



Mix Sustentável



Rethinking Processes: The Upcycling Method for Sustainable Apparel

Repensando Processos: Método Upcycling para o Vestuário Sustentável

Repensando Procesos: El Método del Upcycling para la Indumentaria Sostenible

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Abstract: The concepts of sustainability highlight the importance of socio-environmental responsibility, and fashion companies have been adopting more conscious production models to reduce environmental impact. In this context, upcycling has gained prominence as a competitive strategy aligned with sustainable

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practices. This study aims to identify the contributions of upcycling to sustainable fashion. The research is qualitative in nature, with a descriptive approach and data collected through bibliographic research and a case study conducted with the brand In Core EcoDesign. The results indicate that upcycling contributes significantly to the sector by reducing textile waste, extending the lifecycle of materials, enhancing creativity in the design process, and fostering a more conscious relationship between product and consumer. Furthermore, it reinforces the role of the designer as a transformative agent and highlights the potential of this practice as a tool for building a more ethical, functional, and sustainability-oriented fashion industry.

Keywords: sustainability; fashion; design; upcycling; *autoral*.

Resumo: Os conceitos de sustentabilidade evidenciam a importância da responsabilidade socioambiental e empresas de moda vêm adotando modelos produtivos mais responsáveis, que reduzem o impacto ambiental. Nesse contexto, o *upcycling* tem se destacado como estratégia competitiva de diferenciação alinhada às práticas sustentáveis. Esta pesquisa tem como objetivo identificar as contribuições do *upcycling* para a moda sustentável. Classifica-se como qualitativa quanto à abordagem e descritiva quanto ao objetivo. A coleta de dados foi realizada por meio de pesquisa bibliográfica e estudo de caso com a marca In Core Ecodesign. Os resultados indicam que o *upcycling* contribui para o setor ao reduzir resíduos têxteis, estender o ciclo de vida dos materiais, valorizar a criatividade no design e promover uma relação mais consciente entre produto e consumidor. Além disso, destaca o papel do designer como agente transformador e aponta o potencial da prática como ferramenta para uma moda mais ética, funcional e comprometida com a sustentabilidade.

Palavras-chave: sustentabilidade; moda; design; *upcycling*; *autoral*.

Resumen: Los conceptos de sostenibilidad ponen de manifiesto la importancia de la responsabilidad socioambiental, y las empresas de moda han venido adoptando modelos productivos más responsables, que reducen el impacto ambiental. En este contexto, el *upcycling* se ha destacado como una estrategia competitiva de diferenciación alineada con las prácticas sostenibles. Esta investigación tiene como objetivo identificar las contribuciones del *upcycling* a la moda sostenible. Se clasifica como cualitativa en cuanto al enfoque y descriptiva en cuanto al objetivo. La recolección de datos se realizó mediante investigación bibliográfica y un estudio de caso con la marca In Core Ecodesign. Los resultados indican que el

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ISB: Conceptualization; methodology; investigation (case study based on interviews); qualitative data analysis; data discussion; visualization; writing – original draft; writing – review & editing. FHB: Methodological support; investigation support; qualitative data analysis; data discussion; writing – review & editing; RAC: Methodological support; investigation support; qualitative data analysis; data discussion; writing – review & editing; IS: Methodological support; investigation support; qualitative data analysis; data discussion; writing – review & editing.

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upcycling contribuye al sector al reducir los residuos textiles, extender el ciclo de vida de los materiales, valorar la creatividad en el diseño y promover una relación más consciente entre el producto y el consumidor. Además, destaca el papel del diseñador como agente transformador y señala el potencial de la práctica como herramienta para una moda más ética, funcional y comprometida con la sostenibilidad.

Palabras clave: sostenibilidad; moda; diseño; *upcycling*; autoral.

