

OUR FASHION HABITS

A GEN-Z FEEDBACK ON ECODESIGN STRATEGIES FOR USE-PHASE

CLAUDIA MOREA

Università degli Studi di Firenze
claudia.morea@unifi.it
Orcid 0000-0001-6032-0004

SILVIA GAMBI

Independent researcher
silvia@solomodasostenibile.it
Orcid 0000-0002-5208-3165

Abstract

In recent years, consumers have assumed a central role in the transition for sustainable fashion. Consumers purchasing decisions have been crucial in determining new trends or making way for new business models; for a segment of conscious consumers, purchasing is experienced as a political choice. Recognizing fast fashion's detrimental impact, the European Commission's "Reset the trend" campaign, targeting youth with #fastfashionisoutoffashion, aims to promote sustainable culture. The research presented discusses the results of a survey conducted on a specific gen-Z target, the student of the bachelor in Textile and Fashion Design. The research had the intention to investigate the target familiarity with eco-design strategies related to the use-phase, the one they are directly involved as consumers. The results provide feedback on the gap between policy and design direction and the actual consumers's engagement in the green transition.

Keywords: *Sustainable fashion; Consumer behaviour; Ecodesign strategies; Gen Z Awareness*

INTRODUCTION

The European Commission's "European Strategy for Sustainable and Circular Textiles" aims to ensure that all textile products on the EU market are durable, repairable, and recyclable by 2030. This initiative includes implementing strategies such as new branding services, Digital Passport, Extended Producer Responsibility, and consumer engagement. Despite Generation Z's sensitivity to environmental and social sustainability issues, they also demonstrate a marked addiction to fast-fashion. Consequently, the European Commission is focusing on consumer involvement, particularly targeting the purchasing habits of Generation Z. Although efforts to mitigate the environmental and social impacts, the fashion industry have struggled to counteract the effects of increased consumption.

Fast-fashion remains prevalent, characterised by low product quality, recurrent consumption, impulsive buying and creating a sense of urgency and fulfilment (Anguelov, 2015; Heuer, 2018). From 1975 to 2018, global per capita textile production has doubled from 5.9 kg to 13 kg per year, with fashion brands now producing almost twice as much clothing as before 2000 (Niinimäki et al., 2020). Meanwhile, the wear-time of garments has decreased by 36% since 2005, with evidence of impulse purchases particularly prevalent in the UK and Norway (Laitala, 2018). A JRC study revealed that Italy has the worst purchasing habits among European countries (Köhler, 2021), with high textile consumption per inhabitant. In response, the "Reset the Trend" campaign was launched in 2023, targeting six priority countries, primarily

focusing on young people addicted to fast fashion. This paper provides an overview European strategy for the sustainable fashion industry, emphasising the importance of consumer behaviour during the product life-cycle, especially among Generation Z. A survey titled “Our Fashion Habits” investigates eco-design strategies at use-phase level, targeting students pursuing a Bachelor’s Degree in Textile and Fashion Design at University of Florence (UNIFI). The focus target is being investigated because it identifies a type of public interested in sustainable fashion, who intends to delve deeper into the topic of eco-design. The results of the survey demonstrate how difficult it is for consumers interested in the topic to find information that allows them to transform the intention to make informed choices into sustainable purchases and behaviours. The study highlights a gap in translating eco-design strategies into consumer behaviours and concludes with recommendations for promoting sustainable practices and emphasising the importance of product ownership.

