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**Economia circular e destinação de vestuário descartado: práticas organizadas por
cooperativas de reciclagem em Cascavel-PR**

**Circular economy and disposal of discarded clothing: practices organized by recycling
cooperatives in Cascavel-PR**

[TRADUÇÃO INGLESA]

CLAUDIO CESAR GOMES CARDOSO

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Economia circular e destinação de vestuário descartado: práticas organizadas por cooperativas de reciclagem em Cascavel-PR

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[TRADUÇÃO INGLESA]

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Dissertação apresentada ao Programa de Pós-Graduação em Administração em cumprimento parcial aos requisitos para obtenção do título de Mestre em Administração, área de concentração Competitividade e Sustentabilidade, linha de pesquisa Sustentabilidade, APROVADO(A) pela seguinte banca examinadora:

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RESUMO

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O aumento de iniciativas de descarte correto de resíduos, a preocupação com o desenvolvimento sustentável aliada com a necessidade de redução da exploração de recursos naturais, tem contribuído para uma consciência de proteção ao nosso meio ambiente. Isso tem provocado a criação e o fortalecimento de projetos de descarte correto de resíduos em várias esferas da indústria e da sociedade em geral. Um exemplo são os projetos de recolhimento de material reciclável porta a porta, que ocorre na cidade de Cascavel-PR, aonde todo o material recolhido é levado para os centros de reciclagem da cidade, fornecendo material para as cooperativas de reciclagem, gerando mecanismos de reaproveitamento de materiais recicláveis em geral, contribuindo para uma visão sustentável, abrindo caminho para a produção de novos produtos e negócios. Esta pesquisa teve como objetivo analisar as práticas de economia circular na destinação de vestuário descartado organizadas por cooperativas de reciclagem em Cascavel-PR, considerando as dimensões da sustentabilidade. A pesquisa foi realizada através de uma abordagem qualitativa, aonde se utilizou de entrevistas semiestruturadas. Foram entrevistados os gestores, os técnicos administrativos e os cooperados das cooperativas de reciclagem dos ecopontos de Cascavel-PR. A análise e interpretação dos dados da pesquisa indicou a presença de iniciativas de reaproveitamento de material de vestuário em dois dos seis ecopontos do município, onde foram identificados os seguintes itens: atividades de destinação de vestuário descartado, o volume de vestuário descartado aproveitado em bazares e doação e também o volume do que não vai pro aterro municipal, contribuindo para o meio ambiente. Um dos benefícios identificados nessa pesquisa foi um aumento na renda dos cooperados nas duas cooperativas que realizam iniciativas de economia circular. Através da venda em bazares, o valor arrecadado tem ajudado nas despesas gerais das cooperativas e o restante do valor é dividido mensalmente entre os cooperados. Esta pesquisa contribui para a comunidade, mostrando as iniciativas de economia circular que já ocorrem nas cooperativas de Cascavel-Pr e também como são realizadas o recolhimento, separação e destinação do vestuário descartado. Essas iniciativas aumentam a vida útil de peças de roupas, contribuindo para geração de renda aos cooperados, podendo ser replicadas nas demais cooperativas de reciclagem do município e de outras regiões do país.

Palavras-chave: Economia Circular; Sustentabilidade; Vestuário Descartado; Centros de Reciclagem;

ABSTRACT

Cardoso, Claudio C. G. (2023). Circular economy and disposal of discarded clothing: practices organized by recycling cooperatives in Cascavel-PR (Dissertation). Post-Graduate Program in Management (PPGAdm), State University of Western Paraná – UNIOESTE, Cascavel, PR, Brazil.

The increase in initiatives for the correct disposal of waste, the concern with sustainable development combined with the need to reduce the exploitation of natural resources, has contributed to an awareness of protection of our environment. This has led to the creation and strengthening of projects for the correct disposal of waste in various spheres of industry and society in general. An example is the door-to-door recycling material collection projects, which take place in the city of Cascavel, state of Paraná, where all the collected material is taken to the city's recycling centers, providing material for recycling cooperatives, generating mechanisms for reusing recyclable materials in general, contributing to a sustainable vision, paving the way for the production of new products and businesses. This research aimed to analyze the circular economy practices in the disposal of discarded clothing organized by recycling cooperatives in Cascavel, considering the dimensions of sustainability. The research was carried out through a qualitative approach, where semi-structured interviews were used. Managers, administrative technicians and members of the recycling cooperatives of the city's ecopoints were interviewed. The analysis and interpretation of the research data indicated the presence of initiatives to reuse clothing material in two of the six ecopoints of the municipality, where the following items were identified: disposal activities of discarded clothing, the volume of discarded clothing used in bazaars and donation and also the volume of what does not go to the municipal landfill, contributing to the environment. One of the benefits identified in this research was the increase in the income of members in the two cooperatives that carry out circular economy initiatives. Through the sale in bazaars, the amount collected has helped in the general expenses of the cooperatives and the rest of the amount is monthly divided among the members. This research contributes to the community, showing the circular economy initiatives that already occur in the cooperatives of Cascavel and also showing how the collection, separation and disposal of discarded clothing are carried out. These initiatives increase the useful life of garments, contributing to the generation of income for cooperative members, and can be replicated in other recycling cooperatives in the municipality and other regions of the country.

Keywords: Circular Economy; Sustainability; Discarded Clothing; Recycling Centers;

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LIST OF ABBREVIATIONS AND ACRONYMS

ACRONO	DESCRIPTION
ACAMAR	Association of Recyclable Material Collectors of Cascavel
ASCACAR	Cascavelense Association of Recyclable Collectors
CAREMEL	Cascavel Materials Action and Recycling Cooperative
COOTACAR	Recyclable Material Collectors Workers Cooperative
EC	Circular Economy
EL	Linear Economy
EPR	<i>Extended Producer Responsibility</i>
ONGs	Non-Governmental Organizations

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1 INTRODUCTION

The concern with sustainable development is increasingly evident, where the use of available resources is sought without compromising the ability to meet the needs of future generations. The linear cycle of products is based on production, marketing and disposal. In this system, the use of new resources ends up being the only solution and, with that, the depletion of raw materials is something of concern, along with contamination during the production and disposal phases. In this model, there are several negative environmental impacts, such as high consumption of water and electricity, and underutilization of resources (Pal and Gander 2018; Norris 2019).

Alternatively, the Circular Economy is presented as a system that integrates the three dimensions of sustainability, which are: environmental, economic and social (Kirchherr et al., 2017). Thus, the great challenge of the circular economy is proposed in an attempt to solve such problems, such as aggression to the environment, shortage of raw materials, among others, with intelligent solutions. The circular economy, in turn, does not have in its bias the management of waste from production and consumption, but rather that products, when idealized and produced, are already manufactured with forecast of their reuse.

The increase in waste generation has been characterized as one of the most serious environmental problems caused by humans. This increase in environmental problems is derived from population growth and the increasing level of industrialization and technological advancement. Robins and Roberts (1999) make it clear in their research that the increase in waste generation, with high levels of consumption pattern, tends to overlap with the benefits of waste reduction achieved with the increase in environmental efficiency in industries.

Even though it is complex, due to the various agents involved such as industries, consumers and the government, the issue of waste becomes even more a topic of concern, day by day. Post-consumer responsibility aims to introduce the value of post-consumer materials at the center of manufacturers' concerns and, from there, in the action of other protagonists of their management, especially the consumer (Abramovay; Speranza; Petitgand, 2013).

Within this process of responsibilities, each of the agents plays an important role in waste management: the government as the agent responsible for regulating, supervising and implementing public policies; industries with the role of better use of raw materials and reduction of waste generation in their production processes and the consumer as the

fundamental individual agent in the consumption process, and it is clear that there is recognition of the role of individuals, but there is still a lot of resistance to practicing them, presenting a difference between thought, speech and practice (Oliveira, 2013).

1.1 RESEARCH PROBLEM

Mass production, low prices and rapidly changing trends lead consumers to a culture in which clothes are disposable objects; in addition, the early disposal of clothes increases the industry's profit (Chapman, 2009). In this context, the linear consumption model still predominates, where virgin raw materials are sold, used and discarded. The act of buying a product involves several steps and disposal is the last step, if even taken into account. The life cycle of clothes becomes shorter as new shopping trends and low prices emerge, thus causing increased consumption, and having as one of the consequences a greater volume of disposal often done incorrectly (Ellen MacArthur Foundation, 2017).