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1 INTRODUCTION

Given the widespread access to information, fashion consumers have become increasingly attentive and demanding regarding brands. In the face of this constantly changing scenario, it is up to the designer to find solutions for creating products that prioritize sustainability (Bogner, 2019). In this context, market competitiveness drives companies to adopt sustainable practices in order to remain active. In the apparel industry, sustainable design stands out as a solution by balancing economic viability, environmental responsibility, and social equity, reducing waste and extending product life cycles (Silveira, 2024).

The growing prominence of these concepts and the transformation in consumer behavior indicate increasing attention to ethical and sustainable fashion. This concern has gained strength in recent years in Brazil, encouraging national companies to align with practices adopted in the international context, such as Reverse Logistics and Sustainable Consumption, as strategies to incorporate sustainability into the fashion sector (Vilaca *et al.*, 2016). Thus, promoting conscious consumption implies recognizing the active role of each consumer, highlighting the importance of their emotional relationship when choosing the garments they will wear. This involvement contributes to the adoption of more responsible purchasing and usage practices, reinforcing their participation in building a more sustainable future (Silveira, 2024).

Adopting sustainable practices today, in a scenario marked by constant stimuli to consumption, represents a major challenge. To meet a new profile of consumers concerned with more conscious choices, it is essential that designers move beyond their comfort zones and develop innovative solutions for the fashion industry (Pinto; Sousa, 2015).

This research aims to identify the contributions of upcycling to sustainable fashion. It is justified by the growing demand for sustainable practices in the fashion industry, driven by a more conscious and demanding consumer. In this context, upcycling stands out as a relevant strategy by promoting the reuse of materials and the reduction of waste, aligning with the principles of sustainable design. In addition to the environmental impacts caused by the disposal of textile waste from garment manufacturing, the relevance of upcycling as an effective strategy to mitigate this problem is highlighted.

In this way, upcycling also contributes to job creation, as it opens opportunities within clothing companies for a new production sector. Thus, understanding its contributions becomes essential for the development of innovative and responsible solutions for the sector. Based on the methodological classification proposed by Gil (2008), this article can be understood as: (I) qualitative research with regard to the research problem; (II) descriptive research in relation to its objective; and (III) regarding the technical procedures for data collection, bibliographic research and a case study with the brand In Core Ecodesign, located in the municipality of Florianópolis, Santa Catarina, were conducted through online interviews between April 6 and 12, 2025. The results obtained were interpreted using qualitative data analysis. The theoretical framework addresses: Sustainability, Sustainable Fashion, Sustainable Design, Upcycling, and *Autoral* Fashion.

2 SUSTAINABILITY

“Meeting the needs of the present without compromising the ability of future generations to meet their own needs” has been the definition of sustainable development since the publication of the Brundtland Report in 1987 (UNEP; SETAC, 2007).

According to Viegas, Bianchi, and Medeiros (2015, p. 3, our translation), “the concept of sustainability explores the relationships between economic development, environmental quality, and social equity”. Complementarily, Oliveira, Sposto, and Blumenschein (2012) state that sustainability is a systemic concept involving economic, environmental, cultural, and social aspects, aimed at achieving sustainable development.

The sustainability concept of the Triple Bottom Line (TBL), proposed by British sociologist John Elkington in 1984, encompasses three interdependent dimensions: economic, environmental, and social (Müller *et al.*, 2018). According to the authors, it is the core values of companies that drive sustainable practices, which unfold into the following dimensions:

- a) Social: involves the human capital that composes organizations, adequate wages, people’s well-being, working conditions, education, safety, and leisure;
- b) Economic: concerns the production, consumption, and distribution of goods and services in a way that enables profit generation, job creation, attraction of consumers, cost reduction, anticipation and management of risks, and the pursuit of competitiveness;
- c) Environmental: seeks to assess impacts generated on the environment, including energy and resource conservation, the consumption of renewable and less polluting energy, recycling, minimization of packaging, and reduction of carbon emissions, as well as the generation of waste (solid or otherwise) resulting from economic activity processes.