BACKGROUND GEN Z ATTITUDES

For the European Commission, consumers play a pivotal role in steering the market, with good tools for informed decision-making forcing brands to adapt (EC, 2022). Research indicates a growing global awareness among consumers, transcending generational boundaries, regarding fair labour practices, resource scarcity, and environmental protection (Beltrami et al., 2019). Beltrami (2019) states that two-thirds of consumers express a willingness to change, avoid, or boycott brands based on their stance on controversial issues, with about half identifying as passion-driven activists. The author continues that 66% of consumers are willing to pay more for sustainable products, and 37% of Gen Z consumers seek information on product contents and production methods before purchasing, often relying on reviews and articles. Additionally, nine out of ten Gen Z consumers believe companies bear the responsibility to address environmental and social issues, advocating for greater brand involvement in social campaigns such as #metoo and #blacklivesmatter. Report suggests that while eight out of ten Italians desire information about the origin of raw materials in fashion production, behavioural changes remain elusive (Heiny et al., 2021). Despite efforts to promote transparency and sustainability in the fashion industry, studies (Amed et al., 2023)

suggest a gap in consumer understanding of what constitutes sustainable practices and products, inconsistent sustainability claims erode consumer trust.

Overall, further research is needed to understand the nuances of consumer behaviour, particularly among specific demographics such as Italy’s Gen Z population. Addressing these gaps can inform more effective strategies for promoting sustainable fashion practices and enhancing consumer engagement.

CONSUMERS IMPACTS

The literature highlights the significant impact of the use-phase in the life-cycle of fashion products. For instance, a cotton T-shirt’s life-cycle emissions estimate reveals that 52 percent of CO₂ emissions occur during the use-phase, primarily due to washing and drying practices (Carbon Trust, 2011). The variability in negative impacts during the use-phase, is influenced greatly by user habits such as washing frequency (Jewell et al., 2016). Simple changes in consumption practices, like eliminating tumble-drying and reducing washing temperature from 60 C° to 40 C°, could approximately reduce of 50% of product’s impact on global climate change (Allwood et al., 2006). Synthetic garment use contributes between 20% and 35% to microplastic pollution in marine environments (Laitala et al., 2018). Furthermore, research reveals that the use-phase contributes substantially to environmental indicators such as human toxicity, ecotoxicity, and water depletion (Beton et al., 2014). However, it is often excluded from Life-Cycle-Assessment analysis due to assumptions about consumer behaviours (Quantis, 2018), although it could provide valuable data for eco-design strategies, particularly in material choice considerations (Laitala et al., 2018).

Concerning the garment’s lifespan, consumer attitudes and expectations play a crucial role in determining clothing end-of-life (Cooper et al., 2022). Common causes are garment failure including pilling and colour fading. Changing consumer habits requires proper information on garment use and end-of-life options, which is increasingly addressed through legislation such as Extended Producer Responsibility for textiles in the European Union (EC, 2022).

SUSTAINABLE STRATEGIES DIRECTION

Examining critical issues related to the use-phase of garments reveals two main concerns: (*) the

amount of resources used and toxicity of substances released during washing, and (**) the duration of the product's functional lifespan. (*) Technological innovations are being developed to improve efficiency and reduce harm, such as innovative washing machine designs and less harmful detergents. Brands like Patagonia have collaborated together with Samsung to design a wash cycle and filter that dramatically reduces the release of microplastics during washing. Levi's are actively involved in providing information on product maintenance and promoting sustainable washing practices. (**) New circular business models that involve repair services and second-hand sales are spreading in order to extend the lifespan of products or their materials (Bocken, 2016; Abtan 2019). Collaborative consumption and sharing economy models, including rental and peer-to-peer sharing, are gaining popularity, especially among younger consumers (Zamani et al, 2017). According to the report conducted by BCG and Vestiaire Collective 2022¹ platforms and initiatives for second-hand garment exchange have made the phenomenon appealing to consumers, particularly Gen-Z, contributing to a global second-hand market worth billions of dollars. However, challenges such as transportation efforts, price barriers, availability, and hygiene concerns still exist, limiting the viability of rental as an alternative to fast fashion for many consumers (Niinimäki, 2017;Iran et al., 2017).

