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**Communicating the Environmental Impact
and Sustainability of fashion:
Developing New Labels for Consumer Awareness**

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Introduction

Current labels on clothing primarily inform consumers about the material composition and care instructions, with limited information on the environmental impact of the garment's lifecycle. This lack of comprehensive labeling restricts consumers' ability to make informed, environmentally conscious choices. So in this thesis want to explore the existing landscape of fashion labeling, the role of government regulations, and the influence of industry practices in this context.

A critical examination reveals that while there are some initiatives and labels addressing environmental concerns, they are often fragmented, inconsistent, or lacking in widespread adoption. This scenario presents a unique opportunity to propose a new, more holistic labeling approach that not only communicates the environmental impact of garments more effectively but also aligns with broader sustainability goals.

The proposed labels aim to bridge the knowledge gap, enabling consumers to understand and evaluate the environmental footprint of their clothing choices easily. By doing so, the thesis augurs that these labels could drive a shift towards more sustainable consumer behavior and compel the fast fashion industry to adhere to more environmentally responsible practices.

In conclusion, this introduction sets the stage for a comprehensive study of the environmental impacts associated with fast fashion, the current state of labeling and its limitations, the role of government and industry in shaping consumer awareness, and the potential of innovative labeling solutions to foster a more sustainable fashion industry.

1.

Environmental impact, sustainability and fashion

1.1 ENVIRONMENTAL IMPACT OF THE FAST FASHION INDUSTRY



FASHION AND FAST FASHION

Fashion refers to popular clothing, accessories, beauty and style and is a way of expressing one's self, culture and social identity. Fashion is not just about the style and design of clothing, but also about the interaction of personal choices and social trends. Fashion can be reflected in the design of high-end brands, or it can be a natural expression of street fashion. It is constantly changing and reflects the spirit and cultural background of the times.

Fast fashion, on the other hand, is a business model that refers to quickly taking design inspiration from high-end fashion shows and then producing mass-market fashion quickly, in large quantities, and cost-effectively.

Fashion wasn't always as destructive of an industry. Clothes shopping used to be an occasional event—something that happened a few times a year when the seasons changed or when we outgrew what we had. But about 30 years ago, something changed. Clothes became cheaper, trend cycles sped up, and shopping became a weekly hobby for many.¹

Before the 1800s, fashion evolved at a slower pace. Individuals need to personally obtain raw materials such as wool or leather, process them, weave them into cloth, and then sew them into clothing by hand. With the advent of the Industrial Revolution, the introduction of new technologies such as sewing machines has made the production process of garments easier, faster and more economical. To meet the needs of the growing middle-class market, tailor shops began to pop up widely.

Numerous clothing stores are starting to hire teams of garment workers or groups working from home. At this stage, so-called sweatshops begin to appear, with all kinds of safety hazards. The Triangle Shirt Factory fire in New York in 1911 was one of the first major garment factory disasters, killing 146 garment workers, many of them young female immigrants.



In the 1960s and 1970s, youth culture led a new fashion trend, using clothing as a tool to express one's own style. The growing pursuit of affordable fashion has led to a boom in the textile industry in developing countries, dominated by low-cost production. The purchase of new clothes has gradually become a popular consumer behavior, both as a hobby and as a way to enhance one's social status. In 1990, the New York Times first proposed the concept of "fast fashion", describing a new fashion retail model that could transform designers' ideas into finished clothing in stores in just 15 days.²



By the end of the 20th century and the beginning of the 21st century, cheap fashion reached its climax. With the rise of online shopping, fast fashion brands such as H&M, Zara, and Topshop have become the dominant force in the high street. These brands were able to quickly and cost-effectively replicate the look and design of high-end fashion brands, making the latest

fashion trends accessible to everyone, which explains why fast fashion is rapidly gaining popularity.

Some Fast Fashion Brands:

FOREVER 21

Forever 21 is a fast fashion retailer founded in 1984. For the past 40 years, they have continued to encourage mass consumerism by making low-quality, long-lasting clothing.

Zara is a Spanish fashion brand, part of the Inditex Group. While the brand uses recycled packaging and has a textile recycling program, the number of resources used in the production of its clothing is not transparent.



H&M is a global fast-fashion powerhouse known for its wide range of fashionable clothing. They use some eco-friendly materials and are more transparent in fashion. they still produce too many styles, resulting in overconsumption. They have sustainability goals, but there is no viable evidence of how to achieve them. And there's no evidence that they match employees fairly.

SHEIN

Chinese brand Shein quickly became popular thanks to social media. It adds 500 products to its website every day at very cheap prices. The clothes are made predominantly from plastic materials, contributing to microplastic pollution.³

1.2 SUSTAINABILITY CHALLENGES OF TEXTILES

COMPOSITION OF TEXTILES

A textile is a flexible material made up of a network of natural or artificial fibers. Most textiles are formed by weaving or knitting yarn into fabric, but textiles can also be non-woven, with fibers bonded into fabric by chemical, mechanical, or heat treatment.

Natural fibers are derived from plant, animal, or mineral sources and are used in their natural form.

Plant-Based Fibers:

Cotton: Soft, breathable, and highly absorbent, cotton is widely used in clothing, towels, and bed linens.

Linen: Made from the flax plant, linen is known for its strong, absorbent, and cool-wearing properties, commonly used in summer clothing and household textiles.

Hemp: Similar to linen but more durable, hemp fibers are used in clothing, bags, ropes, and eco-friendly textiles.

Jute: A coarse fiber used in making burlap, sacks, and carpet backing.

Bamboo: Often processed to create a soft, silky fabric, bamboo is used in clothing and bedding, although the sustainability of bamboo textiles depends on the manufacturing process.

Animal-Based Fibers:

Wool: Obtained from sheep and other animals, wool is warm, durable, and has excellent moisture-wicking properties, used in sweaters, suits, and blankets.

Silk: Produced by silkworms, silk is a luxurious, smooth fabric with a shimmering appearance, used in high-end clothing, ties, and bedding.

Cashmere: Derived from cashmere goats, this is a soft, lightweight, and insulating fiber used in premium sweaters and accessories.

Alpaca: Sourced from alpacas, this fiber is warm, soft, and hypoallergenic, used in high-quality knitwear and textiles.

Synthetic fibers

Synthetic fibers are man-made, usually from petrochemicals, and are engineered for specific qualities.

Polyester: A durable, wrinkle-resistant, and quick-drying fabric, polyester is widely used in clothing, home furnishings, and outdoor gear.

Nylon: Known for its strength, elasticity, and resistance to abrasion and chemicals, nylon is used in hosiery, swimwear, and outdoor equipment.

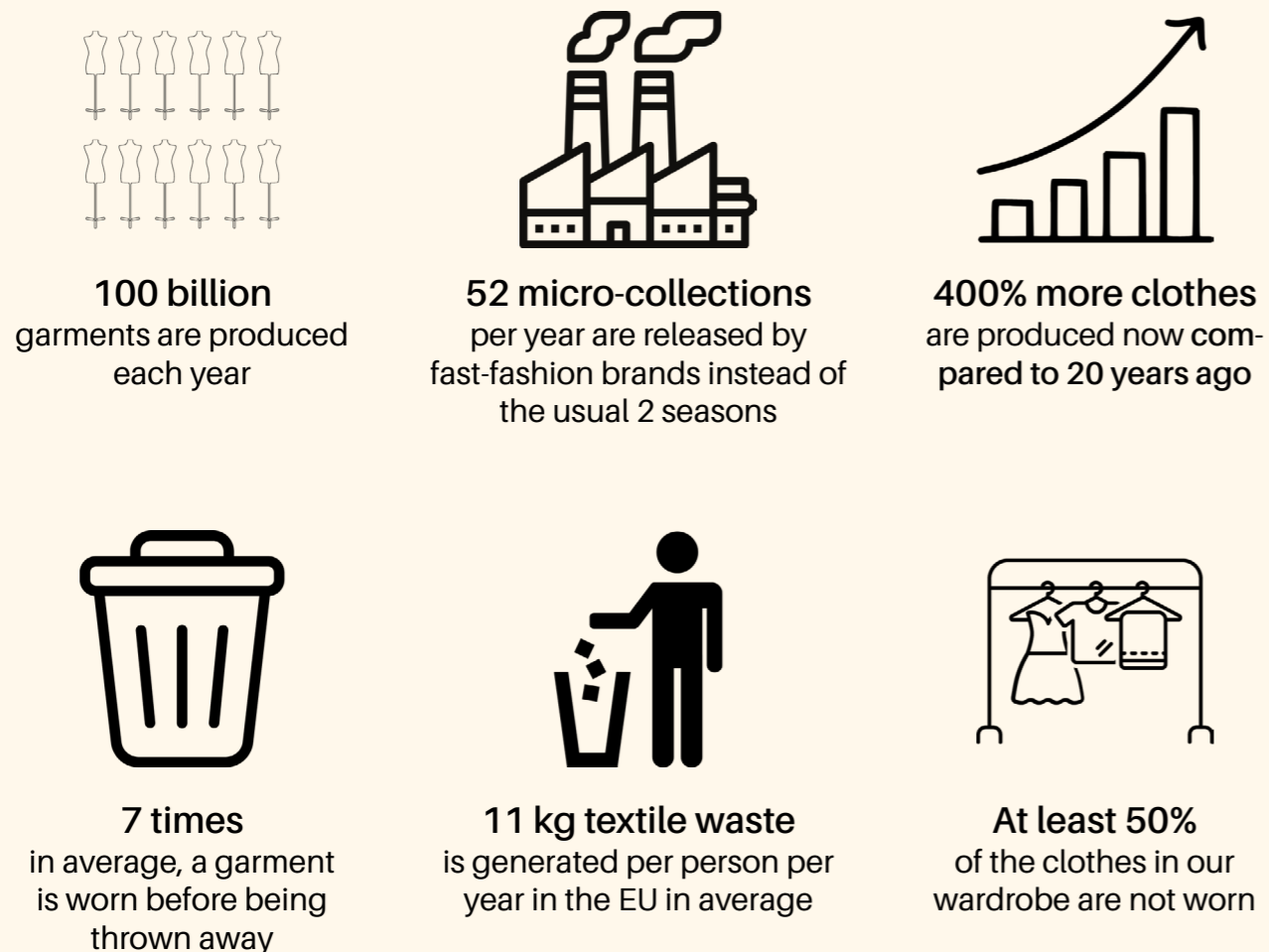
Acrylic: Often used as a wool substitute, acrylic is lightweight, soft, and warm, used in sweaters, blankets, and outdoor clothing.

Spandex (Elastane): Highly elastic, spandex is used in sportswear, swimwear, and stretchy garments for its ability to retain shape.

Polypropylene: Known for its moisture-wicking properties, polypropylene is used in active wear and thermal underwear.

ENVIRONMENTAL IMPACTS AND SUSTAINABILITY

The environmental impact of the fashion industry mainly includes excessive consumption of resources, water and soil pollution, waste generation, and increased carbon emissions (see figure 1). The fast fashion model exacerbates these problems because it promotes the rapid production and consumption of large quantities of low-cost clothing, which are often quickly discarded, increasing the burden on landfills.⁴ In addition, the dyes and chemicals used in the production of garments can contaminate water bodies, affecting water quality and ecosystem health. Textile production also involves significant water and energy consumption, further exacerbating environmental pressures.⁵



“

The speed at which garments are produced also means that more and more clothes are disposed of by consumers, creating massive textile waste.