The United Nations Conference on the Human Environment, held in 1972 in Stockholm, Sweden, was the first major meeting organized by the UN with an exclusive focus on environmental issues, marking the sustainability debate through the introduction of concepts that would later become the pillars of the international environmental agenda adopted by United Nations member countries (Lago, 2013).

In this context, the “6 Rs of Sustainability”, Rethink, Replace, Repair, Reduce, Reuse, and Recycle, are guidelines proposed by the United Nations Environment Programme (UNEP) and the Society of Environmental Toxicology and Chemistry (SETAC) to promote a sustainable management model throughout the product life cycle. Thus, the first three Rs guide product planning, since when a product is properly conceived and designed, considering these initial planning stages, it becomes possible to proceed to the subsequent actions: reduce, recycle, and reuse (UNEP; SETAC, 2007; IBICT; CNI, 2014). See Table 1.

The “Rs” were created with the aim of broadly engaging consumers, promoting individual changes capable of influencing collective behavior. The approach was also designed to support industrial production, authorial fashion, and environmental education processes. In this sense, the 6 Rs can be incorporated into the

Table 1 – 6 Rs of Sustainability (Life Cycle Thinking)

RETHINK	Reassess the product and its functions to ensure the highest possible efficiency throughout its life cycle, considering aspects such as energy consumption, the environmental impacts of the materials used, the possibility of replacing components to extend its use, and its destination after disposal, thereby promoting more conscious and sustainable use.
REPLACE	In product development, this refers to replacing toxic substances used in the manufacturing stage with less toxic or non-toxic alternatives, with the aim of protecting human health, animals, plants, and the environment.
REPAIR (REDESIGN)	This consists of developing and designing the product in such a way that its components can be easily replaced or restored, thereby extending its useful life and preventing premature disposal.
REDUCE	This involves adopting strategies that minimize the consumption of raw materials, energy, and water, as well as greenhouse gas emissions throughout the product life cycle.
REUSE	This means developing products with designs that allow for disassembly, so that their components can be reused in new cycles of use.
RECYCLE	This refers to transforming discarded products and materials into new raw materials or new products, reducing the demand for natural resources and pollution.

Source: Adapted by the author (2025), based on UNEP and SETAC (2007) and IBICT and CNI (2014).

fashion industry as a strategy to reduce the use of natural resources and waste generation, promoting practices aligned with sustainable fashion, as discussed in the following section.

2.1 Sustainable Fashion

In the contemporary context, the fashion industry is considered the third largest economic activity in terms of income generation and financial turnover. However, this prominent position does not correspond to responsible environmental performance. It may seem contradictory to associate fashion with sustainability, considering that “the excessive consumption of clothing and accessories, as well as the logic of fast fashion, result in short product lifespans and superficial relationships with them” (Berlim, 2020, p. 13, our translation).

Within this context, much of the production resulting from the design process is tied to a commercial logic in which natural resources and energy are converted into products that later become waste in increasing volumes, with the aim of boosting sales and market expansion (Marteli *et al.*, 2018).

According to the Ellen MacArthur Foundation (2019), clothing accounts for more than 60% of all textiles used, and over the past 15 years, garment production has approximately doubled, driven by the growth of the global middle class and increased per capita sales in mature economies. At the same time, clothing utilization has declined by around 40%. Both phenomena are directly linked to fast fashion, characterized by the rapid renewal of styles, a greater number of collections per year, and often lower prices.

In light of this scenario, Fletcher and Grose (2011) point out that although certain activities are con-

sidered coherent within dominant economic models, they also represent one of the main barriers to deep and systemic change toward sustainability. Faced with this challenge, designers play a key role in transforming the fashion industry and must develop creative approaches that break with established paradigms. To do so, it is essential that they are well informed and motivated, adopting practices that reshape the system as a whole and acting as facilitators of a more sustainable fashion industry.

However, due to its inherently constant renewal, fashion faces difficulties in incorporating truly sustainable design. Therefore, sustainability in fashion design must be considered at all stages, from product conception to post-sale processes (Silveira, 2024).