METHODOLOGY: 'OUR FASHION HABIT' SURVEY

The research aims to investigate the dynamics between consumers and their garments, focusing on purchasing habits, care, maintenance, and end-of-life decisions, to identify key issues for consumer engagement in sustainable fashion. The study targets a promising demographic, specifically a Gen-Z group interested in entering the fashion industry professionally in the coming years. The data presented in this article were collected during the semester course on Sustainability in the Textile and Fashion Sector in the 2022-2023 academic year, within the Bachelor of Textile and Fashion Design program at the University of Florence (UNIFI). To conduct the research, a Google Form questionnaire was structured to achieve two main goals:

firstly, to collect and store individual data systematically, and secondly, to serve as an ice-breaker activity during the first lesson of the Sustainability in the Textile and Fashion Sector course. This dual-purpose approach allowed the questionnaire to function not only as a data collection tool but also as a means to engage students from the outset. By participating in the survey, students were prompted to reflect on their own fashion consumption habits and the broader implications of these habits on sustainability.

The survey was designed to be anonymous, which encouraged honest and open responses from the students. This anonymity, coupled with the ability to collectively view the survey results in the classroom setting, fostered an environment conducive to critical thinking and discussion. Seeing the aggregated results allowed students to compare their habits with those of their peers, providing a broader perspective on common behaviours and attitudes towards fashion sustainability. This collective reflection was intended to seed students with a life-cycle thinking mindset, emphasising the importance of considering the entire life span of garments—from production to end-of-life.

The sample, consisting of 229 students, was given a questionnaire titled "Our Fashion Habits," administered via Google Forms. Of the respondents, 95% were between the ages of 18 and 25, with a majority (81%) identifying as female. This demographic information is significant as it highlights the specific target group being studied—young adults who are on the cusp of entering the fashion industry professionally and who represent the next generation of consumers and designers.

The survey data were meticulously analysed and compared with existing literature to identify trends, discrepancies, and opportunities for intervention. The questionnaire was structured into four distinct sections, each corresponding to a stage in the product life-cycle. This structure was intentional, designed to provide a comprehensive overview of the students' interactions with their garments at each stage.

1. Quantify: The first section aimed to quantify the amount of clothing owned by the students. Questions in this section explored the volume of garments in their wardrobes, frequency of use, and the variety of items. This data provided insights into consumption patterns and potential areas for reducing excess.

¹ <https://it.vestiairecollective.com/journal/bcg-x-vestiaire-collective/>

2. Buy: The second section focused on purchasing habits. It investigated where and how often students bought new clothes, their preferences for certain brands or types of stores, and their considerations regarding sustainability when making purchasing decisions. This section aimed to uncover the motivations behind consumer choices and the potential for influencing these decisions towards more sustainable options.

3. Take Care: The third section examined the care and maintenance habits of the students. It included questions about washing frequency, methods of care, and the impact of these practices on the longevity of garments. Understanding these habits was crucial for identifying opportunities to promote more sustainable care practices that extend the life of clothing.

4. End-of-Life: The final section explored end-of-life decisions. It investigated what students did with their clothes once they were no longer in use—whether they were disposed of, donated, recycled, or repurposed. This section aimed to identify the most common end-of-life pathways and the potential for enhancing recycling and reuse efforts.

By structuring the survey in this way, the research provided a holistic view of the students' interactions with their garments and highlighted critical issues and opportunities for design action. The insights gained from this study are intended to inform future educational initiatives and design practices, encouraging a more sustainable approach to fashion among the next generation of industry professionals.

MAIN FINDINGS

PURCHASING DECISION

We surveyed participants to quantify their new purchases for the current year across three categories: shoes, pants/skirts, and T-shirts/cardigans. The majority (51.3%) reported purchasing under 5 pairs of pants/skirts, while 36.4% purchased under 10 pairs, with no respondents indicating buying more than 30 pairs. For T-shirts/cardigans, the distribution of purchasing rates was more balanced, with only 3.1% selecting the maximum value (more than 30). In contrast, for shoes, 45% of participants bought between 2 and 3 pairs, 21% bought between 4 and 10 pairs, and only 0.9% bought more than 11 pairs. These findings highlight a noticeable difference in purchasing quantities across categories, particularly with pants/skirts being purchased less frequently

compared to T-shirts/cardigans and shoes. (fig. 01)