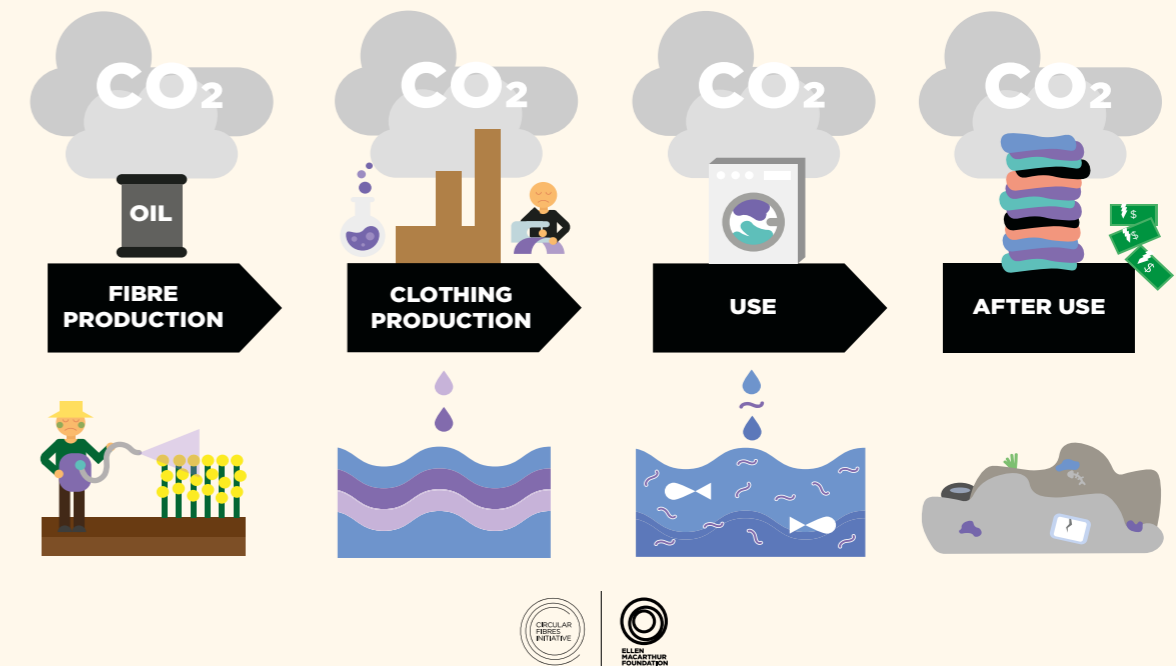


FIGURE 1: TODAY'S CLOTHING SYSTEM PUTS PRESSURE ON RESOURCES, POLLUTES THE ENVIRONMENT, AND CREATES NEGATIVE SOCIETAL IMPACTS

“ **5 millions tonnes** of clothing discarded each year in the EU- around 12kg per person

25 to 35 jobs created for each 1000 tonnes of textiles collected re-use

1% of material in clothing is recycled into new clothing



WATER POLLUTION

In many garment-producing countries, textile mills often discharge untreated toxic wastewater into rivers. These effluents contain harmful substances such as lead, mercury, and arsenic, which pose a serious threat to aquatic ecosystems and the health of the populations living along these rivers. This pollution extends to the oceans, leading to global pollution. In addition, the use of chemical fertilizers in cotton cultivation exacerbates the problem of water pollution by introducing pollutants into surface runoff and evaporative water.



WATER CONSUMPTION

The fashion industry is a significant consumer of water, utilizing vast amounts of freshwater for dyeing and finishing our clothes. Cotton, a common material in clothing, requires a substantial amount of water to grow, often in regions that are warm and dry. The production of just one kilogram of cotton can consume up to 9,700 liters of water, placing immense strain on an already scarce resource.⁶ This has led to severe ecological impacts, such as the desiccation of the Aral Sea, where cotton cultivation has drained the water body completely.



MICROFIBERS POLLUTION

Every time we wash synthetic clothing (polyester, nylon, etc.), approximately 700,000 individual microfibers are released into the water and into our oceans. Scientists found that small aquatic organisms ingest these microfibers. They are then eaten by small fish, and then by larger fish, introducing plastic into our food chain.⁷

Research published by scientists from the Italian National Research Council and the University of Plymouth has shown that wearing synthetic fibers releases plastic microfibers into the air. According to the study, a person "can release nearly 300 million polyester microfibers into the environment every year by washing clothes, and more than 900 million polyester microfibers can be released into the air just by putting on clothes".⁸



MICROFIBERS POLLUTION

Clothing has increasingly become disposable, leading to a rise in textile waste. An average European household discards about 11 kilograms of clothing annually,⁹ with only 15% being recycled or donated, and the rest ending up in landfills or incinerators.¹⁰ Moreover, 69% of our clothing is made from synthetic fibers like polyester, which are plastic-based and can take up to 200 years to decompose, posing significant environmental challenges.



The Environmental Footprint of Fast Fashion

The equivalent of one garbage truck full of clothes is burned or dumped in a land-fill every second (UNEP, 2018)

Approximately 60% of all materials used by the fashion industry are made from plastic (UNEP, 2019)

500,000 tons of microfibers are released into the ocean each year from washing clothes— the equivalent of 50 billion plastic bottles (Ellen MacArthur Foundation, 2017)

The fashion industry is responsible for 8-10% of humanity's carbon emissions— more than all international flights and maritime shipping combined (UNEP, 2018). If the fashion sector continues on its current trajectory, that share of the carbon budget could jump to 26% by 2050 (Ellen MacArthur Foundation, 2017)

Some 93 billion cubic metres of water— enough to meet the needs of five million people— is used by the fashion industry annually, contributing significantly to water scarcity in some regions (UNCTAD, 2020)

Around 20% of industrial wastewater pollution worldwide originates from the fashion industry (WRI, 2017)



CHEMICALS

Chemicals play a significant role in the lifecycle of our garments, being integral to the production, dyeing, bleaching, and wet processing of every piece of clothing. The extensive use of chemicals in cotton cultivation has been linked to health issues and premature mortality among cotton farmers, along with widespread pollution of both freshwater and marine environments and soil degradation.¹¹

11 6. <https://www.theguardian.com/sustainable-business/2015/mar/20/cost-cotton-water-challenged-india-world-water-day>
7. <https://brenmicroplastics.weebly.com/project-findings.html>
8. <https://www.plymouth.ac.uk/news/wearing-clothes-could-release-more-microfibres-to-the-environment-than-washing-them>

9. <https://www.eea.europa.eu/publications/textiles-in-europes-circular-economy>
10. <https://www.theatlantic.com/business/archive/2014/07/where-does-discarded-clothing-go/374613/>
11. <https://www.sustainyourstyle.org/en/toxic-clothing>



GREENHOUSE GASES EMISSIONS

The fashion industry contributes to 5-10% of global greenhouse gas emissions due to the energy consumed in the production, manufacturing, and transportation of millions of garments purchased annually. A significant portion of clothing is produced in countries like China, Bangladesh, and India, which predominantly rely on coal, one of the most polluting energy sources in terms of carbon emissions.¹¹



SOILS DEGRADATION

Soil degradation plays a significant role in the fashion industry, affecting our ecosystem in various ways. This includes the overgrazing of pastures by cashmere and wool-producing livestock, the degradation of soil due to the heavy use of chemicals in cotton farming, and deforestation driven by the production of wood-based fibers like rayon. This not only poses a major threat to global food security but also exacerbates global warming.¹²



RAINFOREST DESTRUCTION

Annually, thousands of endangered and ancient forests are cut down and replaced with plantations for the production of wood-based textiles like viscose, rayon, and modal. This deforestation, particularly in regions like Indonesia over the past decade, poses significant threats to ecosystems and indigenous communities, disrupting biodiversity and local livelihoods.¹³



Fiber production:

Natural fibers: Producing natural fibers (such as cotton and wool) often requires large amounts of water, pesticides and fertilizers, which has a significant impact on water resources and soil quality. For example, cotton cultivation is a water-intensive process and is often accompanied by significant pesticide use.

Synthetic fibers: The production of synthetic fibers (e.g., polyester, nylon) often relies on fossil fuels, producing greenhouse gas emissions and other pollutants. Additionally, synthetic fibers may contribute to microplastic contamination at end-life cycle stages.¹⁴



Yarn and fabric production:

Energy consumption in the production of yarns and fabrics has a significant impact on the environment, especially when this energy comes from non-renewable resources.

The dyeing and treatment process can involve the use of harmful chemicals that, if released into the environment without proper treatment, can cause serious contamination of water bodies and ecosystems.



Textiles production:

Chemicals used in processing (e.g. dyeing, printing, coating) can have significant impacts on the environment, including water pollution and the release of hazardous substances.

Energy consumption continues to be an issue, especially in energy-intensive processing steps.¹⁵



Use stage:

Washing textiles consumes large amounts of water and energy and can result in chemical detergents and microplastic fibers entering water systems.

Frequent washing and improper maintenance can also shorten the life of textiles, thereby increasing their overall environmental footprint.¹⁶



End of life cycle:

Disposing of non-degradable textiles in landfills takes up valuable land resources and may produce greenhouse gases as they decompose. The incineration of textiles produces harmful gases and greenhouse gas emissions.

Insufficient recycling and reuse leads to a waste of resources, especially for materials that can be efficiently recycled.

THE PSYCHOLOGICAL ASPECTS OF FASHION

Throughout history, the role of clothing in expressing individuality has evolved significantly. Advances in technology over the centuries have made fashion an essential aspect of identity. Initially, clothing served primarily to keep us warm and dry. However, with modern conveniences like central heating, clothing's role has shifted away from mere survival.

It has transformed into a social symbol, shaping self-perception and allowing individuals to present themselves in their desired manner, reflecting their personality and social status.

What is a fashion influencer?

Fashion influencers are individuals who develop a following on social media based on their recommended outfitters, styling tips, trends, and any other niche fashion topics such as sustainability, body positivity, vintage, etc. They often use lifestyle websites, fashion blogs, or YouTube channels to express their trends and personal style.¹⁸

Examples of Fashion Influencers, Fashion Icons



GOTHAM//GETTY IMAGES

Bella Hadid is an American supermodel with significant influence. Her unique personal style and leadership of fashion trends, combined with her extensive influence on social media, have made her a trendsetter in the fashion industry and the public eye. In addition, her collaborations and endorsements with fashion brands have further expanded her reach, making her a key figure in shaping, and influencing the public's fashion trends and choices.¹⁹

Another famous influencer is Kim Kardashian, who has had a major impact on the fashion industry with her unique style, entrepreneurial spirit, and extensive social media presence. She promoted a variety of styles and products. Her businesses, including the shapewear brand SKIMS, reflect her influence on fashion by offering products that fit her aesthetic and the needs of her audience. At the same time, Kim's social media presence further expands her influence, where she showcases her fashion sense, collaborations with designers, and her own products, influencing millions of fans and setting global trends.



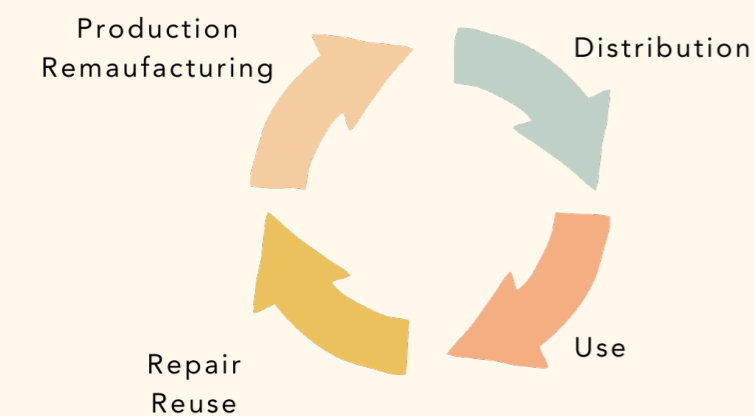
PHOTOGRAPHED BY
LACHLAN BAILEY

Influencer marketing is therefore a strategic tool to create mutual value for brands, and influencers. The aim is to align their perspective with consumer interests and effectively target the end consumer,²⁰ it highlights that influencers, through their immense influence and credibility, can shape trends and purchases by building a sense of trust and connection with their audience decision making. Brands use these influencers to promote their products, thereby having a direct impact on consumer purchasing patterns, with followers likely to purchase items endorsed by influencers they admire and trust.²¹

CIRCULAR ECONOMY

Circular economy is an economic system concept that aims to reduce waste and resource consumption and enable products, materials and resources to be recycled in the economic system for as long as possible through innovation in design and business models.

However, the linear economic approach to raw materials, characterized by a “take-make-dispose” model, places enormous pressure on limited resources and often ignores environmental impacts. This model drives companies to maximize product output and sales with the sole goal of profit maximization, often overlooking the numerous economic opportunities that more sustainable practices may bring.²²



In contrast, the circular economy offers a more sustainable alternative that emphasizes the **reduction, reuse and recycling of resources**, aiming to create a closed-loop system that minimizes waste and optimizes resource utilization. This model not only solves the environmental shortcomings of the linear economy by

reducing resource consumption and pollution, but also opens up new economic pathways by improving resource efficiency and innovating consumption models.²³

TEXTILES ECONOMY

“The aim of circularity is to shift the “take-make-dispose” linear value chain into a circular system, where materials are not lost after use but remain in the economy, circulating as long as possible at the highest possible value.”

Textile economics mainly focuses on economic activities within the textile industry, including the design, production, distribution, and sales of clothing.²⁴ With the growth of the rise of “fast fashion,” textile production has increased rapidly over the past few decades, leading to massive consumption of resources and an increase in waste.