The disposal of clothing items in the post-consumer period is of great concern, due to the large amounts of textile waste discarded in landfills, often including unsold stocks that end up going to incineration (Burton, 2018). The disposal of clothes is usually divided into: common disposal, donation to family members and resale to third parties (Ha-Brookshire & Hodges, 2009). Other ways of disposal for clothes are the sale to thrift stores, the transfer to family or friends and the donation to institutions in general (Bianchi & Birtwistle, 2010; Laitala & Klepp, 2011), customization, reuse and donation (Koch & Domina, 1999).

Non-governmental organizations (NGOs) also act in this sense, reselling and transforming donated or discarded products through collection, selection and resubmission processes (Brace-Govan and Binay, 2010). In the case of second-hand retail, in contrast to traditional retail models, customers are the main partners and suppliers of these establishments. This type of business generates minimal profits, given a business model that typically encompasses sharing profits with partners (Gopalakrishan & Matthews, 2018). Garments disposed through donation can be customized or just go through cleaning procedures, and then purchased or donated to consumers with the funds allocated to the objectives of the cause (Brace-Govan & Binay, 2010).

Another option for disposing of clothes is to throw them in the trash and this happens more often when clothes are cheaper and well worn. This option of throwing clothes in the trash is chosen when people do not feel comfortable donating pieces that they would not use

themselves and, therefore, these people end up throwing them in the trash (Albinsson & Perera, 2009; Goworek *et al.*, 2012; Ha-Brookshire & Hodges, 2009). Other studies report that many clothes go to waste because people do not know how or where to dispose of them (Birtwistle & Moore, 2007; Morgan & Birtwistle, 2009).

In the context of the municipality of Cascavel, state of Paraná, the city government implemented recycling centers called ecopoints, a project inspired by programs in other countries, aiming to create a sustainability network with the necessary infrastructure so that the recycling cooperatives responsible for these centers can carry out their activities. There are six ecopoints installed in Cascavel, which are strategically distributed to serve all regions of the city and to receive various materials for separation and disposal for recycling (Cascavel/Paraná City Hall (2020). In regards to the performance of the ecopoints, in a preliminary survey it was identified that the receipt of clothing materials also occurs, without, however, records of how much material is received and the destination practices adopted.

Thus, this research focuses on the need to analyze the volume of clothing material received by the ecopoints and the destination practices adopted, since from the perspective of the Circular Economy these actions can contribute to the sustainability of the entire municipality by avoiding the disposal in landfill of materials that may have a better destination.

1.1.1 Research Question

Based on the context and problem presented, this research proposes to answer the following question: How are circular economy practices characterized in the disposal of discarded clothing organized by recycling cooperatives in Cascavel?

1.2 OBJECTIVES

1.2.1 General Objective

Analyze the circular economy practices in the disposal of discarded clothing, organized by recycling cooperatives in Cascavel-PR.

1.2.2 Specific Objectives

- a. identify recycling cooperatives in Cascavel that carry out disposal activities for discarded clothing;
- b. identify the volume of discarded clothing that no longer goes to the municipal landfill through the work of recycling cooperatives;
- c. describe the circular economy practices of disposal of discarded clothing carried out by recycling cooperatives;
- d. with the cooperatives, raise the benefits arising from the initiatives to dispose of discarded clothing.

1.3 JUSTIFICATION AND CONTRIBUTION

Post-consumption in the clothing industry has been an area of interest for researchers, especially research on use and disposal habits (Brace-Govan & Binay, 2010); Choo *et al.*, 2014), on sustainable consumption (Ritch, 2015; Bly *et al.*, 2015), and including those involving aspects of the circular economy (Vehmas *et al.*, 2018). Studies on the processes of recycling and reuse of textiles (Noman *et al.*, 2013; Hvass, 2014; Telli & Özdil, 2015; Amaral *et al.*, 2018), their environmental impact (Esteve-Turrilhas & De La Guarda, 2017), economic and social impact (Leal-Filho *et al.*, 2019) also stand out.

Some initiatives can assist in increasing the collection of post-use clothing, in addition to supporting the joint work between collectors and pickers to realize value capture opportunities and also align collection and recycling facilities globally (Ellen MacArthur Foundation, 2015). In this sense, this research is justified by presenting a study on local clothing disposal initiatives applied by recycling cooperatives, from the perspective of circular economy practices.

In practical aspects, the research is justified by presenting clothing disposal practices that can be replicated by recycling cooperatives that do not yet have them, whether in a municipal or national context, offering sustainable alternatives to increase the long life of these products and to reduce the volume of discarded materials that go to landfills. In addition, the disposal of clothing material in cooperatives of recyclable materials in Cascavel, can increase the income of members, becoming a business alternative that can evolve in the future.

1.4 STRUCTURE OF THE DISSERTATION

The research is structured in five chapters. The first chapter contextualizes the research theme, presents the general and specific objective, the research problem, the justification and the structure of the work.

The second chapter addresses the concepts of circular economy, clothing production chain, clothing disposal and similar studies.

The third chapter presents the phases of the research method and technique, which consists of the research design, data collection procedures and data analysis.

The fourth chapter presents the analysis and interpretation of the results, with the analysis of the discarded clothing disposal initiatives organized by the recycling cooperatives of Cascavel, and the fifth chapter presents the final considerations.

2 THEORETICAL AND EMPIRICAL REVIEW

2.1 CIRCULAR ECONOMY

In recent years, the degradation of the environment has been more evident. As a result, the debate on the subject has become abundant and reached relevance in the scientific discourse, boosting some public policies, even within organizations in corporate media. In this discussion, stakeholders try to increase the control of production actions and reduce environmental destruction, thus representing institutions and organizations with a greater reach (Goworek et al., 2012).

The current economic model has caused concerns about the effects of production and what society's consumption causes to the environment. In a linear economy (LE), which is based primarily on the extraction of raw materials, gas production comes as a consequence in the distribution and consumption of products. The circular economy (CE) is an important model for the industrial economy, where it is sought, within the possibilities, to reduce the degradation of the environment, strengthening, for example, the transition from the extraction of finite resources to renewable energy sources (Ellen MacArthur Foundation, 2020).

The CE has, as one of its proposals, that all resources extracted in nature remain in high circularity in production processes, where through integrated production chains, they are able to maintain the maximum of their value and their useful life is extended through the destination in new cycles, eliminating the increase in waste and creating other flows of resources. In this production process, the incorporation of repair, reuse, remanufacturing and effective recycling systems is included (Webster, 2017).

Thus, the Circular Economy is increasingly gaining the interest of scholars and researchers due to its potential to support the necessary transition to more sustainable production and consumption systems (Geissdoerfer et al. 2017). The transition from a linear to a circular economy requires not only new concepts on the part of organizations, but also responsible consumers, willing to follow the logic of new or adapted processes and products (Kirchherr et al., 2017).

Over the past few decades, increasing attention has been given, worldwide, to the new concept and development model of the Circular Economy, with the aim of offering a better alternative to the dominant model of economic development; the so-called “take, make and discard” (Ness, 2008).

The circular economy contributes to reconciling all the elements involved in the production and consumption process, mainly rooted in environmental and political issues, and also with regard to economic and business aspects (Ellen Macarthur Foundation, 2012). The Circular Economy promotes a more appropriate and environmentally friendly use of resources, aiming at the implementation of a greener economy, characterized by a new business model and innovative employment opportunities (Ellen Mac Arthur Foundation, 2012; Stahel, 2014), as well as promoting improved well-being and evident impacts on equity within and between generations in terms of use and access to resources.

The circular economy system is inspired by the principles of nature, where waste from one species is food for the other. The principles of the circular economy are: waste should be seen as a food; it is necessary to build resilience through diversity; use renewable energy; think as a system (Weetman, 2016).