Inquiring about the drivers behind purchasing decisions, the majority of participants (70.2%) indicated making targeted purchases based on their current needs. Specifically focusing on the shoes category, nearly half of the participants (48.9%) confirmed buying new pairs to replace broken or heavily worn-out shoes. Notably, around 25% of participants stated that they mainly follow offers and discounts, with this percentage increasing to 30.1% for shoes. Additionally, 11% of participants mentioned dedicating a specific seasonal day for wardrobe renewal, with this percentage doubling for shoes. The discrepancy between responses to the generic garment question and the shoes-specific question highlights a tendency to base purchase decisions on needs, while also being influenced by offers and new seasonal collections, even when the need is not immediate. These findings align with research by Djaforova (2022) on Gen-Z purchasing habits, which reveals a gap between awareness of the environmental and social consequences of their purchasing choices and their actual buying behaviour.

The sample was asked if they prefer to buy products from collections claiming to be more environmentally and socially sustainable through green-tags such as Consciousness, Committed, Recycled, or similar. Results show that 11.4% of respondents declared that they consider products with green-tags more purchasable. Additionally, 25.1% and 29.7% expressed a high average interest value (3 and 4), while 7.3% and 10% indicated low values (0 and 1) regarding the increased accessibility of green-tagged products. Sustainability plays a significant role in influencing purchasing decisions, with consumers finding environmentally and socially sustainable choices more attractive. However, a Commission study from 2020 revealed that the majority of examined environmental claims in the EU were vague, misleading, or unfounded. (fig. 02)

TAKE-CARE

Firstly, it was found that 58,4% of the sample checks the composition label to make sure they do the washing correctly. Secondly we investigated washing practices habits and we asked participants to quantify the washes number. 50.9% of the sample does more than 8 washes per month, with 22.8% washing between 5 and 8 times per month, 21.1% washing once a week, and the remainder washing

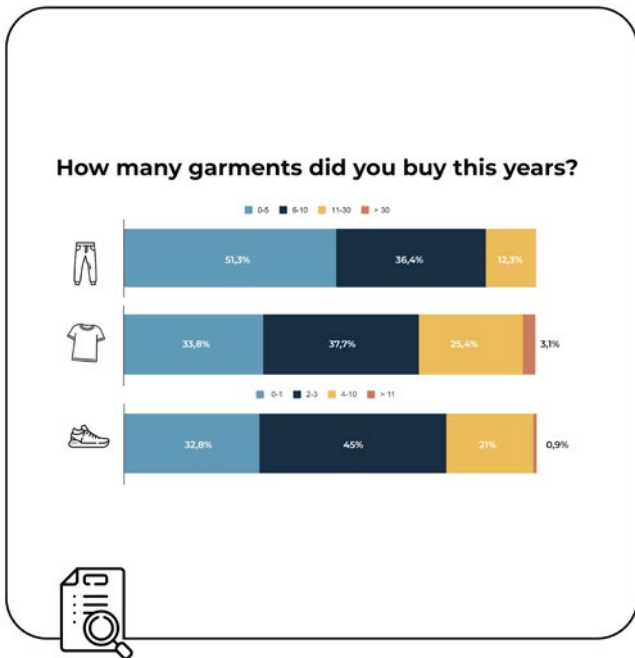


Fig. 01



Fig. 02

between 1 and 2 times per month. When asked about washing habits, 46% of participants wash garments after a single day of use only if there are obvious stains or odours, while 43.4% leave one-day-used garments out of the closet to air them out.

A study conducted in six countries revealed that Italy falls in the middle in terms of the average number of days worn before laundering, with T-shirts worn for 2 days and pants for 4.2 days (Daystar et al., 2019). Cultural and habitual

reasons largely determine the frequency of washes, with only 7.5% of washes done for “heavy dirt” (Catton, 2007). This highlights the importance of considering not only material composition and appliance efficiency but also customs, values, knowledge, and skills related to washing when addressing sustainability in the use-phase (Fletcher, 2014).