So UNEP proposes a vision for a new textiles economy, which is aligned with the principles of the circular economy and aims to achieve commercial, social and environmental benefits through restorative and regenerative design. In the new textile economy, clothing, fabrics and fibers retain their highest value during use and re-enter the economy after use, so that they do not become waste.²⁵

Such a system would be distributive by design, meaning that value circulates among firms of all sizes within an industry so that all parts of the chain can provide workers with good pay and working conditions.

1.3 POLICIES AND REGULATIONS

In the contemporary fashion world, the environmental impact of fast fashion is undeniable. Therefore, at a time when global resources are depleted, it is very important to formulate corresponding policies and regulatory controls to shape a more sustainable fashion industry.

Circular economy action plan

This plan focuses on the entire life cycle of products, promoting sustainable design, consumption and ensuring that waste is minimized. The plan includes both legislative and non-legislative measures targeting sectors like electronics, batteries, packaging, plastics, and textiles to make sustainable products the norm in the EU.²⁶

The United Nations Conference on Trade and Development (UNCTAD) also emphasizes the importance of a circular economy, which encourages reusing products rather than throwing them away. UNCTAD's work on the circular economy began in 2015 and includes collaboration aimed at strengthening the circularity of resources in large economies such as India and China. Their efforts are part of a broader strategy to promote environmental protection, develop new industries, create jobs, and develop new capabilities.²⁷

The European Union's circular economy action plan as part of the European Green Deal is a great example of government support for the transition to more sustainable and circular textile value chains.

Here are several regulations that can help achieve the goals set by these programs:



Europe's REACH regulation focuses on protecting human health and the environment through proactive identification of the properties of chemical substances. It holds the industry accountable for assessing and communicating risks associated with chemicals, requiring manufacturers and importers to compile and submit data

on the substances they handle to a central database. Compliance with this regulation is particularly important for textile companies operating in Europe, given the extensive use of chemicals in the textile industry.²⁸



The EU Ecolabel is a certification scheme that can be awarded to a wide range of product groups, including textile products, which covers all kinds of textile clothing and accessories, interior textiles, fibers, yarn, fabric, and knitted panels, as well as cleaning products. The ecolabel ensures limited use of substances harmful to health, and the environment, reduction in water and air pollution, and color resistance to perspiration, washing, wet and dry rubbing and light exposure.²⁹



DIGITAL PRODUCT PASSPORT

What is Digital Product Passport?

The EU Digital Product Passport (DPP) aims to share information on product sustainability and circularity among various economic stakeholders. It refers to promoting the transition to a circular economy by improving material and energy efficiency, extending product life cycles, improving product design and end-of-life management. DPP also opens new business models based on better access to data, helping consumers make environmentally friendly choices and enabling authorities to check legal compliance. Using QR codes is a cost-effective and user-friendly way to implement DPP.³⁰

From the perspective of consumers, the DPP provides transparency of the product's supply chain and helps them make more informed purchasing decisions with sustainable and ethical considerations.³¹

From the perspective of business, the DPP gives them the access to valuable data and insights to develop more sustainable business models.³²

QR codes provide a cost-effective, user-friendly solution to implement Digital Product Passports (DPP) across product lines, enhance consumer engagement, and easily integrate into existing packaging and labeling processes. They provide easy access to detailed product information, promoting sustainability and informed consumer choices.

How to apply DPP to a new label?

Therefore, combining a Digital Product Passport (DPP) with new labeling strategies to communicate environmental impact and sustainability in fashion can increase consumer awareness.

DPP can do this using a digital interface that can provide detailed insights into the sustainable practices, materials used and environmental footprint of fashion items.

This approach could revolutionize traditional labeling by providing consumers with a more interactive, informative and transparent way to understand the sustainability aspects of their clothing choices, thereby

encouraging more informed purchasing decisions.

On the other hand, using QR codes offers a cost-effective, user-friendly solution in product lines, enhancing consumer engagement and ease of integration into existing packaging and labeling processes. They allow easy access to detailed product information, promoting sustainability and informed consumer choices.

2.

Brands Communication

In this chapter, I will explore the diverse strategies that fashion brands use to communicate the sustainability and environmental impact of their products.

As consumer awareness and demand for transparency reach unprecedented levels, the methods by which brands communicate have become crucial in shaping consumer choices and promoting a sustainable fashion industry.

This chapter will delve into the detailed approaches of websites and brochures, the persuasive nature of advertisements, and the value information of labels. Each of these serves as an essential link between brands and consumers, allowing for the marketing of products while embedding narratives of sustainability.

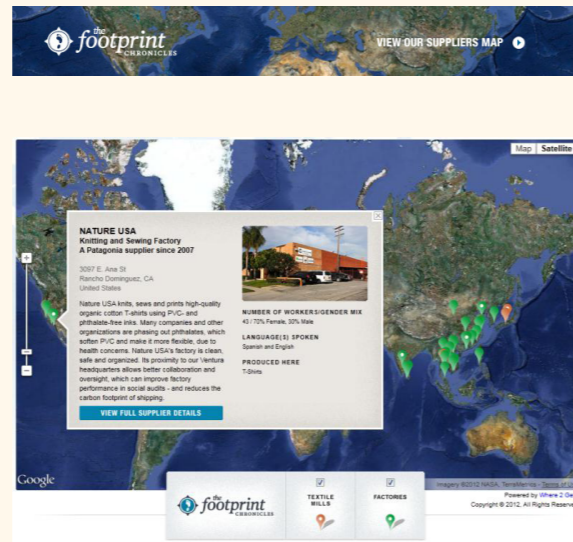
By examining these communication strategies, I aim to highlight the complexities of messaging, the challenges in maintaining authenticity, and the potential for innovation, all in the pursuit of advancing a more sustainable fashion landscape.

2.1 WEBSITES COMMUNICATION

2.1.1 Patagonia

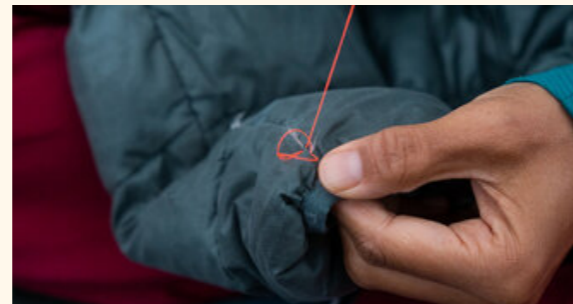
An American retailer of outdoor recreation clothing that was founded by Yvon Chouinard in 1973 and is based in Ventura, California.

This section of the Patagonia website provides transparency about the supply chain and the environmental impact of specific products. It allows consumers to trace the journey of a product from design to delivery, highlighting the company's efforts in reducing its carbon footprint. This section is part of Patagonia's transparency efforts.



WORN WEAR

Patagonia's Worn Wear program promotes the idea of repairing, sharing, and recycling clothing. The website features a platform for buying and selling used Patagonia products, encouraging consumers to participate in the circular economy.³³



IF IT'S BROKE FIX IT

Blog and stories

Blog and Stories: Patagonia's blog, "The Cleanest Line," and the "Stories" section of their website share in-depth articles, stories, and documentaries about adventure, environmentalism, and community initiatives.³⁴ These platforms are used to inspire and engage the community around shared values.



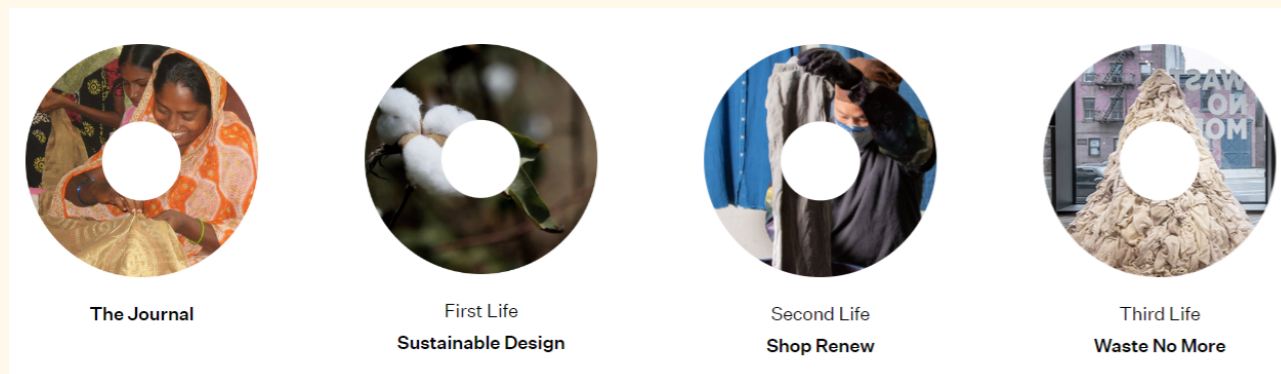
2.1.2 Eileen Fisher

Eileen Fisher is an American clothing brand founded in 1984 in New York by its eponymous founder, Eileen Fisher. The brand is characterized by its minimalist, classic design style. Eileen Fisher's design philosophy emphasizes easy-to-wear basics, aiming to provide women with elegant, comfortable and versatile clothing options.

The Eileen Fisher brand pays special attention to sustainability and environmental responsibility, committing to the use of organic and recycled materials such as organic cotton, recycled wool and recycled nylon. The brand is also taking steps to reduce waste and support circular fashion and sustainability by encouraging consumers to recycle their old clothes through its "Green Eileen" recycling program.



Along with the shop section, customers can easily find the "Circular by Design" section, which includes the brand's contribution in achieving sustainability. Inside the "Circular by Design" section, customers can find four individual parts: "The Journal," "First Life," "Second Life," and "Third Life."



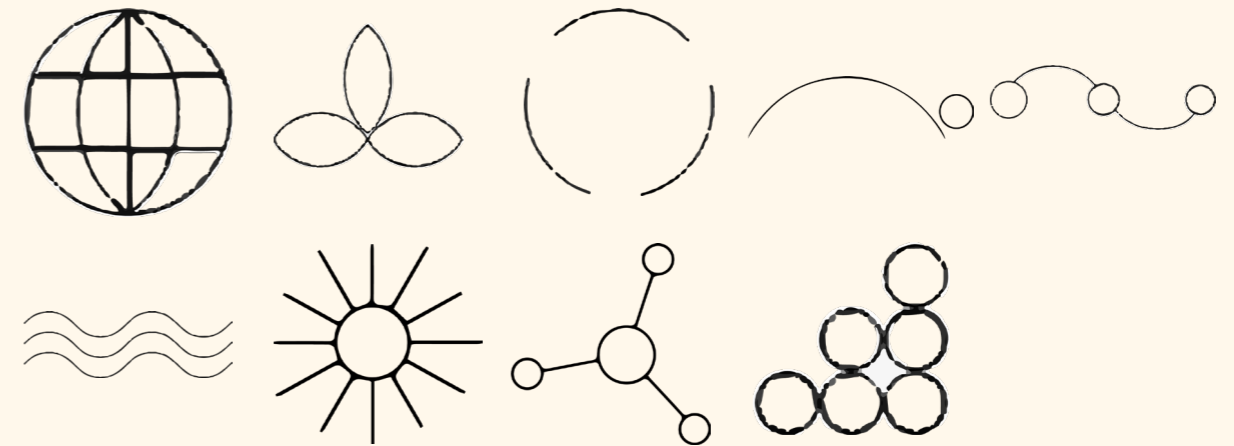
The first part includes tips of choosing the most suitable garment for customers, stories about the brand's progress and the pain points it encounters in achieving sustainability, and the repair and care advice that helps garments last longer.



In the second part "First Life," the brand designed an interactive and cool website page that customers can see the process of Eileen Fisher's efforts in reducing carbon footprints and in becoming a circular brand in a way design the garments for the first life as they scroll down the website.

The website uses the mouse mouse-over effect, which is that when the user moves the mouse pointer over a specific element, the elements are animated, changed in form. Not only does this convey information efficiently, but it also adds dynamics and visual appeal to the websites.

