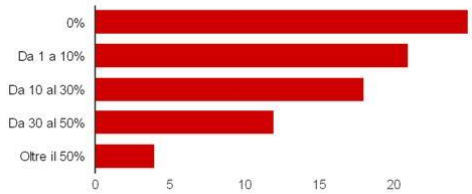
0%	23	29.9%
Da 1 a 10%	27	35.1%
Da 10 al 30%	17	22.1%
Da 30 al 50%	8	10.4%
Oltre il 50%	2	2.6%

Coltivare passioni (come cucinare, musica..) [Quanto del tuo tempo libero dedichi alle seguenti attività?]



0%	3	3.8%
Da 1 a 10%	24	30.4%
Da 10 al 30%	29	36.7%
Da 30 al 50%	17	21.5%
Oltre il 50%	6	7.6%

Sport [Quanto del tuo tempo libero dedichi alle seguenti attività?]

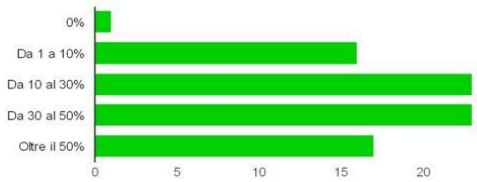


0%	25	31.3%
Da 1 a 10%	21	26.3%
Da 10 al 30%	18	22.5%
Da 30 al 50%	12	15%
Oltre il 50%	4	5%

Leggere, guardare tv/ film/ serie [Quanto del tuo tempo libero dedichi alle seguenti attività?]

0%	4	5%
Da 1 a 10%	23	28.8%
Da 10 al 30%	29	36.3%
Da 30 al 50%	18	22.5%
Oltre il 50%	6	7.5%

Uscire con gli amici [Quanto del tuo tempo libero dedichi alle seguenti attività?]



0%	1	1.3%
Da 1 a 10%	16	20%
Da 10 al 30%	23	28.8%
Da 30 al 50%	23	28.8%
Oltre il 50%	17	21.3%