Regarding the most frequent washing temperatures, the majority of the sample (57.5%) set low temperatures between 30-40°C, while 40.3% set a temperature between 50-60°C, and the remainder use 90°C. Concerning the spin-dryer speed setting, only 34.1% use the lowest 300-400 rpm setting, while the majority (49.8%) opt for the medium setting at 600 rpm, and 16.1% of the sample use the highest setting at 800 rpm. A study found that switching from warm to cold water washing could substantially reduce the overall cradle-to-grave impacts of apparel (Jewell et al., 2016). Specifically, washing at lower temperatures can reduce energy consumption by 10% for every 10°C decrease (ENDS, 2001).

The investigation found that 41% of the sample uses a dryer, which is relatively high for a Mediterranean country like Italy. In contrast, a study conducted in six countries showed that the average use of machine dryers in Italy is just 4%, compared to 12% for Germany and the United Kingdom, and 73% for the USA (Daystar et al., 2019). Dryer use accounts for 60% of the energy consumption in the use-phase. Eliminating this phase, along with ironing and adopting low-temperature washing, is estimated to reduce total product energy consumption by 50% (Allwood et al., 2006).

Regarding the type of detergents used for washing, 56.9% of the sample stated they prefer products with an ecolabel when possible. Strategies exist to reduce the impact of detergents, such as choosing concentrated detergents, which use fewer chemicals and have less packaging. Another option is biodegradable detergents with fewer surfactants. Perchloroethylene, the most widely used substance for dry cleaning, is a petrochemical-based solvent classified as hazardous for air pollution and is therefore strictly regulated (Fletcher, 2014). (fig. 03)

END-OF-LIFE

Consumers play a crucial role in determining the end-of-life of a product, particularly in the fashion context, where they can adopt various

strategies such as: repairing or treating garments, finding new functions, exploring new business such as leasing or re-selling. Brands are increasingly focusing on strengthening strategies to prolong the life of products by offering services that benefit both economically and in terms of customer loyalty. Especially in certain areas, such as sportswear, repair and maintenance services carried out by the brands themselves or through tutorials offered on their platforms have emerged. Finally take-back services for reintegration into second-hand channels of the brand itself, services for renting garments or other production cycles are now developed. It was found that 50.7% of the sample frequently engage in repairing or mending garments, indicating a willingness to extend the lifespan of their clothing. However, only 2.6% stated that they have never repaired garments. When it comes to leather products, such as shoes, 47.1% of participants reported never applying treatments to maintain them. Regarding shoe repair, there is a significant gap, with 59.4% of the sample having never repaired a pair of shoes, particularly boots or hiking boots. This could be attributed to the popularity of sneakers, especially among the target audience, which are often made from materials that are challenging to repair. Overall, data suggests that only a small percentage of people in the country embrace the concept of circularity, with only 23% repairing their clothes and 25% regularly buying second-hand garments (Anguelov, 2015). However, increasing the use of a product can be achieved through various means, often driven by increased product satisfaction and a stronger bond between the consumer and the product.

(fig. 04)

Disposal often occurs not due to physical failure but because of changes in aesthetics, fashion trends, or body size. Consequently, many unwanted garments are either sold online or donated (Cooper et al., 2022). The survey revealed various practices among participants when dealing with garments that have lost partial function due to ruin or ageing. Interestingly, the majority (80.4%) reported the practice of keeping the garment but repurposing it for different contexts, such as using it as pyjamas or home wear. Additionally, some respondents mentioned reusing the garment as a rag or for other purposes, while a portion discarded the garment in the trash or attempted to resell it on online platforms. When garments are still in good condition but lose value for the user, 40.5% of the sample opted for donations, indicating a willingness