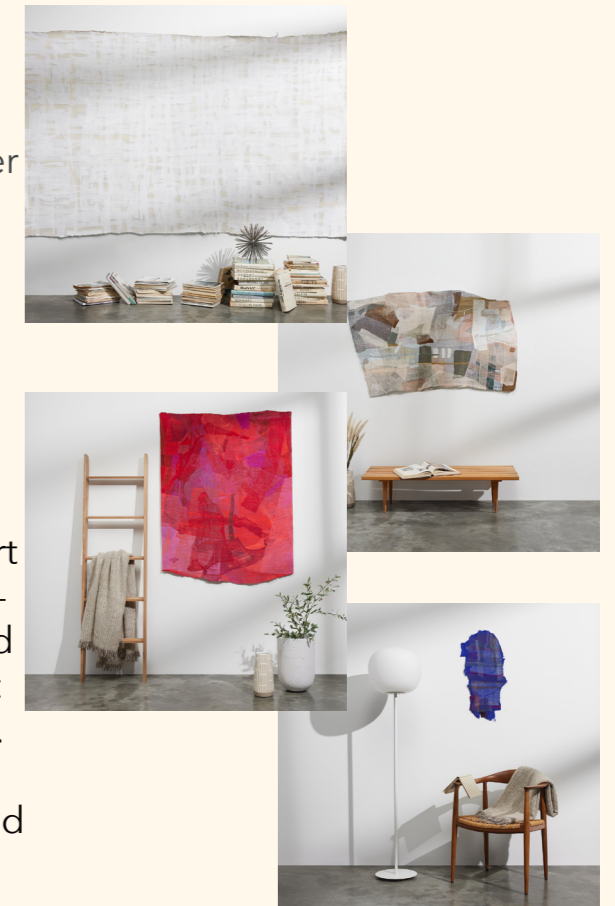
This website successfully built up a method to efficiently convey the brand's ideas of achieving sustainability to its customers.



In the third part "Second Life," Eileen Fisher introduces her shop of renewed garments that aims to give garments a second life. Customers can purchase renewed garments at a much lower price. The renewed garments shop can help reduce the carbon footprint by decreasing the production of new fabrics.

To help customers understand their effort in reducing carbon footprint, Eileen Fisher also includes a link to help explain and calculate the amount of carbon footprint reduction if they buy renewed garments.

The four parts together indicate the brand Eileen Fisher's methods to become a circular fashion brand.



2.1.3 Stella McCartney

Stella McCartney is a high-end fashion house named after the British designer of the same name, which has been around since 2001 with the core philosophy of promoting environmental protection and sustainability. Known for its commitment to animal welfare, the brand does not use fur and leather materials, and was one of the first in the high-end fashion industry to adopt sustainable and ethical production methods.

STELLA McCARTNEY

From the section "Stella's World" of the brand's website, customers can get access to Stella McCartney's sustainability efforts.



Then, customers can get knowledge of the materials and innovation about Stella McCartney's garments and products. Each material is accompanied with a delicate picture related to the material and a hyperlink that customers can discover more if they are interested in.

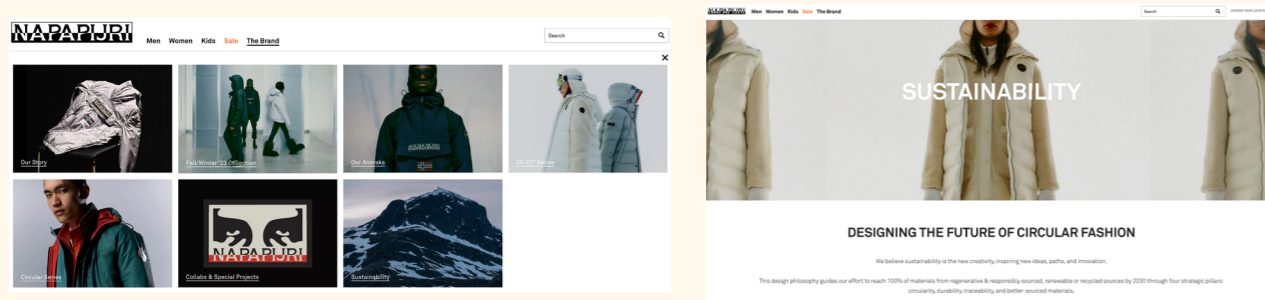


The sustainability section is divided into several parts: "Introduction," "Timeline," "Our Commitments," "Materials & Innovation," and "Collaborators & Commitments." Along with the video in a sign of human, fabrics, and nature, Stella McCartney introduces its vision in achieving circularity and sustainability. The company aims to increase its transparency across supply chains through diligent reporting, measuring and tracking.

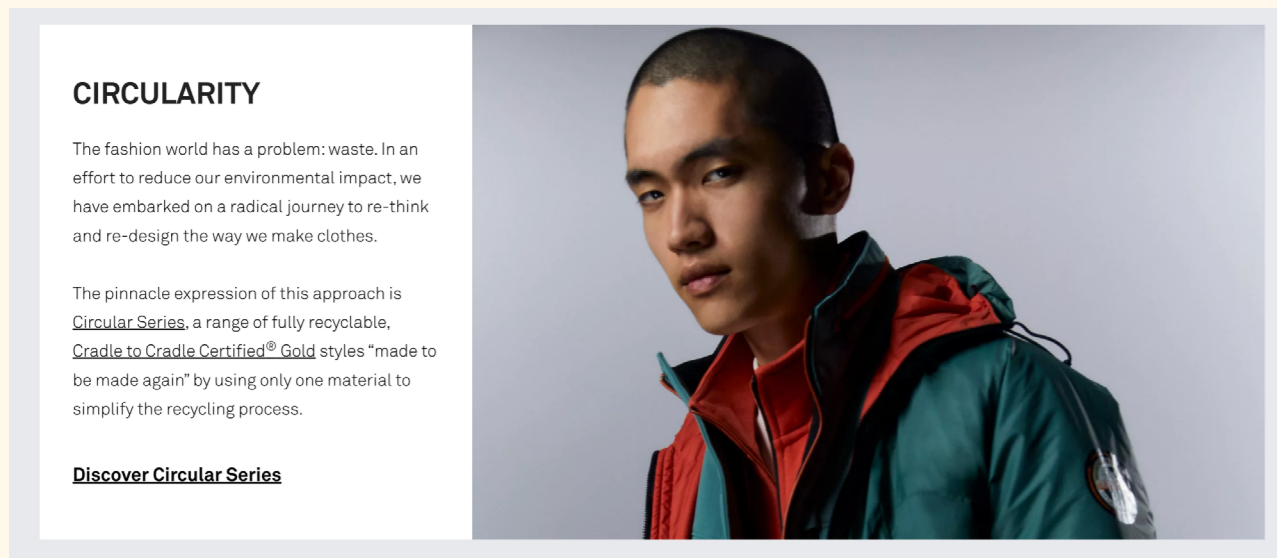


2.1.4 Napapijri

The design of NAPAPIJRI's webpage is concise and straightforward. The first thing that catches customers' attention is the loop playback video of the latest garments collection. On the left top of the website, customers can easily get quick access to the products they are interested in. In "The Brand Section," customers can get further information about the story of the brand, branches of garment collections, and sustainability efforts of the brand.



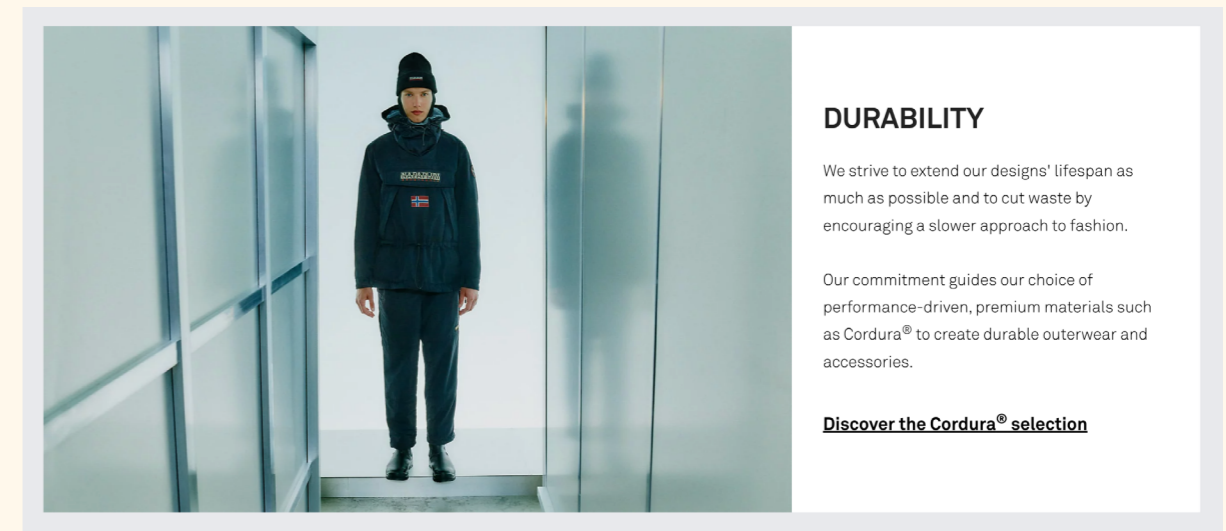
In the "Sustainability" section, the first thing NAPAPIJRI shows is its manifesto of the future products. The brand claims to achieve sustainability through circularity, durability, traceability, and better-sourced materials. When customers scroll down the webpage, they can find more details about each of the four goals.



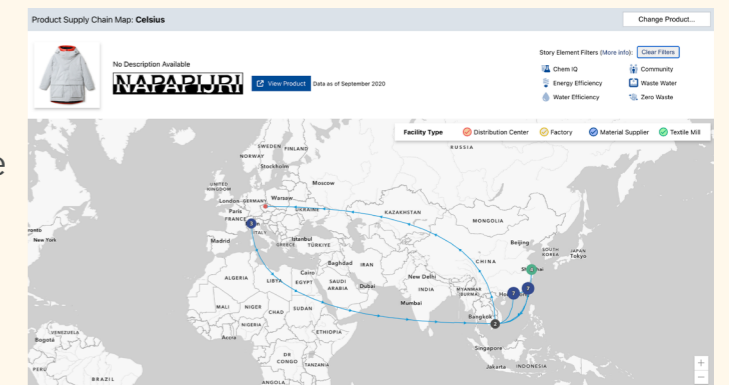
For the part of circularity, NAPAPIJRI shows its solution through the design of the "Circular Series," which aims to make garments with "infinite lives" by using the design of mono-material composition that is "100% recyclable."

To achieve its goal of durability, the brand introduces its solution of designing outwears and accessories using more durable materials like Cordura® to make the lifetime of its products last longer.

To achieve its goal of durability, the brand introduces its solution of designing outwears and accessories using more durable materials like Cordura® to make the lifetime of its products last longer.



NAPAPIJRI also claims to use "Better-Sourced" materials in producing more and more of its garments and accessories that are made of regenerative materials. In the web page, customers can be directed to the collection of the related to the regenerative materials. NAPAPIJRI also provides a visualized tracking system of its supply chain on the web page. By clicking the "Discover our traceability maps," customers are redirected to the traceability map system of its mother company VF Corporation. In the system, customers can track seven of NAPAPIJRI's most iconic garments such as "Celsius" and "Rainforest Winter" series.



Take the product "Celsius" for example, customers can get information about the distribution center, factory, material supplier, and textile mill that participate in making the product. This system can help increase the products' transparency during the production process and build up credibility between customers and the brand in the contribution of sustainability.

2.2 IN ADVERTISING

2.2.1 Patagonia

Print Ad

“Don’t Buy This Jacket”: Patagonia advertisement from the Friday, November 25, 2011, edition of The New York Times (Black Friday of 2011).

The company uses the headline “don’t do something” in the ad to create customers’ curiosity and prompt as many people as possible to read the full ad. In the ad, Patagonia asks customers to buy less and to think before they buy in the retail holiday season, which is contradictory to a company since the company indeed relies on the sales to earn profit. The reason for the company to place this ad is due to its goal in inspiring and implementing solutions to the environmental crisis. Ask people to go to its website and take the Common Threads Initiative pledge. Advertisements were mainly in the form of print advertisements, most notably full-page advertisements in the New York Times. The ad conveys its anti-consumerist message in a direct and compelling way through traditional print media.



It is a visual narrative that tells the story of protecting the rivers of the Balkan Peninsula. As a video medium, documentaries can deeply portray the current situation, impact, and emotions involved in the problem, to resonate with the audience.

Multimedia and interactive platform

Patagonia’s Worn Wear program encourages consumers to repair, share, and reuse Patagonia products instead of buying new ones. The program spreads through a variety of means, including the Worn Wear site in-store and online, as well as through social media and video.