Considering these implications, Fletcher and Grose (2011) emphasize that the impacts of the textile industries on the environment include “climate change, chemical pollution, biodiversity loss, excessive or inappropriate use of non-renewable resources, waste generation, negative effects on human health, and harmful social effects on producing communities.”

Corroborating this view, Vilaca *et al.* (2016, p. 3, our translation) state that “the fashion sector presents several socio-environmental risks. In addition to being a dynamic field, it results in rapid obsolescence, high volatility, and frequent impulse purchases, as well as the premature disposal of products.”

As in other industries, fashion companies face the challenge of reconciling sustainability with market competitiveness, while seeking to meet consumers who are increasingly attentive to the environmental impacts of products and production processes (Vilaca *et al.*, 2016).

According to Schuller (2019), the fashion production chain faces serious challenges such as social dumping, child labor, structural subordination, and tax fraud, which compromise brand reputation and market viability. In this context, the adoption of compliance programs, including internal mechanisms for integrity, auditing, and ethics, becomes essential to ensure that the entire production chain aligns with current legislation and the principles of social responsibility. In Brazil, ABVTEX monitors social responsibility in the textile supply chain by associating fast fashion retailers and luxury brands, contributing to the certification and control of sustainable practices in the sector (Schuller, 2019).

The fashion sector and textile companies are expanding their scope of action and increasingly view sustainability as a growth strategy. As a result, they have progressively adopted sustainable practices to minimize environmental and social impacts. At the same time, consumers have demonstrated greater awareness and concern regarding the negative effects of industrial production and consumption on the environment and society (Silveira, 2024). An alternative for reducing environmental impacts in the textile and apparel sectors is reverse logistics, which enables the return of unused garments to companies to be refurbished, recycled, or directed to community groups that employ artisanal techniques, thus promoting their reintegration into the consumption cycle (Schulte *et al.*, 2014). Reverse logistics aligns with the values of slow fashion, which, beyond reducing production speed, represents a new worldview that breaks away from the practices and values of fast fashion (Fletcher; Grose, 2011).

An important aspect to consider is that, currently, not only garment reverse logistics has been adopted, but there is also a legal requirement for the reverse logistics of packaging. Industries have been fined for failing to implement this practice. The Política Nacional de Resíduos Sólidos (Lei nº 12.305/2010) establishes

administrative, civil, and criminal penalties for non-compliance, including fines, warnings, suspension of activities, and the obligation to repair environmental damage (Brasil, 2010). To comply with the legislation, companies may adopt mechanisms such as Voluntary Delivery Points (VDPs), donations to cooperatives, and environmental compensation programs. Reverse logistics thus constitutes an essential tool for sustainable waste management, aligning with legal requirements and environmental, social, and governance (ESG) commitments (ILOG – Instituto Legislativo de Política Pública, 2024).

Schulte *et al.* (2014, p. 92) argue that “the longer the lifespan of a garment, the less impact it causes; however, it must have added value and differentiation so that consumers develop an emotional attachment to the piece.” In this sense, the circular economy emerges as a strategic approach to extending product lifespans, seeking to keep resources within production chains for as long as possible through repairs, upgrades, and material recycling (Silveira, 2024).

From this perspective, sustainability may represent a challenge for fashion, but it also holds the potential to profoundly reshape the sector, directly impacting all professionals involved in the textile industry and product development (Fletcher; Grose, 2011). In this context, the principles of the circular economy can be applied to fashion to reduce natural resource consumption and waste generation by transforming them into new, higher value-added products without the need for complex industrial processes, through sustainable design, which is addressed in the following section.

3 SUSTAINABLE DESIGN

Design can act as a facilitator in the process of making fashion more sustainable. According to Vezzoli *et al.* (2010), designing products and services that incorporate social and aesthetic qualities while maintaining a low environmental impact defines design for sustainability. With regard to product development linked to environmental sustainability, it is necessary to consider the criteria, methods, and investments of life cycle design, which addresses the life cycle of products.