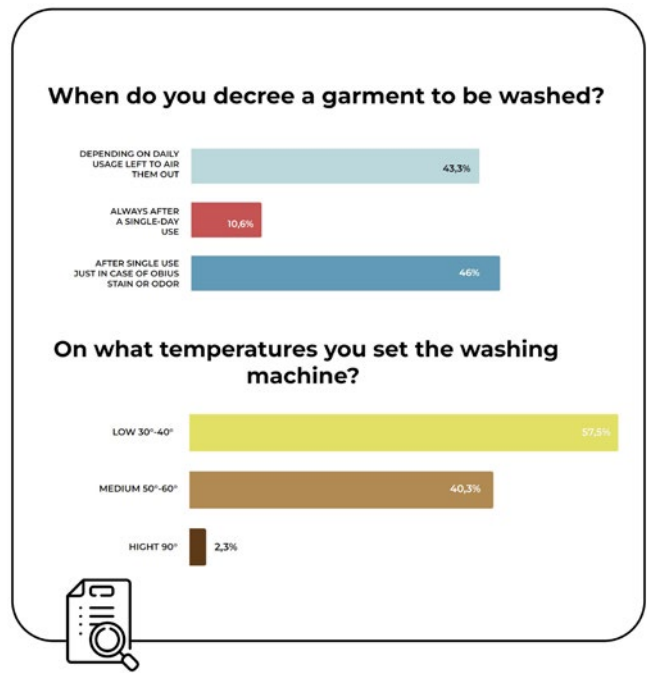


Fig. 03

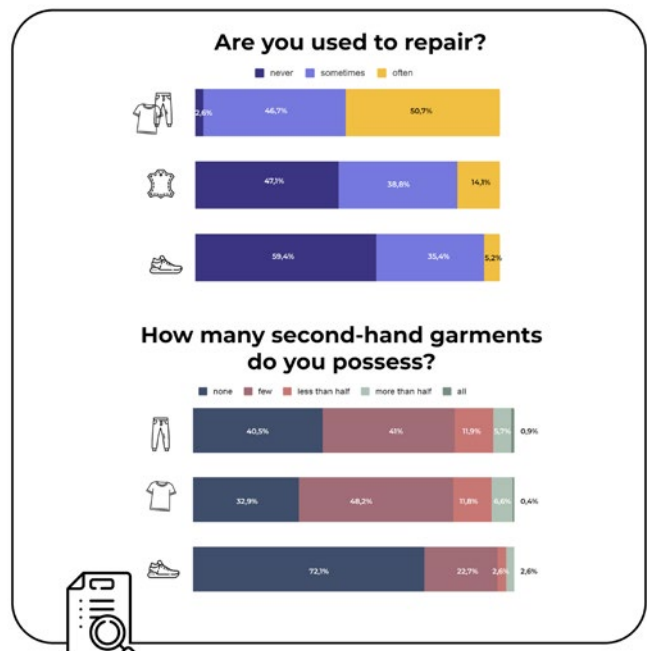


Fig. 04

to extend the lifespan of the garment by giving it to others in need. However, 33.5% admitted to simply storing the garments, and 24.2% attempted to sell them online. Interestingly, only a small percentage organised exchanges and swaps among friends and acquaintances. The low rate of swaps and resale is consistent with the data of second-hand garments among the sample. Specifically, we investigated the presence of second-hand clothing in participants' wardrobes across categories such as t-shirts/cardigans, pants/

skirts, and shoes. For t-shirts and pants, similar patterns were observed, with 32.9% and 40% of respondents stating they have no second-hand garments in these categories, respectively. However, data regarding shoes showed a more significant trend, with 72.1% reporting no second-hand shoes at all, and only 22.7% indicating they have a few. This disparity in second-hand shoes may be attributed to concerns about hygiene as well as the likelihood that shoes are worn until the end of their usable life, limiting their availability in the second-hand market.