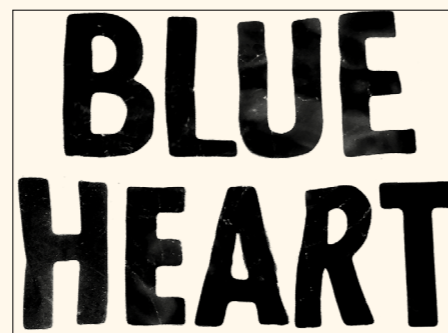


Through these diverse formats, the Worn Wear Program builds an integrated communication platform that not only conveys information about sustainable consumption, but also creates a community that encourages people to take practical actions in support of sustainability and environmental protection.



Documentary

“Blue Heart” is an environmental movement launched by Patagonia to protect Europe’s last wild rivers from large-scale hydropower developments. The company produced a documentary of the same name and set up a dedicated page on its website to raise the profile of the movement, showcasing its concerns and actions on global environmental issues.

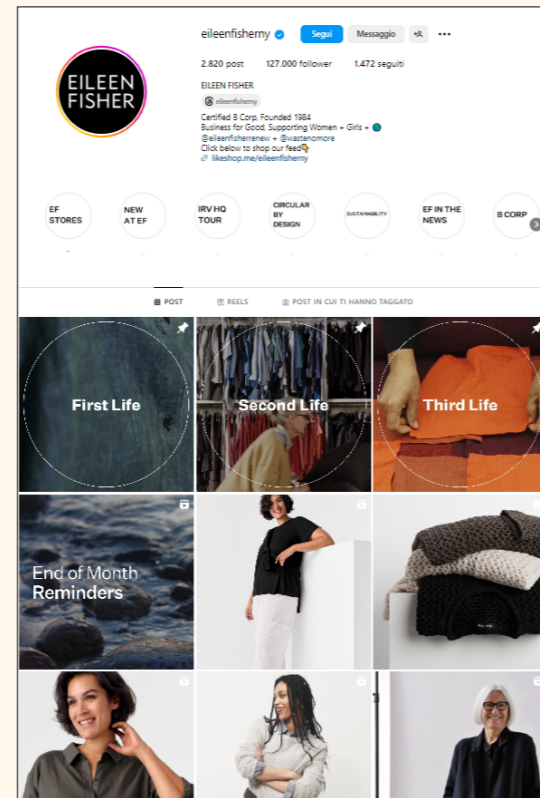


2.2.2 Eileen Fisher

Social Media

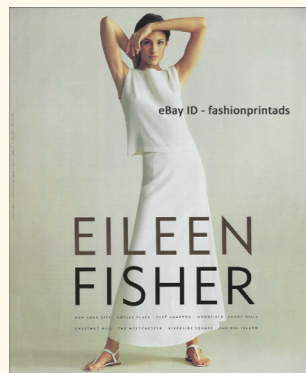
Eileen Fisher uses its social media platforms to showcase her latest collections, ongoing initiatives, and brand stories. This allows brands to create a direct connection with their audience and share their values through posts, stories, and interactive content.

Brands use social media platforms to encourage user engagement and interaction, such as by hosting contests, and surveys to attract attention. Eileen Fisher also encourages customers to share photos of their outfits, using specific hashtags to add a sense of community and engagement.



Print Ad

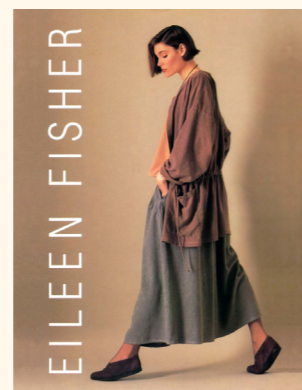
Eileen Fisher takes a nuanced and meaningful approach to print advertising, which often appears in fashion and lifestyle magazines such as Vogue, Harper's Bazaar, and Elle, among others.



EILEEN FISHER 1-Page Magazine PRINT AD Spring 1996
DANA DOUGLAS ankles feet



EILEEN FISHER 1-Page Magazine PRINT AD Fall 2012
JIHAE KIM



Campaign image from 1990.
Courtesy of Eileen Fisher.

Features of these print ads include:

Minimalist design: Eileen Fisher's print ads reflect the brand's core design ethos – simplicity, classicism, and transcendence. The visual elements in advertising are often simple, emphasizing the texture, cut, and streamlined beauty of the product.

Clear Message: Despite the minimalist design, the message in the ad is very clear, emphasizing the brand's commitment to sustainability, the use of eco-friendly materials such as organic cotton and recycled fibers, and social responsibility practices.

Real Models: Eileen Fisher is known for working with real, diverse female models. The models in the campaign represent different ages, body types, and backgrounds, echoing the brand's "Design for All Women" philosophy.

Brand Story: Print ads not only showcase the product, but also tell the brand story and values.

Emotional connection: These ads aim to engage consumers not only by showcasing products, but also by conveying the brand's deep values and philosophy.

2.2.3 Stella McCartney

Video Commercial

In this commercial, Stella McCartney showcases her Fall/Winter 2017 collection against the backdrop of Clevedon Beach in the English countryside. Stella McCartney, who is concerned about environmental sustainability, conveyed the brand's importance and positive attitude towards the issue of "waste and overconsumption of resources" in the Fall/Winter 2017 campaign.



Photo: Harley Weir for Stella McCartney



Photo: Harley Weir for Stella McCartney

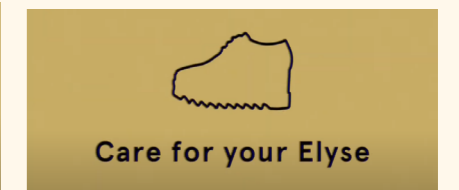
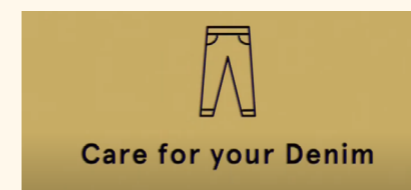
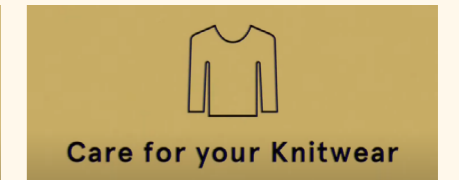
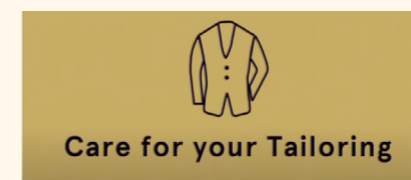
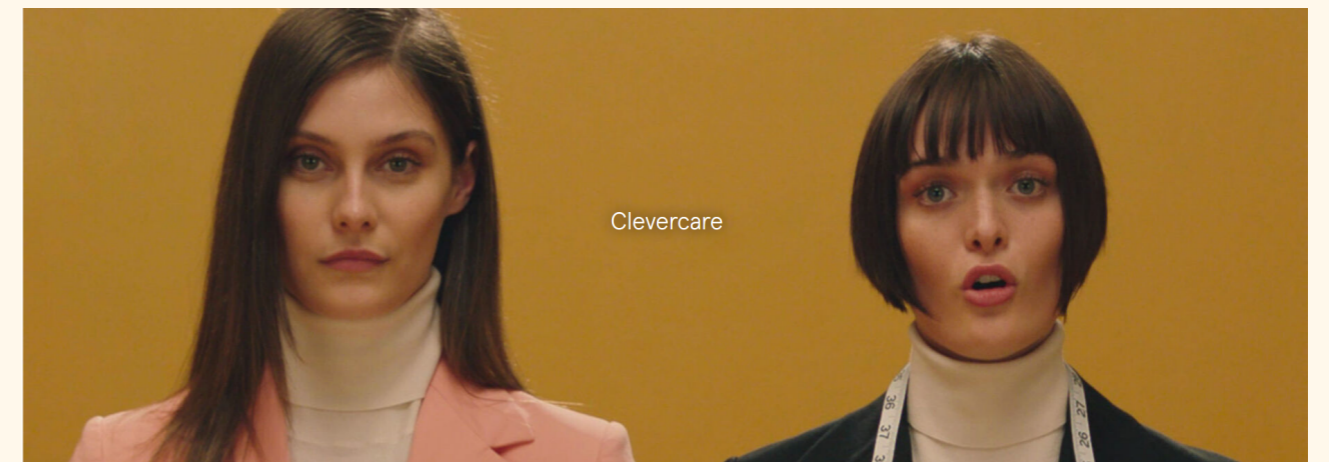
Social Media-There She Grows

To raise awareness of the conservation of Indonesia's rainforests, Stella McCartney launched the "There She Grows" campaign. This campaign invites celebrities and influencers to "adopt" a tree on social media and share their stories to raise awareness. This not only raises public awareness of environmental issues, but also strengthens the brand image.



Social Media-Clevercare

With this collection, Stella McCartney encourages consumers to take care of their clothes in an eco-friendlier way. This campaign conveys information on how to wash, dry and iron laundry to minimize environmental impact through simple graphics and tips. The collection reflects Stella McCartney's overall commitment to sustainability in the fashion industry.



2.2.4 Napapijri

Video Commercial-“Choose Future”

Napapijri has partnered with Zalando on a campaign called “Choose the Future” starring actor Taron Egerton. Directed by Bear Damen, the campaign emphasizes design, sustainability and innovation, depicting a dystopian future and emphasizing the urgency of environmental action. The campaign showcases nature preserved in a museum-like setting, emphasizing the importance of sustainable practices in fashion.



Photo: shot by photographer Emman Montalvan



Photo: shot by photographer Emman Montalvan

2.3 LABELING

2.3.1 Patagonia

As an outdoor apparel brand known for its sustainability and environmental responsibility, Patagonia’s clothing labels not only contain information about traditional sizing, materials, and care guidelines, but also often convey additional information about the brand’s eco-friendly philosophy, material provenance, and sustainability practices. Patagonia is known for its commitment to environmental protection and sustainability, and these values are reflected in all aspects of its products, and here we mainly talk about their Tag and Hang Tag.

Tag

Care Guidelines: Clear instructions on the label on how to properly wash, dry and store your garments to ensure longevity and reduce environmental impact.

Material composition: A detailed list of all materials used to make clothing and their proportions, including organic cotton, recycled polyester, recycled wool and other environmentally friendly materials.

Size information: Provide the size information of the clothing.

Manufacturing information: including information on the country of manufacture and sometimes the manufacturing plant, reflecting the brand’s commitment to supply chain transparency.



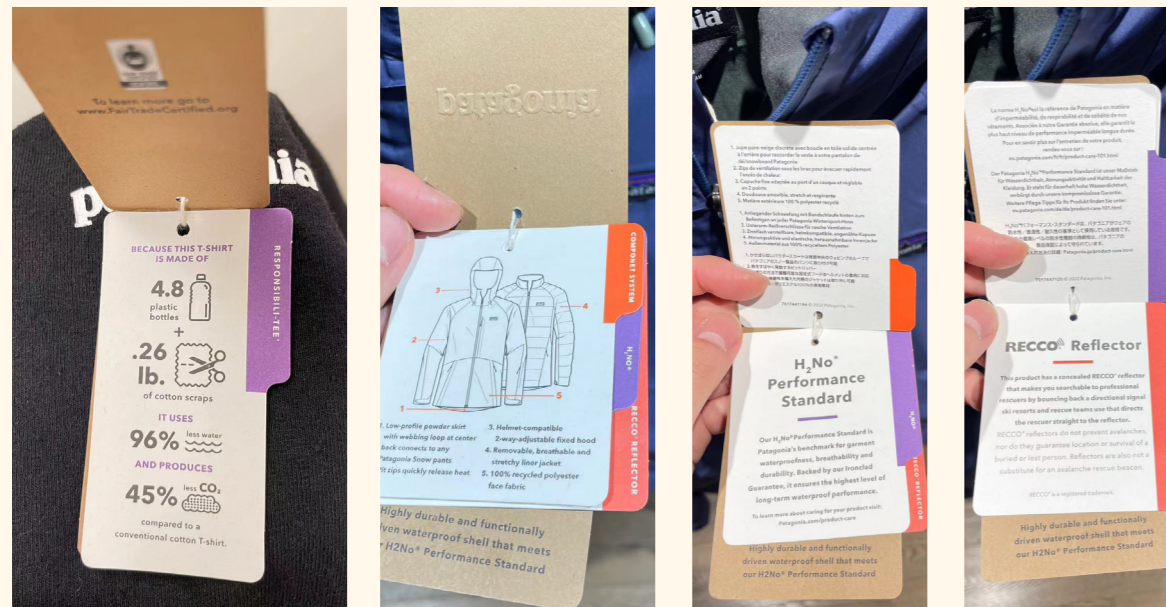
Hang Tag

Brand Story: Listings may tell Patagonia’s brand history and environmental mission, emphasizing its sustainability and environmental efforts.