Sustainable design for apparel considers environmental impacts from product conception through to the end of its useful life. The objective is to reduce waste, pollution, and the consumption of natural resources (Vezzoli *et al.*, 2010). In this sense, it is associated with economically viable production, environmental responsibility, and social equity, and can contribute to reducing generated waste and extending product life cycles. To achieve this, the principles of design for the dimensions of sustainability must be observed (Table 2).

In view of the above, sustainable fashion must take into account the principles of design. According to Manzini and Vezzoli (2010), the balance among environmental, economic, and social dimensions should guide initiatives aimed at reducing the environmental impacts of human activities.

However, the short life cycle of fashion products has become a major environmental concern. From raw material extraction to disposal, various impacts are generated, and as an alternative to mitigate them, brands have emerged that adopt the concept of upcycling—an approach that is discussed in the following section.

Table 2 – Dimensions of Sustainability and Their Principles

PRINCIPLES OF DESIGN FOR SUSTAINABILITY	
Environmental Dimension	Minimize the use of resources
	Select low-impact resources and processes
	Optimize product lifespans
	Extend the life of materials
	Facilitate disassembly and assembly
Economic Dimension	Improve working conditions
	Increase equity and fairness among stakeholders
	Promote and enable sustainable and responsible consumption
	Support and integrate people with disabilities and marginalized groups
	Promote social cohesion
	Strengthen and add value to local resources
Social Dimension	Strengthen and value local material resources
	Promote the reintegration of waste
	Respect and value local culture
	Promote network-based organization
	Foster the local economy
	Ensure profitability
	Ensure competitiveness

Source: Vezzoli *et al.* (2010).

4 UPCYCLING

Upcycling is a process that transforms materials that would be or have been discarded into new products without devaluing them, thereby extending their life cycle and adding aesthetic, functional, and symbolic value, with the aim of preventing the waste of what can still be useful. Creativity plays a central role in this process, allowing discarded materials to be treated as raw materials for new value-added pieces. By reusing waste without the need for recycling processes, this practice contributes to reducing the consumption of new raw materials during product creation, which may lead to decreases in energy consumption, air and water pollution, and even greenhouse gas emissions, in addition to promoting more sustainable consumption in fashion (Braungart; McDonough, 2002; Schulte *et al.*, 2014; Vilaca *et al.*, 2016; Morelli; Ender, 2017; SEBRAE, 2018; Silveira, 2024).

In this context, the designer plays a fundamental role in the process, since “techniques developed by a designer, such as remodeling, sewing, and cutting, add value and enable a new useful life for a garment previously considered non-reusable” (Schulte *et al.*, 2013, p. 205). The adoption of upcycling may occur for different purposes, such as:

- **Waste reduction:** companies can reuse materials that would otherwise be discarded, assigning them a new use;
- **Business strategy:** upcycling can also be adopted as a business strategy, encompassing both production processes and brand communication (SEBRAE, 2018).

SEBRAE (2018) provides guidelines for applying the concept of upcycling as a business strategy:

- a) Identify waste within the company or society by observing materials that could be reused;
- b) Define the type of raw material that can be used in the business. This may involve a product that gives rise to another product or a material that results in a new item. Attention should be paid to the characteristics and composition of the material to ensure product quality;
- c) Consider establishing partnerships with companies that discard materials that can be used as raw materials in the production process;
- d) Engage the team in creative processes, fostering innovation in product development, either through the adaptation and transformation of existing items or through the creation of entirely new products.

According to Aus (2011), the advantages of applying upcycling in industry include: Ease of implementing design processes and the speed with which designers can engage in the creation of value-added products; The possibility of solving problems within the industry without the need to resort to waste management; Minimization of energy resource use; The ability to reduce or even eliminate waste generation; The valorization of existing materials; The creation of a unique “new” product using the “old” within mass production; The opportunity to select the most appropriate process through both environmental and socio-ethical perspectives.