Compared to other movements, the circular economy places a greater emphasis on reusing renewable materials and composting to capture nutrients for the biosphere. China and the European Union are currently making global efforts to enact policies, set targets and measure the performance of the circular economy (Murray et al., 2017).

In recent years, the circular economy has received considerable attention due to the opportunities offered in order to optimize and promote sustainable production and consumption, through new models based on continuous growth and unlimited resources (Govindan & Hasanagic, 2018).

2.2 CLOTHING INDUSTRY

The clothing industry's production chain is driven by large production numbers, driven by rapid obsolescence and style changes (HU et al., 2014). This clothing industry is globalized by nature, being profitable, and contributes to the development of a country's economy and belongs to the sectors with the highest perceived value in the industry in general (Dissanayake & Sinha, 2015; McKinsey Global Fashion Index, 2019).

The clothing production chain is based on quick and short fashion cycles, assuming a continuous nature composed of cycles, in which people are attracted by the style or fashion of the moment, especially those who emphasize their clothes, with excessive consumption as one of the consequences (Niinimäki & Hassi, 2011; O 'cas, 2000).

The production, consumption and quantity of waste in the world of textile fibers are constantly increasing (Dahlbo et al., 2017). In addition, the linear production system and economic context has caused degradation of ecosystems, impacting the environment, such as the pollution of rivers, springs and emissions of polluting gases (Avagyan et al., 2015; Fischer & Pascucci, 2017).

The expected growth of the production chain in 2019 was between 3.5% and 4.5%, mainly driven by the sportswear segment (growth of 7%), an increase in the Asian market in exports (China represents 35% of all world transactions), consolidation of the European Union in textile imports (40.2% of total world transactions) and India as the main consumer (McKinsey Global Fashion Index, 2019).

When analyzing the current scenario of the global and national panorama of the current mode of production in the clothing industry, the environmental impacts generated and their possible solutions are evidenced, including the reuse and recycling of textile waste (HU et al., 2014), and the need for correct disposal of discarded material due to present consumption habits is also evidenced.

The consumption and quantity of textile waste has increased significantly worldwide, especially due to fast fashion and linear consumption of resources. In European manufacturing, textiles and clothing play an important role, generating a turnover of €166 billion and employing 1.7 million people (European Commission 2018).

In addition to linear consumption and other factors that contribute to the increase in textile waste, clothing ends up becoming an underutilized product, and many clothes are used only a few times before disposal (D 'Adamo et al., 2022; Zhou et al., 2021). It is estimated that more than half of the clothes produced in the world are discarded less than a year after purchase.

2.3 DESTINATION OF CLOTHING IN THE CIRCULAR ECONOMY

The textile and clothing industries, in turn, are undergoing changes. They are exploring ways to support more sustainable consumption patterns, thereby reducing textile waste, revisiting traditional business models, assessing responsibility for clothing produced, and looking at the possibility of extending product life through new, more sustainable solutions. Charitable organizations play a key role in collecting reusable textile products and clothing

products that can still be reused, but there has been growing interest from private organizations, through online market and bazaars without intermediaries (Tojo, 2012).

Terms such as reconditioning, remanufacturing and repair are relevant. Reuse can occur in numerous ways, through product exchange mechanisms, for example, as citizen to citizen in online markets and bazaar. Another form is that of citizen for charitable organizations, defined as reuse companies, such as garment delivery centers, where there are selective collections of recyclable materials, through municipal waste collection. (European Commission, 2008).

When trying to understand a little more about the dimension of clothing from the perspective of sustainability, it is possible to see within the consumption of second-hand clothing an expansion of the product cycle, promoting another form of economy and enhancing a process that meets the criteria of sustainability. The reuse of second-hand garments can occur through the form of upcycling, which occurs when a discarded garment is inserted in the reuse and transformation process and becomes raw material for a new product, with added value and low cost (Carvalho, 2016). Among the approaches to the use of textile waste, in addition to recycling, reuse and upcycling practices stand out. Within the recycling technique, this process takes place through the use of leftover fabrics, where it is possible to have new yarns providing raw material for weaving. Reuse and upcycling, on the other hand, are characterized by a greater demand for time in manual activity and enable the creation of new products (Berlin, 2016).

One of the business models that are part of an important stage of the circular economy in the clothing industry is the second-hand clothing market. This type of market has grown a lot in recent years, where consumers demonstrate more responsible consumption (D'Adamo et al., 2022). In Finland, this business model has conquered many consumers, who see in this trade an opportunity to buy clothes from expensive and well-known brands, with affordable prices (Borg et al., 2020). This market segment has as one of its advantages the entry of new products and also the reduction of incorrect disposal of textile waste in landfills. But this business model also requires a greater marketing effort, costs related to cleaning clothes and fundraising (D'Adamo et al., 2022).

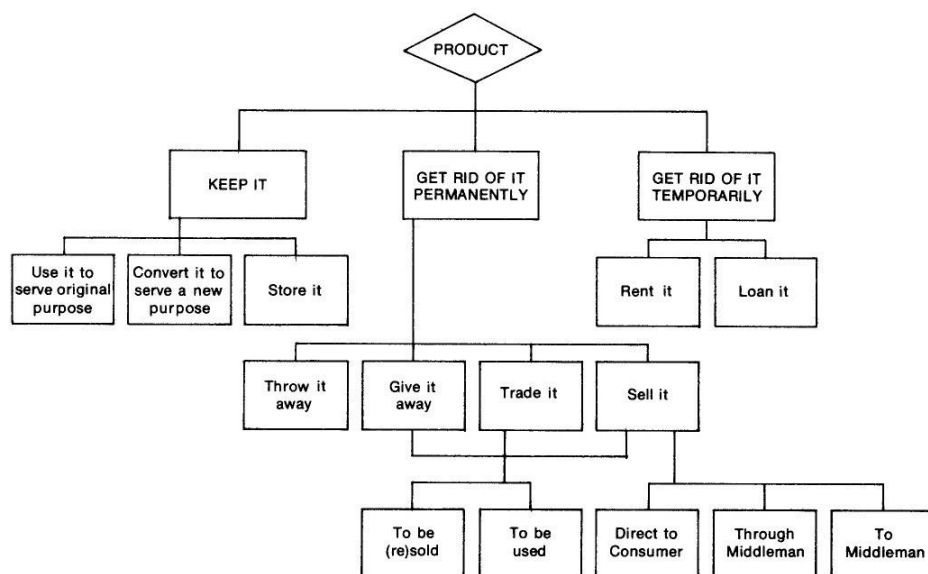
Thrift stores are known as places that sell pieces of clothing that have already been used, with exclusive characteristics of low price and tendency to conscious consumption. The concept of thrift store in Brazil emerged during the nineteenth century, in Rio de Janeiro, and its precursor is the merchant Belchior, a man who at the time was known for selling clothing and used objects. Time has passed and, nowadays, we find many places in the country where this practice happens, making it more and more popular (Amorim, 2015). There are five classified types of thrift store: Church thrift store, usually composed of donations in good condition from

the faithful themselves, where it is possible to find pieces of well-known brands and a wide variety of products; Asylum thrift store, where new or difficult-to-find products are found, with a wide variety of products and low prices; Mess thrift store, as the title says, as it is literally a mess of items, are usually installed in garages or small rooms in homes, with products coming in many colors and shapes; Gourmet thrift store, where pieces of clothing with an added value and standardized layout are found, are clean and organized places, these are characteristics that contribute to the decision at the time of purchase; and the last type is the online thrift store, with its positive and negative points (Felippe & Feil, 2019).

The interest in textile reuse and recycling has increased through international and national policies in relation to the concept of Circular Economy, which in turn has advanced in some waste prevention projects in the countries of the European Union. Although still timid, these projects advance the general approach to effectively integrate reuse, recycling and waste management (European Commission, 2018).

From the purchase of a piece of clothing, the destination of the piece presents several stages, with permanent disposal being one of the options, which can generate other possibilities of use (Jacoby, Berning and Dietvorst, 1977), as shown in figure 1.

Figure 1 - Taxonomy of the main disposal behaviors.



Source: adapted from Jacoby, Berning and Dietvorst (1977).