Product features: Introduce the design concept, functional characteristics of the clothing in detail, and why it is beneficial for outdoor activities.

Environmental information: Explain how the product meets sustainability criteria, such as the use of low-impact dyes, the use of organic materials, etc.

Recycling and Repair Program: Patagonia’s listing may mention its unique recycling program and free repair services that encourage consumers to use and dispose of clothing responsibly.



2.3.2 Eileen Fisher

Eileen Fisher is a fashion brand known for its minimalist design, sustainability, and ethical production. The brand’s Tag and Hang Tag exemplify its commitment to simplicity, transparency, and environmental friendliness.

In terms of design, Eileen Fisher’s labels and tags tend to use natural tones and textures, reflecting her appreciation for nature and a minimalist aesthetic. The text and graphic layouts are often straightforward and elegant, avoiding over-embellishment, in keeping with the brand’s overall design philosophy.

Tag

Care Guidelines: Clear instructions on how to wash, dry and care for your laundry to extend its life and reduce its impact on the environment.

Material composition: Detail the material of the garment, emphasizing the use of sustainable materials such as organic cotton, recycled fibers and natural dyes.

Size information: Provide sizing information for clothing to suit consumers of different body types.

Brand logo: Eileen Fisher’s brand name is usually displayed in a concise manner, in line with its minimalist brand style.



Eileen Fisher Foundation launches 'Hey Fashion!' platform for textile waste crisis. - Facebook: Eileen Fisher

<https://discountdays.ru/product/386531628697>

2.3.3 Stella McCartney

Hang Tag

Brand Concept: A listing outline Eileen Fisher's brand philosophy and commitment to sustainable fashion.

Environmental information: Detail the sustainability features of the garment, such as the use of eco-friendly materials, ethical production practices, and social responsibility programs.

Design Story: Introduce the design inspiration and aesthetic concept of clothing, highlighting its time and versatility.

Recycling program: Eileen Fisher offers a clothing recycling program, and the listing mentioned how used clothes can be recycled and reused through the brand's recycling program.



<https://www.bellissimaconsignment.com/product-page/eileen-fisher-white-midnight-organic-linen-cotton-stripe-bateau-neck-top-ps>



<https://wearhouseconsignment.com/products/eileen-fisher-nwt-sequin-simple-gray-cardigan-size-l>

Tag

Care Guide: Provides detailed guidance on how to properly wash, dry and care for your garments to maintain their quality and extend their lifespan.

Material Composition: Clearly indicate the materials used in the garment, with special emphasis on any sustainable or innovative materials, such as organic cotton, recycled fibers and leather alternatives of non-animal origin.

Size information: Provide the size of the clothing to help consumers find the right size.

Brand information: Usually include Stella McCartney's brand logo, which reflects the brand's identity.



<https://obligedblog.wordpress.com/2017/10/02/packaging-fashion-stella-mccartney-picks-tipas-bio-based-plastic/>



<https://obligedblog.wordpress.com/2017/10/02/packaging-fashion-stella-mccartney-picks-tipas-bio-based-plastic/>

2.3.4 Napapijri

Hang Tag

Brand Story & Values: An introduction to Stella McCartney's brand philosophy, emphasizing its commitment to sustainability, ethics and animal welfare.

Product Highlights: Detailing the design features of the garment and the innovative, sustainable materials used.

Environmental information: Provide advice on how to care for and dispose of clothing in an environmentally friendly way and encourage consumers to adopt responsible consumption behaviors.

Design Inspiration: Sometimes the inspiration behind the design is mentioned, demonstrating Stella McCartney's deep understanding of art, culture, and the environment.



Image from Onlineshop

Material Information: Napapijri's labels often provide detailed information about the materials used in their clothing. This includes the type of fabric and any unique material properties, especially those that are environmentally friendly or sustainable.

Care Instructions: Labels provide clear and accurate care instructions to ensure the longevity of the product.

Brand Identity: Napapijri's labels often feature its iconic logo, including the Norwegian flag, a nod to the brand's inspiration from Arctic explorers.

Sustainability information: Given the brand's focus on environmental responsibility, some of its labels may include information about a product's eco-friendly attributes, such as the use of recycled materials or eco-conscious manufacturing processes.

Size and fitting information: Napapijri's labels provide clear sizing information and may also include fitting details to help customers make informed purchasing decisions.

Traceability: Some of the Napapijri's labels may provide traceability information, allowing customers to understand the sourcing and production process of their garments.



Image from GESTO OUTLET



Image from Shop by home



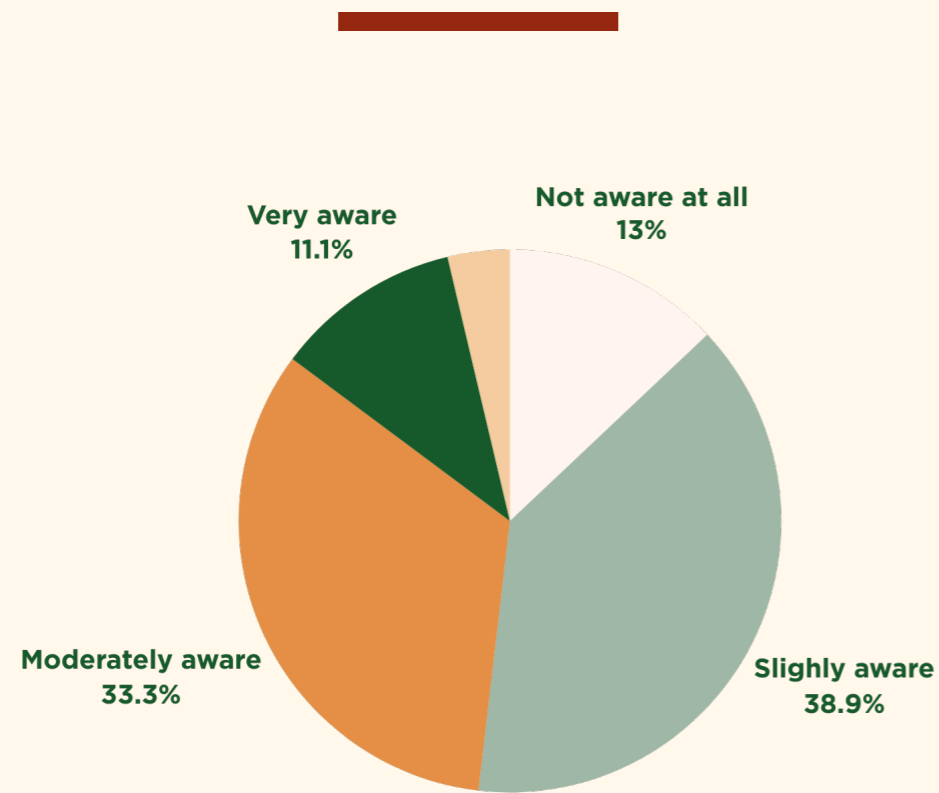
Image from Vinted

3.

Purchase pattern of consumer in garments

To better gauge consumer awareness of fast fashion's environmental impact and to think about how to focus on the awareness-raising potential of the new label. I developed a questionnaire that collected demographic details and clothing spending to evaluate the fashion industry's awareness of the environmental footprint, the impact of environmental issues on purchases, and the willingness to pay more for sustainable choices. and finding out if people are interested in platforms that provide information about the impact of their products, indicating the need for labels that effectively communicate sustainability to facilitate environmentally conscious purchasing decisions.

3.1 DATA AND STATISTICS

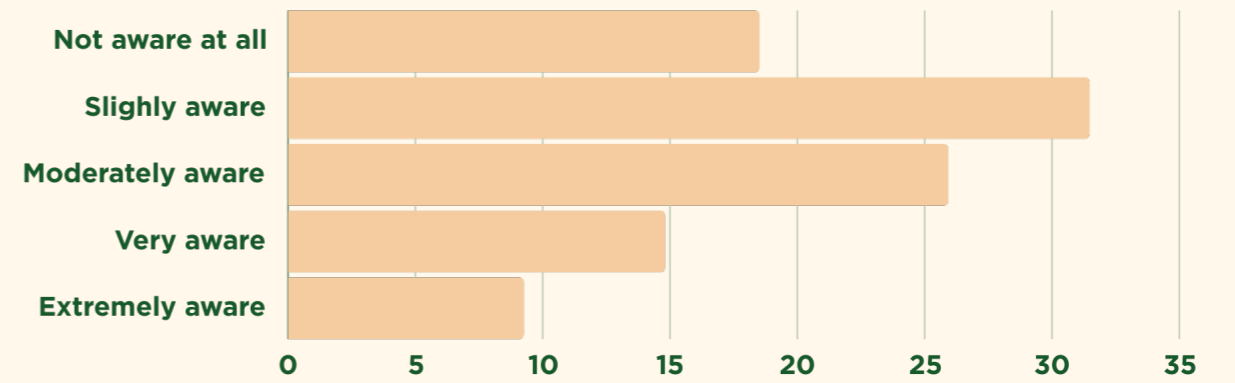
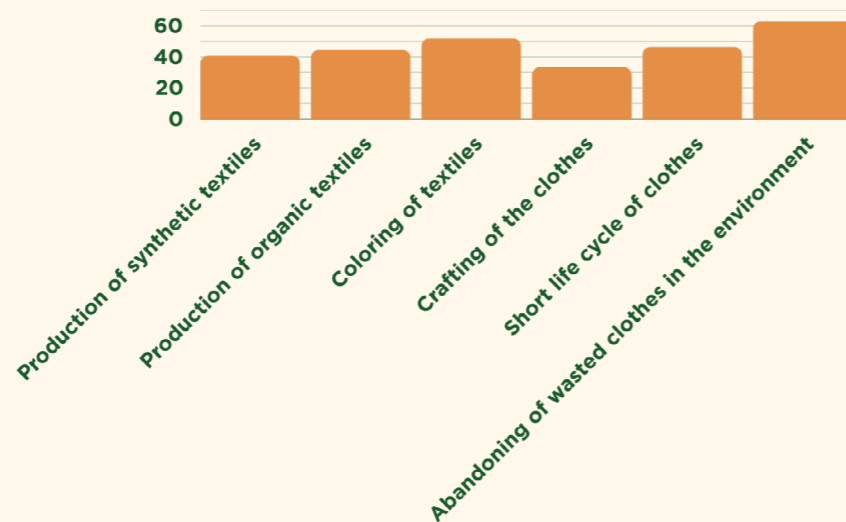


1. To what extent are you aware of the environmental impact of the fashion industry?

The proportion of respondents with slight and moderate awareness of environmental impacts is similar, at 38.9% and 32.2% respectively. Those with a deep understanding are the fewest, at 11.1%, and 13% are completely unaware. This indicates that most of respondents lack knowledge about the environmental impacts of the fashion industry.

2. In your opinion, what aspects in the fashion industry have the most relevant impact for the sustainability? (Multiple choice question)

Most respondents view all six aspects as highly relevant to sustainability, with over 60% identifying the disposal of garments outdoors as the most significant impact. Additionally, 40% perceive coloring of textiles processes as critically impactful.