This potential for reinvention demonstrates that sustainable fashion goes beyond material reuse, opening space for new design and market opportunities. Fletcher and Grose (2011, p. 129) argue that “what is sent to landfill is not only clothing: design and business opportunities are also buried in a hole in the ground.”

From this perspective, the designer’s role extends beyond technical functions, also incorporating the symbolic dimension of products and their relationship with consumers. As noted by Schulte *et al.* (2013, p. 196), “the designer has the role of translating the symbolic into the tangible, adding values that affect and sensitize consumers so that they can identify with the product.”

Upcycling in fashion does not follow a fixed model of application, being guided by the designer’s creativity and the brand’s objectives. Pattern-making, finishing, and embellishment techniques are adapted according to available materials, which range from fabric remnants and garments with minor defects to discarded clothing and other textile waste. The process of sourcing and selecting these inputs also varies according to the aesthetic and functional intent of each creation, making upcycling a versatile practice intrinsically linked to the creator’s perspective (Farias, 2017).

Considering the aspects discussed, upcycling can be understood as a strategic practice within sustainable fashion, as it combines material reuse, innovation, and symbolic value. Its application depends directly on the

designer's active role, acting as a mediator between environmental concerns and the consumer's aesthetic and emotional experience. In this way, upcycling emerges as a pathway for rethinking fashion production processes, expanding creative possibilities and aligning closely with *autoral* fashion, a topic addressed in the following section, insofar as the creative process comes to express identity, intention, and values beyond industrial logic.

5 AUTORAL FASHION

Autoral fashion can be understood as a creative process that, by incorporating elements from other cultural systems rather than relying exclusively on the fashion system, produces rare and singular objects not governed by mass production. This results in products with exclusive characteristics and differentiated, non-homogeneous design, in which the independent designer is configured as a cultural worker who operates through creative and reflective capacities, legitimately positioning themselves in the market alongside corporate structures and promoting transformations in individuals, products, modes of consumption, and everyday life itself (Correa, 2016; Felipe *et al.*, 2020; Pinto *et al.*, 2023).

According to Correa (2016), transformations in cultural practices within a post-Fordist context have given rise to new forms of consumption oriented toward demands for singularity and distinction. In this scenario, independent workers act as cultural agents, producing non-massified symbolic goods that confer identity upon users and re-signify the way of “dressing” everyday life.

Still according to the author, the consumption of “*autoral*” clothing and design products is associated with individuals' need to differentiate themselves, express authenticity, and assert their own identities in relation to others through aesthetic choices perceived as original and exclusive.

This perspective on *autoral* fashion is further developed by Silva, Rosa, and Novelli (2023, p. 12, our translation), who define *autoral* fashion as “the work of creators who intensify their practice within a sustainable and meaningful logic, in which the creative proposal goes beyond commercial purposes, raising questions related to the methods used in the ideation of these projects, particularly with regard to body studies.”

Based on these perspectives, *autoral* fashion emerges as a field that articulates creation, identity, and meaning, while shifting away from the logic of standardization toward practices grounded in authorship and symbolic value.

6 CASE STUDY

The concept of upcycling in fashion is not limited to isolated collections developed by designers; it is also adopted as a conceptual foundation by brands that incorporate it as part of their identity. In such cases, upcycling guides the entire production process, fostering not only a connection with a specific audience but also the construction and dissemination of a lifestyle aligned with sustainability (Farias, 2017).

In Core EcoDesign represents a practical application of this approach, having upcycling as the central

foundation of its production. Using kites collected through a partner company, In Core EcoDesign, founded in 2021, develops jackets, bags, backpacks, and other products (Figure 1). The retail prices of the products range from R\$ 100.00 to R\$ 259.00 for bags, backpacks, and waist packs, while jackets range from R\$ 399.00 to R\$ 599.00, depending on the model, size, and amount of material used. According to the brand's founder, an average of 20 kites have already been transformed into new products, in addition to the use of other reclaimed raw materials. It is therefore estimated that over its four years in the market, the brand has been responsible for giving a new destination to at least 80 meters of textile waste, considering that kites can vary from 4 to 17 meters in length.