There are several means for the disposal of clothes indicated in the literature, among which some studies highlight three, which are: sale to thrift stores, donation to close people and donation to charities (Bianchi & Birtwistle, 2010); Laitala & Klepp, 2011). Other studies

indicate that the most frequently used means are resale, customization, reuse and donation (Koch & Domina, 1999). Another option for discarding clothes is to throw them in the trash (Goworek et al., 2012; Joung & Park-Poap, 2013), and this option is chosen when clothes are cheap, when they are not in good condition or are of poor quality, so that people do not feel good about donating pieces that they would not use themselves and end up throwing them in the trash (Albinsson & Perera, 2009; Goworek et al., 2012; Ha-brookshire & Hodges, 2009).

In many cases clothes go to waste because people do not know how or where to dispose of them, nor how to recycle them (Birtwistle & Moore, 2007; Morgan & Birtwistle, 2009). However, they would consider changing their behavior in relation to the consumption and disposal of clothing if they were more aware of the environmental and social consequences of this act and if they were encouraged to reflect more on their behavior (Morgan & Birtwistle, 2009; Goworek et al., 2012).

Consumers can see their clothes as investments, assuming that they have emotional value, decreasing the frequency of disposal or recycling them (Koch & Domina, 1999; Ha-Brookshire & Hodges, 2009). With the sale of used clothes, space is created for new pieces and, thus, people get rid of the guilt for consuming excessively or unnecessarily (Isla, 2013).

Frame 1 shows the main means and reasons for disposal examined in the literature.

Frame 1 - Main means and reasons for disposal

Means of disposal	REASONS WHY	Authors
Bazaar	Size, getting sick of the outfit, price, habit, declutter wardrobe, convenience, influence of family members, environmental and economic concern.	Kock and Domina (1999); Bianchi and Birtwistle (2010); Joung and Park-Poaps (2013)
Donation	Size, getting sick of the outfit, price, habit, declutter wardrobe, convenience, environmental and social concern, fashion changes, relieve feelings of guilt, increase the consumption of clothes, avoid throwing in the trash.	Kock and Domina (1999); Ha-Brookshire and Hodges (2009); Birtwistle and Moore (2007); Bianchi and Birtwistle (2010); Goworek <i>et al.</i> (2012); Joung and Park-Poaps (2013)
Throw away	Worn clothes, cheap clothes, convenience.	Ha-Brookshire and Hodges (2009); Goworek <i>et al.</i> (2012); Laitala and Klepp (2011); Joung and Park-Poaps (2013)

Source: Prepared by the author based on the literature review.

Some research has indicated that people's motivation, when opting for one of the means of disposal, can be hedonic or socially oriented. Hedonic characteristics are those derived from pleasurable experiences and the desire to want something, while socially oriented ones are focused on efficient and/or economic experiences related to the need for something (Carpenter *et al.*, 2005; Baker, 2011).

The donation of clothes to people nearby or to charities makes people feel good for helping others, especially if the donated clothes have as one of the effects to minimize the feeling of guilt caused by excessive purchases, waste and by continuing the cycle of purchase, use and disposal (Bianchi & Birtwistle, 2010; Ha-Brookshire & Hodges, 2009).

2.4 SIMILAR EXPERIENCES

In Brazil, the control of waste generation from the production of clothing and textiles is not done the way it should be, but it is estimated that the country generates 160,000 tons of waste per year, which are discarded due to lack of selective recycling (Zonatti *et al.*, 2015), with 60% destined for landfills (Lorenzetti, 2018).

The study by Bukhari *et al.*, (2018), shows that France is the only country that has implemented Extended Producer Responsibility (EPR) for post-consumer clothing and shoes. This extended responsibility policy has led to a threefold increase in the collection and recycling rates of post-consumer textiles since 2006, with the material recovery rate of post-consumer textiles reaching 90% (of which 50% can be directly reused) in 2019.

An idea that came out of a personal taste and became a business in some European countries is the so-called second-hand purchase, which is nothing more than the purchase of clothes from major brands, which seeks to highlight the advantages of the circular economy and the use of resources in the most efficient way. One of the relevant characteristics of the project is the careful selection and treatment of pieces of good quality and an interesting price (Lorenzetti, 2018).

Recently, a photo went viral on the internet for showing piles and piles of clothes dumped in the Atacama Desert in Chile. A scene not unlike other sad moments for the environment and reinforced by Sebrae data, this “worn clothes cemetery” is in fashion: in Brazil, for example, about 170 tons of textile waste are discarded annually. Of this total, 80% is improperly disposed of in nature and in landfills or is incinerated. Some options for donating or disposing of garments in a sustainable way are to pass on used garments in good conditions

of use to others, since what no longer works for someone can be very useful for someone else and small defects such as missing buttons or broken zippers are easily solved; reuse fabrics and clothes that are no longer useful where, for example, scraps from manufacturing industries are reused to make cleaning towels in mechanical workshops; recycle when the other options are no longer possible, when the only correct option is to dispose of these garments for recycling since they have a different path than what is done with other disposable waste (Queiroz, 2022).

Another example comes from Portugal. MyCloma is an online platform for the sale of second-hand clothing, created by young Portuguese entrepreneurs, which aims to promote the circular economy by extending the cycle of clothing use. Faced with the numbers of textile waste in Portugal and a desire to give a second life to clothes no longer used, MyCloma entrepreneurs came to the conclusion that something should be done. With that, they began to collect used but in good condition garments all over the country and looked for someone to give them a new life. A mission of the project is also to try to change the mentality and end up as a prejudice against second-hand clothing, showing that it is possible to buy good, quality pieces at affordable prices and thus also help the environment and avoid waste (Mycloma, 2023).

3 METHOD AND LEGAL RESEARCH TECHNIQUES

In this chapter, the methodological procedures of this research were addressed, starting with the research design, the procedure of data collection and analysis of clothing disposal initiatives discarded in the ecopoints in Cascavel-PR to achieve the specific objectives.

3.1 RESEARCH DESIGN

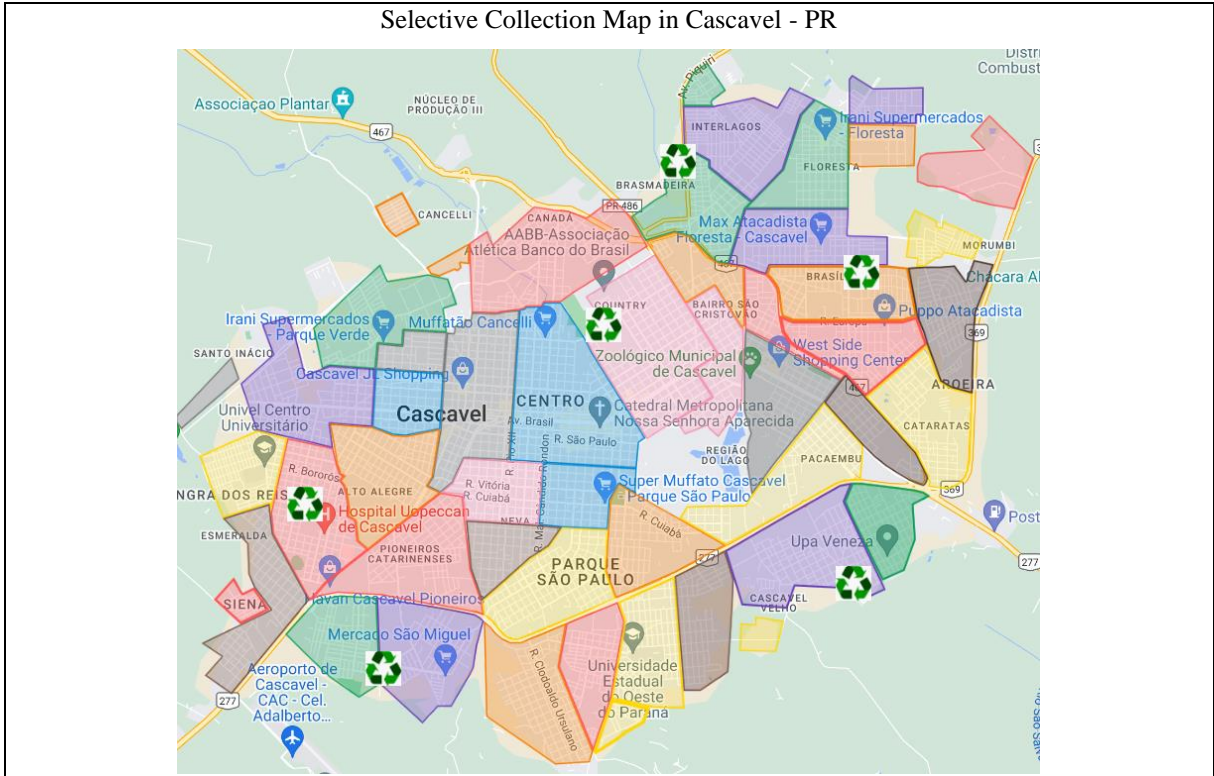
Scientific research is characterized when an explanation of a certain phenomenon is sought; the information obtained can, through techniques and methods, be transformed into data, thus answering the research question (Prodanov & Freitas, 2013). This research was carried out with a qualitative perspective, which makes it possible to explore, identify and evaluate initiatives based on the information obtained from the interviews, thus providing data for future analysis (Creswell, 2014). The orientation of the qualitative approach starts from the activities and expressions of people in their contexts of action (Flick, 2009).