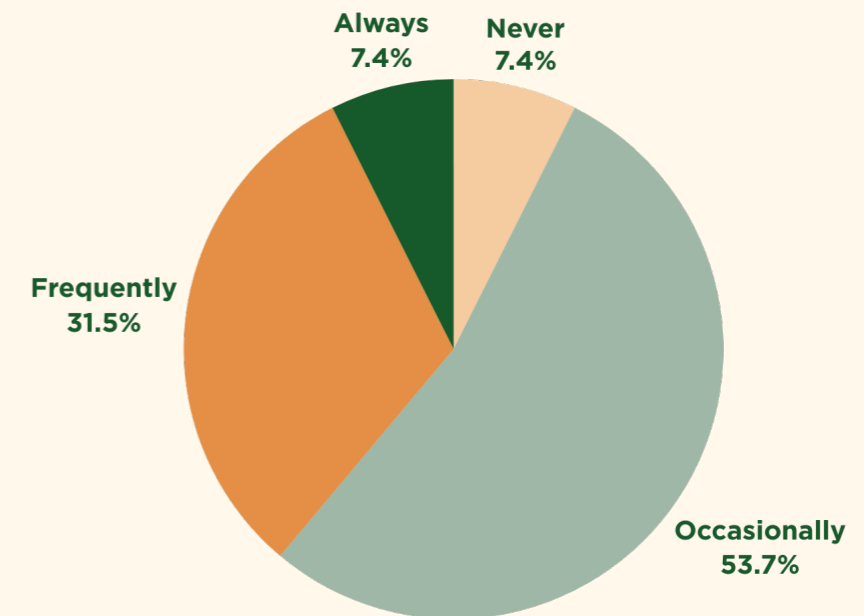


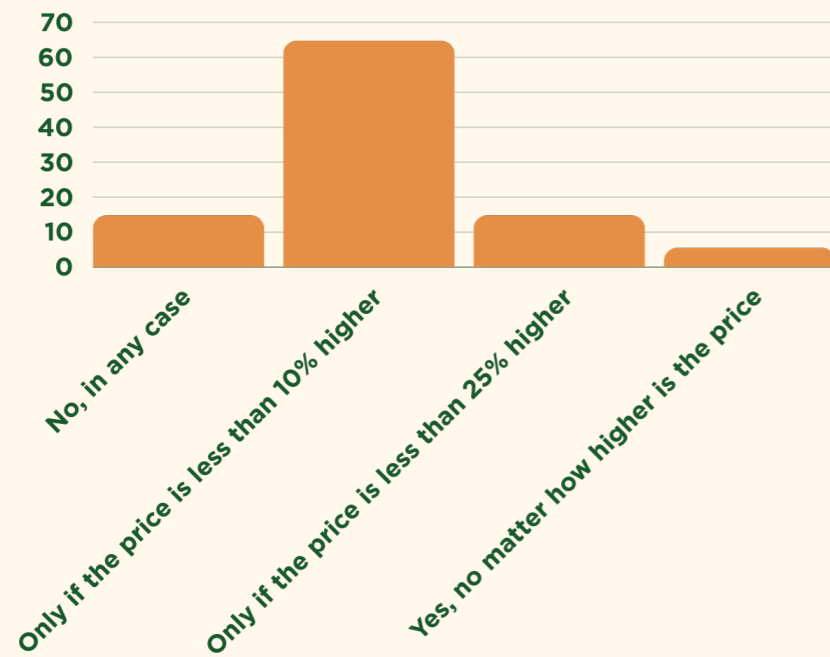
3. Are you aware of the environmental impact of other industries (such as mobility, food, and health)?

The chart illustrates respondents' awareness of the environmental impacts of industries such as mobility, food, and health. It shows that awareness levels vary, with a notable portion having only slight or moderate awareness, roughly a third of respondents in each category. A smaller segment is very aware, while the least, about one in ten, have an extremely high level of awareness. A minority of respondents are not aware at all. This suggests there's a general awareness of the environmental impacts of these industries, yet in-depth knowledge is less common.

4. Do environmental factors influence your purchasing decisions?

The pie chart indicates that most of respondents, over half, say that environmental factors occasionally influence their purchasing decisions. A significant minority, about a third, frequently consider environmental factors, while only a small fraction, 7.4%, always take them into account. An equal 7.4% never consider environmental impacts when making purchases. This data shows that while environmental considerations play a role for most consumers, they are not consistently the primary deciding factor.



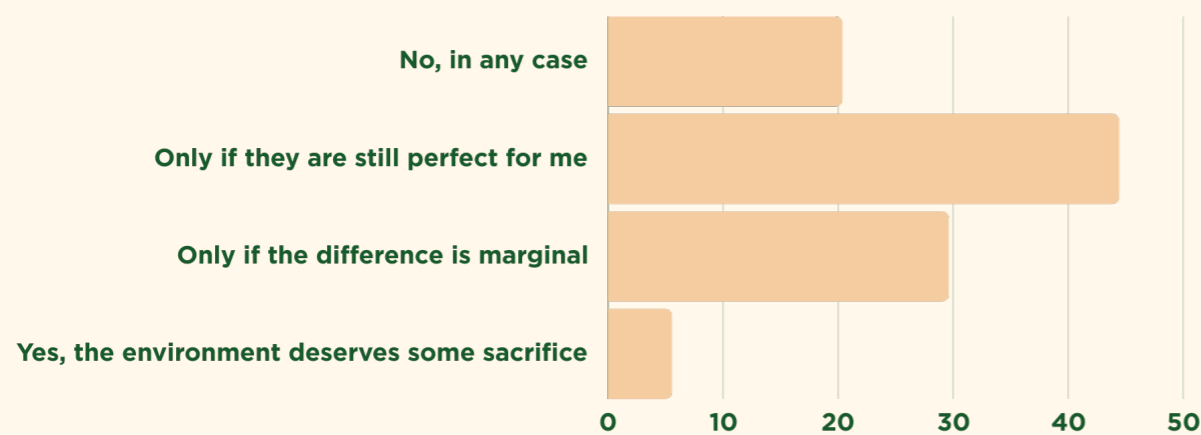


5. Would you choose more environmental friendly brands even if they are more expensive?

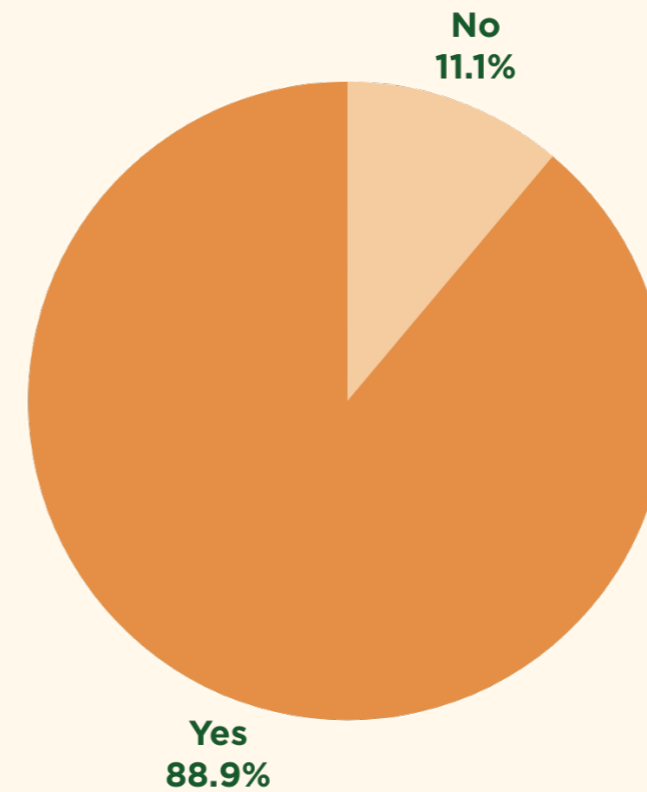
The chart reveals that a significant majority of respondents might choose environmentally friendly brands if the cost is slightly higher, with the largest group willing to do so only if the price increase is less than 10%. A small percentage would always prefer eco-friendly options regardless of the price, while another small group would not consider them at all if they were more expensive.

6. Would you choose more environmental friendly brands even if their 'look and feel' is somehow less appealing to you?

The chart indicates that most of respondents are willing to opt for environmentally friendly brands, even if the 'look and feel' are less appealing, if the difference is marginal. A smaller group would prioritize the environment regardless of product appeal, signifying some willingness to sacrifice for sustainability. A moderate segment will only make this choice if the products still perfectly meet their needs, while a minimal number wouldn't compromise on appeal for environmental friendliness.



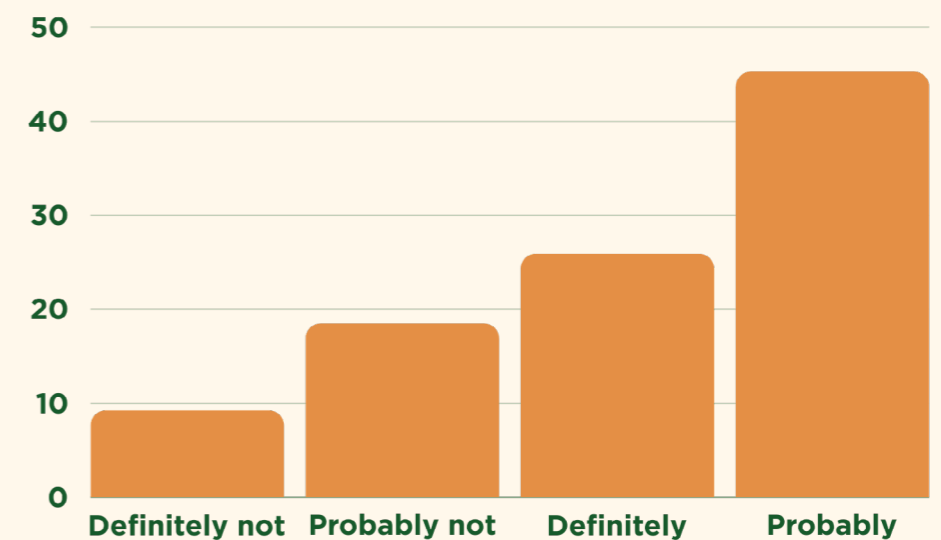
7. Are you interested in learning more about the environmental impact of the products you purchase?



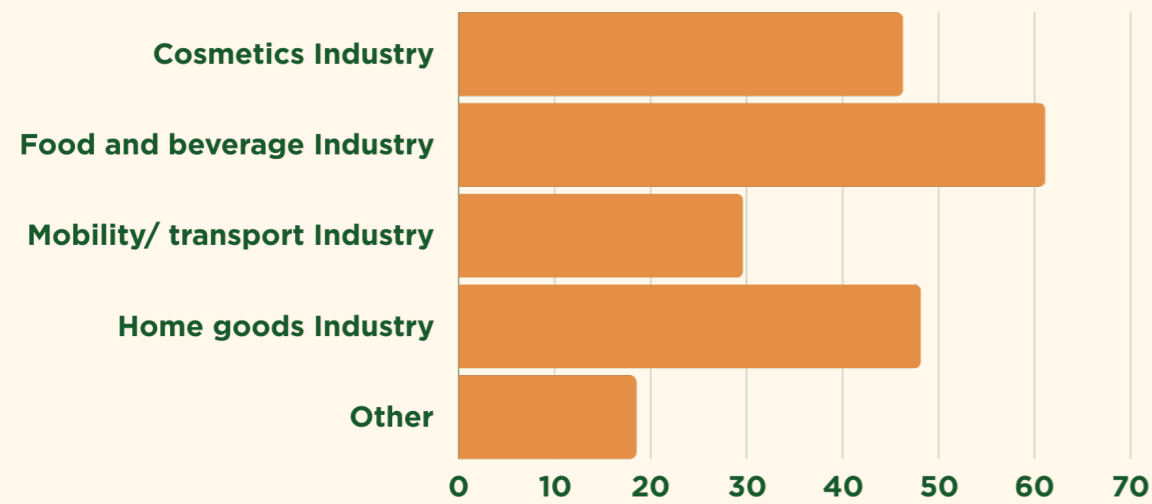
The pie chart displays a strong interest among respondents to learn more about the environmental impact of the products they purchase, with 88.9% answering 'Yes'. This indicates a high level of consumer consciousness regarding the environmental implications of their buying habits. Only 11.1% of the respondents indicated 'No' interest in learning about these impacts.

8. If there was a platform that provided detailed information about the environmental impact of clothing and other products, would you use it to make purchasing decisions?

The bar chart depicts that the largest group of respondents would likely use a platform providing detailed environmental impact information of clothing for making purchases, while a smaller segment is on the fence, leaning towards not using such a platform. Those definitively against the use of such a platform are the fewest. This shows that the majority are inclined to consider environmental details in their shopping choices if they were readily accessible.



9. Do you get/search for product's information about the environmental impact in other industries?



The bar chart shows the extent to which respondents seek out or come across information regarding the environmental impact of products across various industries. The Food and Beverage industry appears to be where respondents most commonly get information about environmental impact, followed by the Home Goods and Cosmetics industries. Mobility/Transport is another significant sector, but less. A small segment of respondents looks for this information in other, unspecified industries. This data suggests that while there is some interest in the environmental impact across various sectors, the level of engagement varies by industry.

10. What do you think is the individual's responsibility in reducing the environmental impact of consumption?

The responses from the survey indicate that individuals have a role in reducing the environmental impact of consumption. Some respondents suggest resisting consumerism by avoiding unnecessary purchases, not blindly following fashion trends, buying durable products, and purchasing less overall.

On the other hand, there is a mention of the economic barrier to environmental consciousness, implying that financial stability can influence one's ability to prioritize the environment.