Figure 1 – Products and production processes.



Source: In Core Ecodesign (2025).

The creative process begins with the raw material itself, taking into account its functionality and the practicality it can add to the products. For the lining of the jackets, the designer prioritizes the use of sustainable fabrics and currently works with Ecological PET Jersey (50% cotton and 50% PET polyester), purchased from Aradefe Store, located in Brusque, SC. Kites are currently used due to their abundance and high reuse potential. In their original form, their cost varies significantly, ranging from approximately R\$ 2,000.00 for used models in good condition to around R\$ 11,000.00 for new kites, depending on brand, model, and year of manufacture (Kitesurfer Brazil, 2023b).

The kite, also known as pipa or papagaio in some regions, is the main piece of equipment that gives name to the sport of kitesurfing. It consists of an arched wing predominantly made of resin-coated ripstop nylon, a

lightweight, durable, water-resistant fabric similar to that used in parachutes. Different kite models and sizes are employed to adapt to varying conditions and styles of the sport (Delta Experiences, 2022; Kitesurfer Brazil, 2023a).

However, despite its durability and lightness, nylon (or polyamide) is a synthetic fiber derived from non-renewable resources; it is non-biodegradable and has an estimated decomposition time of approximately 400 years. Its production involves complex processes that generate environmental impacts, such as the use of crude oil and the emission of nitrous oxide, a greenhouse gas that contributes to pollution and to the depletion of the ozone layer (Portal VirtuHab – UFSC, 2024).

Given the environmental impacts associated with nylon, particularly its long decomposition time and non-renewable origin, reusing waste such as discarded kites represents an intelligent and sustainable way to reduce environmental damage and assign new purpose to materials that would otherwise be lost, although this practice poses challenges for designers. As reported by the brand's founder, aligning sustainability with economic viability presents significant challenges, especially due to the time and labor required in the upcycling of complex materials such as kitesurfing kites. Their specific characteristics, including irregularities and pre-established colors, directly affect production time and, consequently, the final price of products, demanding greater dedication in both the creative and production processes and influencing commercial viability.

Considering these aspects, design can be understood as a forward-looking process in which designers plan and oversee product creation by considering cultural, economic, social, and environmental factors in order to generate positive impacts, ensuring that solutions are aligned with the needs of the context in which they are inserted (Morelli; Ender, 2017).

According to the brand's founder, In Core Ecodesign's target audience is between 25 and 45 years old and includes men and women who engage in outdoor activities, travel frequently, and demonstrate environmental awareness. Instagram data indicate that these followers adopt responsible practices, such as waste separation, and show political engagement. The creative process is collaborative: customers choose the model, color, and print of each item, depending on the availability of materials. For the founder, consumer responsibility is essential to encourage conscious choices and promote change within the fashion industry.

The more consumers adopt attitudes focused on environmental protection, the more they tend to engage with sustainable fashion. There is a clear and positive relationship between such attitudes and conscious consumption within the fashion sector (Vassalo *et al.*, 2024, our translation). Thus, the importance of In Core Ecodesign's work is highlighted, as it demonstrates how upcycling can be an effective strategy for combining innovation, environmental awareness, and functional design.

The brand's work not only contributes to reducing environmental impacts through the reuse of synthetic materials that are difficult to decompose, but it also proposes new pathways for the sustainable fashion sector. By transforming waste materials that, in their original form, had no further utility and would otherwise remain in the environment for centuries, as is the case with kites, into products with aesthetic and functional value, In Core strengthens the role of design as an agent of change and reinforces the importance of responsible practices in building a more ethical future for fashion and for the environment.

7 FINAL CONSIDERATIONS

Based on the case study of In Core Ecodesign, it is possible to identify how the principles discussed throughout this study are put into practice. Upcycling, adopted as the foundation of the brand's production process, contributes significantly to the construction of a more ethical and responsible fashion industry.