This study was classified as descriptive research, where, by describing the information from the reports obtained in interviews, it makes it possible to outline some characteristics related to the phenomenon among the variables of a given population (Raupp & Beuner, 2012). This research is descriptive in that it seeks to outline the perceptions of individuals regarding the destination of clothing discarded in recycling cooperatives in Cascavel, considering the economic, social and environmental dimensions involved in circular economy practices in this process.

The field of study of this research consists of the six recycling ecopoints of the municipality of Cascavel, due to representing the entire selective collective of recyclables carried out by the municipal government. According to the Municipal Secretariat for the Environment (2023), the ecopoints are assigned to the four recycling cooperatives that have an agreement with the City Hall: ACAMAR, ASCACAR, CAREMEL and COOTACAR. The Ecopoints are part of the "*Reciclar é preciso*" program, constituted from a Technical and Financial Cooperation Agreement between the Municipality of Cascavel and *Itaipu Binacional*, for the construction and implementation of Waste Recovery Units, called Ecopoints. The program includes a collection structure with trucks and collectors from specialized companies, which collect recyclables in 33 sectors of the municipality, and the collected material is

distributed to the Ecopoints, located in strategic regions throughout the city, as shown in frame 2.

Frame 2 - Selective Collection Map in Cascavel - PR



ECOPOINT	INFORMATION
	<p>Ecoponto Manaus Address: 1524 Manaus Street Country Neighborhood Number of members: 8 Employees: 01 manager and 01 administrative technician</p>
	<p>Ecoponto Brasília Address: 52 Noel Rosa Street Brasília Neighborhood Number of members: 11 Employees: 01 manager and 01 administrative technician</p>





	<p>Ecoponto Quebec Address: Aparecida dos Portos Street <i>Guarujá</i> neighborhood Number of members: 12 Employees: 01 manager and 01 administrative technician</p>
	<p>Ecoponto Cascavel Velho Address: Hermes da Fonseca Street <i>Cascavel Velho</i> Neighborhood Number of members: 15 Employees: 01 manager and 01 administrative technician</p>
	<p>Ecoponto Santa Cruz Address: 1400 Tupinambás Stret <i>Santa Cruz</i> neighborhood Number of members: 18 Employees: 01 manager and 01 administrative technician</p>
	<p>Ecoponto Melissa Address: 153 Hibiscos Street <i>Brasmadeira</i> neighborhood Number of members: 32 Employees: 01 manager and 01 administrative technician</p>

Table 2 – Active eco-points in the municipality of Cascavel

Source: elaborated by the author based on data from the Department of the Environment of Cascavel (2023) and research data.

3.2 DATA COLLECTION

Data collection was divided into two stages, the first with the objective of a preliminary survey on the activities of the six ecopoints analyzed and the existence of actions aimed at the

destination of clothing received, and the second aimed at detailing these actions in the ecopoints that carry them out.

The first stage was carried out from August 29 to 30, 2023, through a visit to each of the six ecopoints in the city of Cascavel, using open-ended interviews, applied with the administrative technicians. The visit was previously scheduled with the administrative technician by telephone, and the proposal and objectives of the research were presented. The face-to-face interview with the administrative technician of each of the six ecopoints allowed access to information on the cooperative's routine and destination of clothing received from the selective collective. Administrative technicians have a fundamental role within the ecopoints, one of the functions is to prepare monthly reports of volumes of materials arriving at the ecopoint, accountability reports, registration of cooperative members, among other functions. The interviews with the technicians had an average duration of twenty minutes.

The second stage of the research was carried out in the period of September 2023, in the Santa Cruz and Melissa ecopoints, in which clothing destination initiatives were identified in the first stage of the research, where semi-structured interviews were carried out with managers. In the stage with the managers of the ecopoints, access to information about the daily life of recycling cooperatives was granted, technical and management information about a recycling cooperative: how negotiations with suppliers and customers take place, how local projects were started in the neighborhoods, how the management of a cooperative works and the manager's involvement in daily activities, how cooperatives are selected and what is the manager's view of the circular economy practices carried out in cooperatives. Interviews with managers lasted an average of fifty minutes.

The third stage of the research consists of a group interview in the Santa Cruz and Melissa ecopoints. This stage was carried out in September 2023, when arriving at the site, the participation of the cooperative members who were available was requested so they could participate in the interview. After the invitation, five cooperative members of the ecopoint Santa Cruz took part in the interview and four cooperative members of the Ecoponto Melissa agreed to participate, following the same script. One of the objectives of these group interviews was to understand the vision of the members in relation to the activities carried out by them within the cooperative and also how they see the circular economy initiatives that are practiced by them. The two group interviews lasted an average of fifteen minutes and records were made through authorized recording by the interviewees and subsequent full transcription, in addition to notes.

Regarding the data collection instrument, a semi-structured script containing the items to be collected in the interviews of the second stage was used. Martins (2008) comments that

the script used in an interview should be supported by the theoretical framework, as it will be related to the research and its objectives. Gil (1999) points out that the preparation of the interview script is a fundamental point to achieve the objective of the research in obtaining information about a certain subject or problem. Thus, in this research, the items that were part of it were extracted from the literature indicated in the theoretical-empirical review item.

The structured interview script used with the two ecopoints that have clothing destination actions included the following items:

- a) **Opening:** Clarifications on the research and authorization for recording;
- b) **Project description:** name, start date, team involved, relationship with municipality;
- c) **Volume of discarded clothing received by the cooperative:**
 - approximate volume received since the beginning of the activity and/or monthly/annual;
 - sources of clothing received (selective collection from the municipality, delivery on site by citizens, collection in the community by cooperative members, garment delivery centers, receipt from charitable organizations, other forms);
 - approximate number of garments used that no longer go to the landfill;
 - approximate amount that is not feasible to use and is destined for final disposal (landfill);
- d) **Circular economy practices for apparel applied in the project and how they occur:**
 - maintenance or repair (clothing repair service);
 - reuse of parts: sale, donation, exchange, loan, rent, others;
 - used commercial means: bazaar resale, online market, sale to second-hand stores, others;
 - means of donation used: for charitable organizations, others;
 - reuse of products or components for the production of new clothing products;
 - recycling (destination and type of material use);
 - return to brands/industries with clothing return programs;
 - transfer to other garment delivery centers;
- e) **Benefits from the project:**
 - approximate economic result of the project for the cooperative.
 - social, economic and environmental benefits for the cooperative and for the members.
 - Any other relevant information;

Closing: acknowledgement and questioning disponibility, if any.

3.3 DATA COLLECTION AND ANALYSIS PROCEDURES

As for the data collection procedure, a structured script was used, through interviews with open-ended questions. The questions were organized according to the target audience, facilitating the understanding of the interviewees, and addressed items related to the profile of those involved in recycling cooperatives. The script used in an interview must be based on the theoretical framework, must be related to the research and its objectives (Martins, 2008). Regarding the type of questions, Marconi and Lakatos (2011) state that questions can be open-ended or close-ended. In this research, only open-ended questions were used, allowing freedom in the answers.