Finally, the participants were asked to identify the garment they have owned for the longest period of time. The oldest products primarily belonged to two categories: relatively recent basic garments (5-10 years) and accessories. Common responses included fast-fashion garments, grandmother's jackets, shoes, leather garments, and jeans garments, highlighting a predominant presence of fabrics in the oldest items. Research on the useful life of various garment types across six countries revealed an average lifespan of only 3.1-3.5 years per garment, with significant variations among countries (Dayster et al., 2019).

DISCUSSION

The analysis of the collected data reveals two main assessments. On one hand confirmation of the consumer attitude-behaviour gap observed in the literature (Heiny et al. 2021; Busalim et al., 2022), on the other hand the difficulty of finding reliable information that allows consumers to make conscious decisions. The sample demonstrates awareness of sustainability issues and exhibits some sustainable behaviours, such as preference for eco-labeled products, buying new products mainly to replace worn-out ones, and washing clothes only when necessary. However, there are discrepancies between attitudes and behaviours, as evidenced by high frequency of washing, use of dryers, frequent wardrobe renewals, and limited attention to repair options and second-hand purchases. The survey highlights distinct habits between products from different fashion sectors, with more negative habits observed for footwear. This includes less consideration for sustainable practices in purchase decisions, minimal ownership of second-hand shoes, and lack of repair options for shoes and leather accessories.

Furthermore, the survey highlights how emotional durability decides the future of clothes: a strong link between an item and its owner, supported by

reparability and care behaviour, prolongs its life in the wardrobe but maybe not in its function. For Gen-Z, the aesthetic aspect is important and is also closely connected with ethical behaviour. Especially in the head care phase, the habits recorded are those that are learned in the family. This means that an awareness strategy focused on younger generations can have a positive impact on sparking change across all age groups.

In this regard, it is important to note that in Italy there are no active awareness campaigns against fast-fashion and for conscious use of one's clothes. The information activity is hopefully delegated to the brands themselves, but no official campaigns are yet active, despite the entry into force of the separate collection of textiles in January 2023. This leads to an often fragmented knowledge of the issues related to sustainable fashion, addressed in more depth by professionals. The target analysed, even if interested in entering the fashion sector, confirms that their behaviours are often superficial and that they are not dictated by conscious purchasing strategies.

To address these findings and promote a more sustainable fashion industry, the following design strategies are suggested here. (*) Tailoring eco-design strategies to sector-specific needs and size: European legislation should consider differences in the use-phase between clothing and footwear sectors and develop specific policies for eco-design implementation and development accordingly (starting from the two categories proposed in EU Strategy for a Sustainable Fashion); (**) strengthening consumer protection and empowerment: Policies should empower consumers to access tools for assessing sustainability claims and ensure transparency in information provided by brands (see the Green Claim Directive Proposal); (***) mandatory integration of use-phase in life-cycle assessment (LCA) analysis: Use-phase impacts should be included in LCA analysis for material choice to provide a comprehensive overview of sustainability impacts necessary for eco-design, (pushing forward the Cooperative Reporting Standard Directive); (****) Implementing regulations to encourage brands to communicate strategies for prolonging product life: Policies should engage brands in communicating with consumers about strategies to extend product life, fostering trust along the entire supply chain (see the increasing role of Digital Product Passport to communicate with consumers and suppliers). In conclusion, key issues include strengthening

brand engagement in product life extension and avoiding the risk of invalidating eco-design strategies by considering sectoral diversity within the textile industry. Integrating use-phase data into life-cycle assessments is crucial for informed eco-design decisions. Successful behaviour change requires supportive policies addressing social, cultural, economic, and material factors (Niinimäki et al., 2020).

CAPTIONS

[fig. 01] Garments bought in one year, data collected following the typologies: pants, T-shirt, shoes. "Our Fashion Habits" survey.

[fig. 02] Purchase decisions habits and Eco-tag affection in purchasing. "Our Fashion Habits" survey.

[fig. 03] Washes time perception and wash temperature habits. "Our Fashion Habits" survey.

[fig. 04] "Repair habits and second-hand garments. "Our Fashion Habits" survey.

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