The creative process at In Core begins with the possibilities offered by the waste materials themselves, demonstrating that upcycling does not depend on a fixed model, but rather on a careful and creative perspective regarding what is available. In this way, each piece carries not only design value but also the history of the reused material, highlighting the importance of the designer in this process of re-signification.

The estimate that approximately 20 kites have been reused in new creations, resulting in around 80 meters of textile material being diverted from disposal, reinforces the effectiveness of upcycling as a waste-reduction strategy. Considering the durability and environmental impact of resin-coated ripstop nylon, this volume underscores the importance of the brand's role in mitigating environmental damage and in valuing resources that would otherwise be improperly discarded.

In this sense, the experience of In Core Ecodesign demonstrates how upcycling can be consolidated as a creative and strategic approach within the design process. Thus, the contributions of upcycling can be observed across multiple dimensions. From an environmental perspective, the practice stands out for minimizing the volume of discarded waste, especially textiles, by reintegrating unused materials into new cycles of use. In the social dimension, upcycling strengthens the emotional bond between consumer and product, attributing symbolic value to the pieces and encouraging more conscious consumption choices. From an economic standpoint, it offers a viable and innovative alternative for small businesses and independent brands, which view waste as an accessible and creative source of raw material, aligned with the demands of a market increasingly sensitive to sustainability issues.

More than simply reusing materials, upcycling involves reinterpreting possibilities, promoting new forms of creation that engage with the present and point toward more conscious paths for the future of fashion.

The movement toward sustainability represents a major challenge, as it requires individuals to rethink their attitudes toward the environment in which they live, a task made more difficult by the growing individualism of modern society. The fashion market, characterized by accelerated production and consumption, fuels consumerism and hinders the effective adoption of sustainability. For sustainability to move beyond being merely a capitalist trend, both small and large brands must commit to real change, led by engaged individuals, and legal frameworks must be established to guide personal, corporate, and governmental actions across social, environmental, and economic dimensions (Santos; Gondim, 2019).

Based on the results obtained, it can be concluded that the upcycling practice adopted by In Core EcoDesign goes beyond a simple process of material reuse. It represents a conscious stance in the world, in which design, sustainability, and awareness are articulated in the construction of a new perspective on fashion and its impacts.

This understanding corroborates the ideas of Fletcher and Grose (2011), who emphasize the importance

of material selection in garment production as a means of reducing environmental impacts, thereby reinforcing the need to rethink design and production in fashion by connecting the designer's ethical commitment with conscious material choices in order to minimize negative effects.

The current system of clothing production, distribution, and consumption is predominantly linear, based on the intensive extraction of non-renewable resources to manufacture garments intended for short-term use, many of which are discarded in less than a year. This model results in material losses, environmental degradation, pressure on natural resources, and negative social impacts at multiple scales, while simultaneously wasting economic opportunities (Ellen MacArthur Foundation, 2019).

In light of this scenario, it becomes clear that upcycling represents a relevant and multifaceted contribution to sustainable fashion. By combining waste reuse, design innovation, and environmental engagement, the practice offers viable pathways for reducing ecological impacts, extending the life cycle of materials, and reconfiguring consumption patterns within the sector.

Moreover, the practice analyzed directly aligns with the principles of authorial fashion, as it values non-standardized creative processes, product singularity, and the role of the designer as a cultural worker. By transforming waste into unique pieces imbued with symbolic value and identity, the brand distances itself from the logic of mass production and moves closer to a model in which authorship, meaning, and sustainability are intertwined.

More than a reuse technique, upcycling constitutes a strategic approach for rethinking modes of production and consumption in fashion. The brand demonstrates that it is possible to combine innovation, functionality, and environmental awareness through the creative use of waste materials, such as discarded kites, which are assigned new value and purpose. The designer's involvement in this process is essential, as it is the designer who leads the transformation of waste into product, articulating aesthetics, function, and socio-environmental impact. In this way, upcycling contributes to consolidating more ethical and sustainable pathways within the fashion sector, reaffirming the importance of design as an agent of change.

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