The main objective of the analysis is to look for meaning and understanding in the collected data, and a qualitative analysis has comparison as its main tool, since the data can be compared with models already defined, with the data themselves, and with data from other researches (Tesch, 2013).

Data analysis took place in a comparative way, based on the structure of the interview script prepared based on the literature, which made it possible to organize the results of the two ecopoints that carried out the clothing destination initiatives, based on the transcription of the recordings of the interviews carried out in the second stage of the research, considering: volume of discarded clothing received by the cooperative, circular economy practices for clothing applied in the project and how they occur, and benefits arising from the project.

4 ANALYSIS AND INTERPRETATION OF RESULTS.

The main objective of this research is to analyze circular economy practices in the destination of clothing in initiatives organized by recycling cooperatives in the city of Cascavel. In this chapter, the results and discussion of the collected data are presented, initially addressing the recycling cooperatives operating in the Cascavel ecopoints, and a description of the discarded clothing disposal initiatives organized in two Cascavel recycling cooperatives is later presented.

4.1 RECYCLING COOPERATIVES OPERATING IN ECOPOINTS IN CASCAVEL

According to records on the website of the Department of the Environment of Cascavel (2023), at the initiative of the municipal government of Cascavel and with the support of the *Itaipu* Hydroelectric Power Plant, until 2023, six recycling centers were installed in the city, known as ecopoints, which are strategically distributed to serve all regions of the city. They are: *Ecoponto Manaus*, *Ecoponto Brasília*, *Ecoponto Quebec*, *Ecoponto Cascavel Velho*, *Ecoponto Santa Cruz* and *Ecoponto Melissa*. After the implementation of these places, some cooperatives for the separation and sale of recyclable material were organized more efficiently, thus strengthening this new segment that met the need to have a more sustainable city and with tools that could contribute to a greater organization between the parties involved in the process of collecting, separating and selling recyclable materials.

The government of the Municipality of Cascavel participates by providing the ecopoints' infrastructure, such as land and sheds. According to reports obtained with the open-ended questions of the first stage interviews with the administrative technicians of the ecopoints, *Itaipu* provides trucks, machinery and also pays the salary of the administrative technician of each ecopoint, whose main function is the general administration of the cooperative, which include: financial control, inputs and outputs, volume of recyclable material from the ecopoint and purchase of office supplies, food purchase for meals prepared and offered at the ecopoint, among other activities.

It was also reported that the ecopoints have facilities to support workers in cooperatives and sheds to store the collected materials. The cooperatives that operate in the ecopoints are formed by people who, for the most part, collected recyclable material on the streets. Every cooperative has a person who is responsible for the members, responsible for the entire process

of the project of collecting, separating and disposing of the collected material. The general expenses and general maintenance of machinery, trucks and the ecopoint are responsibility of the cooperatives, whose main source of income is the sale of the collected material.

The existence of clothing destination actions in ecopoints is something that has been recently disclosed, and some clothing destination initiatives have occurred on a small scale in recycling cooperatives in Cascavel. This became clearer when it was observed in the interviews with the administrative technicians of the ecopoints that not all of the recycling points receive clothing materials, and that part of those who receive this type of material give destination to the clothing materials received from the selective collection.

In the *Manaus* ecopoint, the cooperative is only receiving electronic waste disposal and is going through a process of hiring personnel, renovating the facilities and purchasing machinery, therefore there are no activities related to discarded clothing.

The cooperative of *Brasília* ecopoint has eleven cooperative members and receives clothing material, and disposal of this material is carried out. The wet and torn material is destined for the landfill and what is used is donated among the cooperative members without any charge for the parts.

The ecopoint *Quebec* has twelve people working in the cooperative and there is no control over the volume of garments that arrive on site. The donation of the pieces that can be used among the cooperative members who work in the ecopoint is carried out and the rest of the garments is destined for the sanitary landfill of the municipality. In this ecopoint there are no organized activities specific to clothing.

The cooperative of the *Cascavel Velho* ecopoint has fifteen cooperative members working and it does not have any clothing disposal activity implemented, and from the clothing material received, what is of interest to the cooperative members is donated to them and the rest is destined for the landfill, which represents the largest volume.

Eighteen cooperative members work in the *Santa Cruz* ecopoint. In this ecopoint, clothing material is collected and there are activities organized by the cooperative with pieces of clothing, which are the donation of pieces of clothing to the members and the sale in the bazaars.

In the *Melissa* ecopoint, the activities carried out in the cooperative are supported by thirty-two members, of which twenty-six are women and six are men. The cooperative carries out the bazaars with clothing material, which take place from Monday to Friday in the afternoon with a single value per piece. Another practice is the sale of torn garments that cannot be used in bazaars to another cooperative that operates outside the ecopoint, in which heavy cleaning towels are made for use in mechanical workshops.

It was observed in this first stage of interviews that only two ecopoints have organized activities aimed at the destination of clothing: the *Santa Cruz* ecopoint and the *Melissa* ecopoint. These two ecopoints later received a new visit to collect data on these initiatives.

4.2 DESCRIPTION OF DISPOSAL PRACTICES OF DISCARDED CLOTHING ORGANIZED BY RECYCLING COOPERATIVES OF *SANTA CRUZ* AND *MELISSA* ECOPOINTS

Considering the practices listed in the script of the semi-structured interview applied in the research, the practices reported by the managers were synthesized and, from the initial incursion into all ecopoints of the municipality, initiatives were identified to dispose of discarded clothing in the *Santa Cruz* and *Melissa* ecopoints. These initiatives were detailed through semi-structured interviews with administrative technicians, managers and cooperative members.

In the *Santa Cruz* ecopoint, the cooperative members do not perform any maintenance or repair on the discarded clothes received from the selective collection and also do not make an exchange or loan. The cooperative practices the reuse of this type of discarded material by commercial means, reselling through the bazaars held in the cooperative's container, in person, and the disclosure of available parts takes place on site. The bazaar takes place every day during the ecopoint's opening hours and is held on some Saturdays of the month, at least twice a month.

Tojo's study (2012) provides an overview of possibilities for increasing the useful life of products through sustainable solutions. This study highlighted the interest of private companies in encouraging the online market and bazaars that happen daily or weekly, as we see in our research. This portrays well what in the research of Stahel (2014) reports one of the advantages of the circular economy, where there is a new business model, as evidenced by the interviews carried out in recycling cooperatives that this initiative through bazaars has increased the income of cooperative members.

The manager of the ecopoint of *Santa Cruz* reported that the greatest difficulty today for the cooperative is to have someone only to serve people who seek the bazaar during the week, and that this service is most often done by the administrative technician. Another reported practice is the donation of pieces of clothing to cooperative members and their families, made without limits on the amount or frequency of donation. The disposal of the pieces that go to the landfill occurs only as a last resort, and these pieces are usually torn or in a poor state of repair.

A study by the European Commission (2018) highlighted an increase in consumption and the amount of textile waste in some European countries, due to fast fashion behavior: what is fashionable today, tomorrow is no longer. This behavior has affected textile production worldwide, including in Brazil. Given this scenario of linear consumption of resources, some practices within the clothing industry have brought possible solutions, among them in the study by HU et.al. (2014), the reuse and recycling of textile waste.

During the group interview, the cooperative members interviewed reported that the clothes they earn during the month are often for themselves, but this initiative has also been important for family members. Another report made is that the clothes donated to them are of good quality and that this donation is the only way to acquire these pieces of clothing.

In the *Santa Cruz* ecopoint, two initiatives for the disposal of clothing materials were identified. The first is the donation of garments that meets the need of the members, as they have the opportunity to choose items for themselves and family members.

The donation of clothes that takes place in the *Santa Cruz* cooperative has the same objective that was defined by the study by Bianchi & Birtwistle (2010). This initiative helps others and has the effect of minimizing the guilt of excessive purchases or, for example, compensates for the degradation of the environment, avoiding increasing the purchase cycle.

The second initiative organized by the cooperative is the reuse of clothing in bazaars, which takes place in the container prepared for the bazaar. These bazaars occur during the ecopoint's opening hours, during the week. The service in the bazaar is done by the administrative technician and employees on a voluntary basis, and the sale value of each piece in the bazaar can vary from R\$1.00 to R\$5.00.

According to the ecopoint manager, each month the volume of garments discarded by the community increases considerably; with this, the stock of garments for the bazaars has remained satisfactory and the number of garments sent to the landfill is small, being only damaged garments that have no possibility of being used.

In the *Melissa* ecopoint, discarded garments are not repaired, and the only way to reuse this material in the cooperative is through bazaar sale or sale to members. The sale of pieces of clothing to the cooperative member occurs throughout the month and the value of each piece is discounted in the commission of the sales of the bazaars.

No repairs are made to the garments received because there are no people or equipment for this type of maintenance and because this type of service is unfeasible. The cooperative does not make donations to other institutions and does not exchange parts with other cooperatives, it also does not make loans or rent any type of material that arrives at the ecopoint. The only way

to reuse discarded clothing is through sale to members and in bazaars. Another data reported by the manager was that the volume is not limited to pieces of clothing, but also to shoes and household items.

Webster's research (2017) defines that the circular economy should be an integrated production process, in high circularity, extending the useful life of products, through the destination in new cycles; contributing to the reduction of garbage, including repair, reuse, remanufacturing and recycling in this production process.

The participants of the group interview at the *Melissa* ecopoint reinforced the information already passed on about not making repairs to discarded garments, and highlighted that most of the garments that are separated by them are in good condition, with almost everything being used. Another important data passed on by the group interviewees is that the disposal of shoes and toys has increased, but that the largest volume of disposal is still garments. They also reported that the number of pieces of clothing that go to the landfill is torn pieces and that this volume has decreased.

In the *Melissa* ecopoint, one of the initiatives for the destination of garments is the sale to cooperative members or the realization of bazaars. The bazaars take place in a container in the yard of the ecopoint, and are held every day in the afternoon. In the morning, the employees responsible for the bazaar separate and classify the items, identify the pieces and take them to the container. The value practiced in the bazaar is unique, of R\$3.00, for all pieces – there is no difference in value if the piece is purchased by a cooperative member or if it is a sale in the bazaar to external parties.

The other destination initiative organized by the cooperative is the sale of torn and unused pieces of clothing in bazaars for a project that sews cleaning tow from clothing scraps. This tow sewing project is carried out by another cooperative that has no connection with the ecopoint. The ecopoint manager pointed out that the largest volume of garment disposal is worn garments, but the disposal of new garments, even with price tags, has been recurrent.

4.3 VOLUME OF CLOTHING TREATED IN THE COOPERATIVES OF THE SANTA CRUZ AND MELISSA ECOPOINTS

According to the information provided by the technicians and managers of the Santa Cruz and Melissa ecopoints, much of the volume of recyclable materials that arrive at the ecopoints comes through selective collection, carried out from door to door by the collection trucks of the

city hall, following a schedule divided into days, streets and times defined in its area of operation.

These clothing materials, when arriving at the ecopoints, are first separated on the conveyor belt, at the same time that the other recyclable materials are separated. Each material is separated into large bags that assist in the separation and organization of the process, thus, the internal logistics part of the ecopoints is more adequate, improves the quality of work of the cooperative members and visually assists in the idea of the daily volume of material collected. In the case of discarded clothing, a first separation is made such as: torn, wet clothes – these pieces do not go into the separation bags, they are reserved in other smaller bags and at the end of the day they are sent along with the rest of the garbage that goes to the landfill. The pieces in good condition and that can be used are separated in the large bags and, as soon as the separation on the conveyor belt ends, usually at the end of the working day, the cooperative members responsible for the bazaars begin to separate and classify the pieces.

At the *Santa Cruz* ecopoint, the volume of clothing pieces per month is an average of approximately 2,000 pieces that are separated and, of this volume, about 75% are used; around 1,500 pieces are destined for donation or sale in the bazaar. Of the volume of parts in good condition, an average fraction of 7% (about 100 pieces) are new parts that still have the store label. The rest of the clothing material, about 400 pieces, which corresponds to 18% of the total, are pieces already well-worn and most often torn, without condition for use and go to landfill.

In the *Melissa* ecopoint, in addition to receiving the clothing materials for the collection of the municipality's trucks, they receive donations in the ecopoint itself, which are usually from shopkeepers who often donate brand-new pieces of clothing with a price tag. The ecopoint does not donate clothes to the members, and when a member is interested in any piece of clothing, they can separate and make the payment at the end of each month. The average volume passed on is 3,000 pieces of clothing per month. About 80% of this volume (2,400 pieces) is used for sale in the bazaar and eventual sales to members. Of the volume of separate parts for sale, 150 parts, around 5%, consists of new parts with labels.

On average 450 garments (15% of the total volume) are not used for sales, but have another destination: on average 10%, which corresponds to 300 garments, are sold for a patchwork sewing project for the production of heavy-duty cleaning tow, used in mechanical workshops and other activities; and on average 150 garments, about 5% of the total volume of garments, go to landfill.

4.4 BENEFITS OF CLOTHING DESTINATION INITIATIVES

In recent years the degradation of the environment has become more evident, one of the pieces of evidence is climate change and events that demonstrate the strength of nature. The research by Goworek et al. (2012) highlights the control of production actions with a longer cycle, strengthening the transition from the extraction of finite resources to renewable energy sources.

The benefits achieved with the correct disposal of recyclable materials, together with the process of increasing the useful life of products, have been taken more into account and do not go unnoticed, as each day increases the need to rethink the consumption of products in general and reduce the extraction of raw materials from the environment. Some of the initiatives that are carried out in the recycling cooperatives in Cascavel have demonstrated the importance of processes for reusing discarded clothing, with donations and sales in local bazaars.

In the following paragraphs, the interviewees reported a little more about the routines of a recycling cooperative, use of resources, meals served on site and impacts on the income of the members.

In the *Santa Cruz* ecopoint, the amount collected in the bazaars has been fundamental for the management of the cooperative's expenses. This amount helps to pay the overhead expenses in the maintenance of equipment, fixed expenses of the month, office supplies and contributes to the purchase of food for the meals that are prepared and served in the ecopoint. The purchases of these foods are made in the neighborhood markets by the administrative technician, and these foods are used in the meals of the cooperative members in the ecopoint, who receive breakfast, lunch and dinner in the ecopoint kitchen. The remaining amount is divided among all members, contributing around 5% to the monthly income of each member.

As for the benefits or impacts of these initiatives organized by the cooperative with the reuse of discarded clothing, the manager replied that "it is certainly less garbage in the landfill". The initiatives also help people in the community, who see with great value the possibility of selling and obtaining products in the bazaar with low prices.

In the *Melissa* ecopoint, the amounts collected from the sales of clothing pieces during the month are destined to the cost of the general maintenance of the cooperative, such as hygiene material, office material; purchase of food products that is offered in the ecopoint and purchase of basic food basket for families of the cooperative.

As for the impacts of these initiatives applied in the cooperative, the manager reported that through a monthly financial monitoring by software spreadsheets, it is noted that each

cooperative member has a monthly income increase of 20%. This average tends to improve because movements have been made to publicize the bazaar, through articles in printed newspapers, newscasts and also through conversation apps.

Regarding the benefits or impacts of the initiatives organized by the cooperative with the reuse of clothing, the manager indicated that less material is sent to the landfill, more products are separated to the bazaar; the results help in the income of the cooperative members, pieces are offered at an affordable price to the needy community, promotes less waste and helps the environment.

4.5 COMPARATIVE DISCUSSION AND CONCLUSIONS

The objective of this research was to identify circular economy practices in the destination of clothing in initiatives organized by recycling cooperatives. Thus, it was sought, first, to establish a statement of the activities carried out in each of the recycling cooperatives. Through semi-structured interviews in the *Santa Cruz* and *Melissa* ecopoints, common initiatives and different points in the destination of clothing were identified, and a comparison table between the two ecopoints was prepared, as shown in frame 3.

Frame 3 - Comparative table between ecopoints

Comparative table between ecopoints		
	SANTA CRUZ ECOPOINT	MELISSA ECOPOINT
Manager	Yes	Yes
Administrative Clerk	Yes	Yes
Number of cooperative members	18	32
Years of implementation of the cooperative	21 years	15 years
Years of implementation of the ecopoint	3 years	3 years
The ways to receive clothing	Selective collection and donation	Selective collection and donation
The forms of cooperative income	Sale of recyclable materials Bazaar	Sale of recyclable materials Bazaar Clothing scrap sale
Accept used garments	Yes	Yes
Volume of garments received on average per month	2,000	3,000
There is any initiative to dispose of this material	Yes	Yes

The forms of destination of the pieces/clothes	Bazaar Donation (members)	Bazaar Sale (members)
The bazaar is advertised	No	Yes
The unit value of used garments	R\$1.00 to R\$5.00	R\$ 3.00
What is done with unused garments	Landfill	Sale for tow sewing Landfill
Some repairs are made to the garments	No	No
Donation of clothing pieces	Yes	No
To whom the clothes are donated	Cooperative Members	-
Loan/rent	No	No
Online sales	No	No
What is done with the amount collected from the bazaars	Helps pay general expenses Food Shopping Split with cooperative members	Helps pay general expenses Split with cooperative members
What are the benefits of reusing garments	Less landfill waste It helps people Possibility to sell clothes with low prices	Less landfill waste More products for the bazaar Aid in the income of cooperative members Affordable price, well under market price Quality of materials sold in bazaars Decreases waste Helps the environment
What is the impact on the monthly income of each member, through circular economy initiatives	Average 5% increase in the monthly income of each member	Average 20% increase in the monthly income of each member

Source: Made by the author (2023).

It is noted that the two ecopoints have been working in the cooperative format for many years, but in the current format as an ecopoint they have been working for three years. The ecopoint of *Santa Cruz* currently has 18 members and the ecopoint of *Melissa* has 32 members. The way of receiving clothing through the selective collection and donation of shopkeepers is common to both ecopoints, and both ecopoints receive clothing material.

The income of each ecopoint happens through the sale of recyclable materials to industries, and in the case of the *Santa Cruz* ecopoint, another form of resource for the cooperative is the sale of pieces of clothing in bazaars. In the case of the *Melissa* ecopoint, in addition to the sale of material for industry, a bazaar, there is also the sale of torn clothes for a patchwork sewing

project for cleaning tow. With this retail sale, the *Melissa* ecopoint has been decreasing every month the volume of clothing material that goes to landfill.

One of the differences shown in table 3 is the volume of pieces that arrives in each ecopoint: in *Santa Cruz* it is an average of 2,000 pieces per month and in *Melissa* it is 3,000 pieces of clothing on average per month, which can impact the monthly results of each ecopoint. In the *Santa Cruz* ecopoint, in addition to the bazaars, the donation of pieces of clothing to the cooperative members is also carried out, without restriction on the number of pieces. This donation initiative for members can be important for the quality of life of these workers, as it consists of the amount they no longer spend on buying clothes and can buy other everyday items.

In the *Melissa* ecopoint, there is no practice of any type of donation, including for cooperative members or other charities. The practice among members is to purchase clothing for their own use or that of family members. According to *Melissa's* manager, this type of sale to members has not impaired their access to the pieces in which they have an interest and the value of each piece is the same as that practiced in bazaars. Another common point between the *Santa Cruz* and *Melissa* ecopoints is that no repairs are carried out on clothing pieces, nor loan or rent these pieces, as this mainly repair practice would end up disrupting production within the waste separation line in general.

Other reasons for not carrying out repairs on garments is the time it takes to make and mainly because they do not have their own people and machinery for this, and the *Santa Cruz* manager reported that the cooperative members prefer to stay on the material separation line, as this time with repairs of the clothes would harm the volume of separated material. The bazaars in both ecopoints take place in person, and there is no online sale of products from the bazaar.

The control of the inputs of values through sales in the bazaar is done by the administrative technician. Regarding the application of the amounts collected from the bazaars, *Santa Cruz's* manager passed on that this amount helps paying the general expenses of the cooperative and some food purchases are also made for the meals that are served in the ecopoint to the members; the rest of the balance is divided between them. In *Melissa*, the manager explained that the amount collected is used to pay general expenses and is shared with the members.

Regarding the impact on workers' income, in the *Santa Cruz* ecopoint, the average increase in income is 5% in the salary of each member, and in *Melissa* this percentage is higher, reaching 20% in the salary. The difference between the impact of the values between the ecopoints can be explained by the dynamics of the bazaars, since the space for the bazaars in *Santa Cruz* is

not open to the public and the service only happens during the week when someone arrives at the place, while in *Melissa* the service is done by two cooperative employees, who are in the ecopoint container performing the service. This dynamic of service and the exposure of products are fundamental to the success of the initiative carried out in the cooperative. In addition to this aspect, the volume received and the minimum amount practiced can also impact income, as it is higher in *Melissa*.

Regarding the benefits of these initiatives in cooperatives, in the ecopoint *Santa Cruz* it was indicated the reduction of garbage going to landfills, the generation of products for the bazaars; the discarding of garments helps the people of the cooperative and the discarded garments have good quality, this contributes to the economy during the month because there is no extra expense with the purchase of clothes, and there is the possibility for the external community to buy garments with a below-market price.

In the *Melissa* ecopoint, the benefit was indicated as the smaller volume of material that goes to the landfill, the increase in clothing options for the bazaar and the reduction of waste. The main benefit is in the income of each member, the contribution to the environment, and the maintenance of the bazaar with products, helping in the expenses of the cooperative, and access to good clothes at an affordable price.

It can be seen from the results presented that the clothing destination initiatives, organized by the cooperatives in the ecopoints of the city of Cascavel, are related to sustainable development, whose main benefit is to reduce the waste of clothing material, contributing directly to the environment and society as a whole. Another benefit of the initiatives carried out in the ecopoints and that was evident in this research is the positive impact on the monthly income of the cooperative members, with an increase in the salary of these workers and donations of clothes to the cooperative members, helping their cooperative members and families.

5 FINAL CONSIDERATIONS

The research developed achieved the proposed objectives of analyzing circular economy practices in the destination of clothing in initiatives organized by recycling cooperatives in Cascavel. Among the specific objectives, the clothing disposal initiatives carried out by recycling cooperatives in Cascavel were described, the volume of discarded clothing that no longer goes to the municipal landfill was identified, the circular economy practices for disposing of discarded clothing in ecopoints and the benefits arising from these initiatives were identified.

The result of this research pointed out that initiatives for the reuse of clothing received by cooperatives through the disposal of selective collection are being carried out in two of the six ecopoints in the municipality of the city of Cascavel, the ecopoints of *Santa Cruz* and *Melissa*, which have organized initiatives for the reuse of garments through the donation of clothes to cooperative members and the sale of this clothing material in bazaars.

It can be considered that these circular economy initiatives for clothing disposal carried out by the recycling cooperatives of *Santa Cruz* and *Melissa* have contributed to sustainability in the city of Cascavel; they have also contributed to the reduction of clothing material that goes to the municipal landfill, have met the need for cooperative members who receive donations of clothing pieces, and the amount collected by the bazaars has contributed to the economic development of recycling cooperatives, also presenting a positive impact of between five and twenty percent increase in the income of cooperative members, benefiting their families.

As a conclusion, it was possible to point out that the garment disposal practices applied in the two analyzed cooperatives meet the propositions of the Circular Economy, since they increase the useful life of the garment material received and separated, generate a new cycle of use by donation or bazaar, and also enable the reuse in another activity in the destination for the production of tow. Although they can be considered initial practices, since they do not apply all the options suggested in the literature, they do provide an important benefit in terms of income for those involved and many contributions to environmental conservation.

Future studies that may contribute to the increase of circular economy initiatives within garment disposal activities in recycling cooperatives in a way that meets the dimensions of sustainability are recommended, identifying the causes that lead other cooperatives in the municipality not to adhere to these garment disposal practices. Studies are suggested for the implementation of clothing reuse initiatives in other recycling cooperatives in the municipality,

as well as for the expansion of practices not yet adopted in those that already have identified initiatives.

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