Additionally, it is highlighted as an important practice that the concept of reusing and recycling items, embracing the idea that what may be waste for one could be a resource for another.

These responses collectively underline the importance of mindful consumption and waste management as individual responsibilities in mitigating environmental damage.

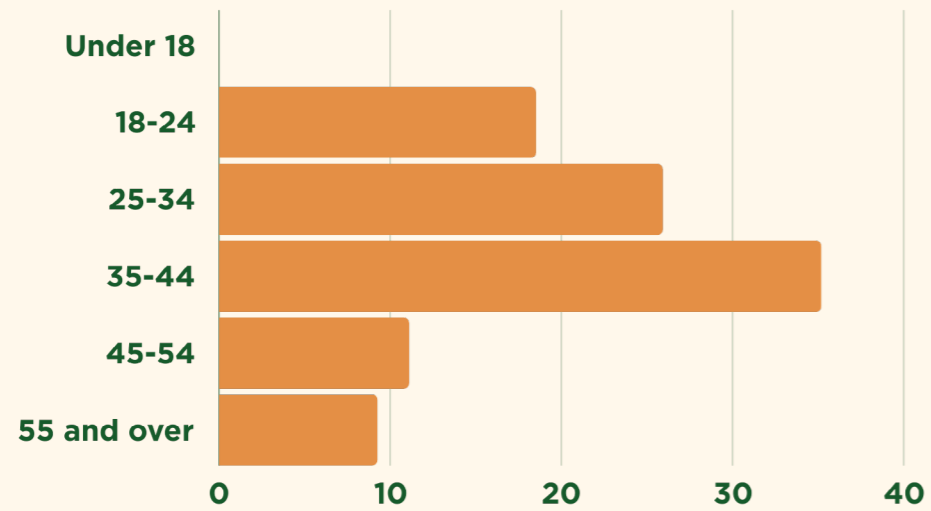
11. Do you have any suggestions or ideas that could help consumers make more environmentally friendly purchasing decisions?

The survey participants suggest several strategies to encourage eco-friendly consumer behavior. These include urging companies to adopt sustainable practices and promote their products responsibly to avoid overconsumption. There's a call for better consumer education on sustainability labels to inform more conscious buying. Incentives like small rewards for learning about sustainability are proposed to encourage engagement. Additionally, there's a recommendation for government intervention, such as subsidies for sustainable companies and penalties for those not meeting environmental standards, to shift market competitiveness towards responsible companies.

12. What is your nationality?

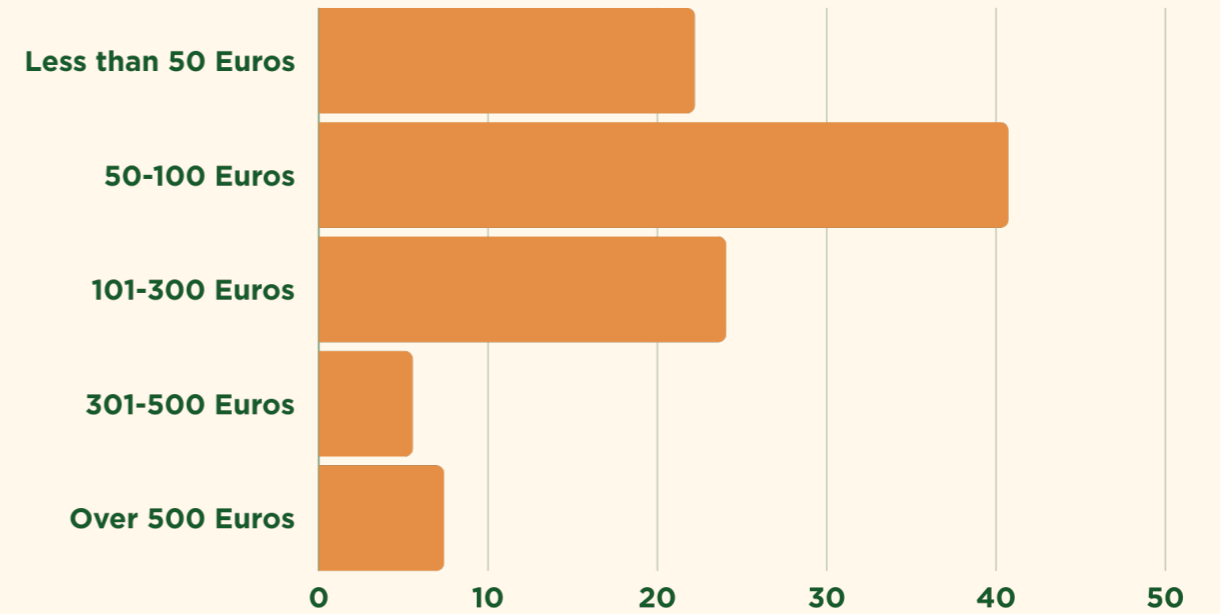


China	48
Italy	3
Spanish	1
Colombia	1
India	1



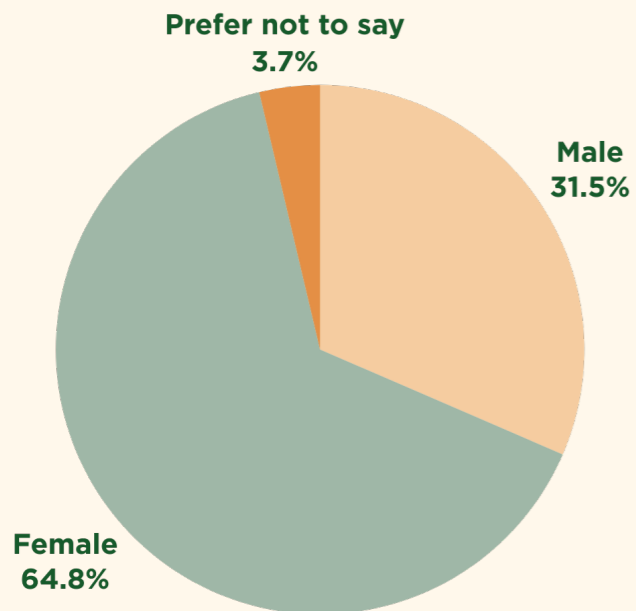
13. What is your age?

The bar chart illustrates the age distribution of survey respondents. The largest age group participating in the survey appears to be those aged 35-44, followed by the 25-34 age bracket. Young adults aged 18-24 and middle-aged adults 45-54 are represented in smaller proportions, with the 18-24 age group being slightly larger. The smallest group of respondents is under 18, and those aged 55 and over are similarly the least represented.



15. What is your average monthly budget for garments?

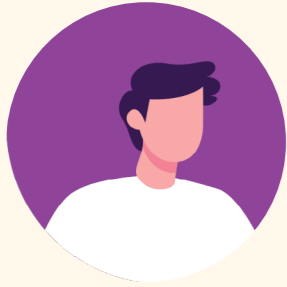
The bar graph illustrates the average monthly budget for garments among the respondents. The largest group spends between 101-300 Euros. The next most significant group's budget ranges from 50-100 Euros, followed closely by those who spend 301-500 Euros. A smaller segment reports spending over 500 Euros, while the smallest group spends less than 50 Euros per month on garments. This data indicates that most respondents allocate a moderate amount of their monthly budget to clothing.



14. What is your gender?

The pie chart presents the gender distribution of survey respondents. A majority, approximately 64.8%, are female, while 31.5% are male. A small percentage, 3.7%, prefer not to disclose their gender. This data suggests that more females participated in the survey than males.

3.2 USER PERSONAS



Jeff

Age: 24 YO

Gender: Male

Nationality: Chinese

Average monthly budget for garments: 50-100 euro

User experience

Jeff shops for clothing only when necessary, usually opting for basic and functional items that require minimal decision-making. His shopping experiences are mostly online, driven by convenience and the need to replace worn-out or outgrown items.

Challenges

Jeff finds the shopping process overwhelming and time-consuming, preferring to spend his time on hobbies and studies.

He struggles with identifying quality items online, often unsure if the products will meet his expectations in terms of durability and comfort.

Jeff is indifferent to fashion trends, which sometimes makes him feel out of place in social settings.

Key Attributes

Low maintenance
Indifferent to trends

Needs

Jeff needs clothing that is versatile, suitable for both his casual lifestyle and occasional formal events like presentations and conferences.

He looks for user-friendly shopping platforms that offer straightforward, no-frills buying options, simplifying the purchase process.

Jeff values recommendations from trusted sources, such as friends or reliable online reviews, to guide his infrequent shopping endeavors.

He appreciates durable clothing that withstands frequent wear and requires minimal maintenance, aligning with his practical approach to fashion.



Hongxia

Age: 48 YO

Gender: Female

Nationality: Chinese

Average monthly budget for garments: Over 1000 euro

User experience

Hongxia indulges in luxury shopping as a form of self-reward and a statement of her success. She frequents high-end boutiques and exclusive online platforms for her purchases.

Her shopping experience is characterized by personalized service, attention to detail, and a preference for private shopping sessions or VIP treatment.

Challenges

Keeping up with the fast-paced trends in luxury fashion while maintaining a timeless wardrobe poses a dilemma.

Key Attributes

Brand-loyal
Status-conscious

Needs

Hongxia looks for exceptional customer service that includes personalized shopping experiences, exclusive previews, and bespoke tailoring options. She values authenticity guarantees and often relies on brand reputation and secure purchasing channels to ensure the legitimacy of her luxury items.

Hongxia needs access to limited edition collections and unique pieces that offer a sense of exclusivity and differentiation from the mainstream luxury market. She appreciates luxury brands that offer a blend of contemporary design with classic elegance, aligning with her desire for a modern yet timeless wardrobe.



Jana

Age: 24 YO

Gender: Female

Nationality: Spanish

Average monthly budget for garments: 301-500 euro

User experience

Jana enjoys exploring the latest fashion trends and often shops for new outfits to express her vibrant personality and creativity. She values the shopping experience, both in-store and online, preferring platforms that offer a seamless, engaging, and visually appealing browsing experience.

Challenges

Jana is increasingly concerned about the environmental impact of her fashion choices but finds it challenging to decipher the sustainability claims of different brands. Limited options for trendy yet sustainable clothing often leave her feeling compromised between style and eco-friendliness.

Key Attributes

Trend-conscious
Socially aware

Needs

Jana seeks affordable fashion options that do not sacrifice style for sustainability. She desires clear, transparent information about the sustainability practices of fashion brands to make informed choices. Jana looks for brands that offer a mix of trendy designs and eco-friendly materials.



Sara

Age: 35 YO

Gender: Female

Nationality: Italian

Average monthly budget for garments: 101-300euro

User experience

Sara values quality over quantity in her wardrobe, preferring timeless pieces that offer versatility and durability. She appreciates a streamlined shopping experience, favoring brands that offer detailed product information and a curated selection of items.

Challenges

Finding fashion brands that align with her minimalist aesthetic without compromising on ethical production standards can be difficult. Sara is skeptical of marketing claims and seeks genuine proof of sustainability and ethical practices in the fashion industry. Balancing a professional appearance with her personal style and values sometimes poses a challenge.

Key Attributes

Practical
Detail-oriented

Needs

Sara needs versatile clothing that can transition from a professional setting to casual outings without compromising on style or comfort. She looks for fashion brands that provide clear, detailed information about their materials, supply chain, and sustainability efforts. Sara values pieces that are made to last, reducing the need for frequent replacements and minimizing waste. She appreciates brands that offer a timeless aesthetic, blending modern design with traditional craftsmanship.



Arjun

Age: 27 YO

Gender: Male

Nationality: Indian

Average monthly budget for garments: Less than 50 euro

User experience

Arjun's approach to fashion is pragmatic and trend-focused, primarily driven by style and affordability rather than environmental considerations.

He shops both online and in physical stores, often influenced by the latest trends and what he sees on social media or his peers. He shops both online and in physical stores, often influenced by the latest trends and what he sees on social media or his peers.

Challenges

Arjun finds it difficult to keep up with rapidly changing fashion trends while managing his budget.

He sometimes experiences buyer's remorse after impulse purchases that don't match his expectations in terms of quality or style.

Key Attributes

Trend-conscious

Price-sensitive

Indifferent to sustainability

Needs

Arjun needs access to a wide variety of trendy and affordable clothing options that allow him to experiment with different styles.

He values convenience in shopping, preferring platforms that offer easy returns and exchanges to mitigate the risk of online purchases.

3.3 USER JOURNEY MAP

A user journey map is a visual representation that outlines the steps a user takes when interacting with a product, service, or brand. It captures the user's experience, emotion, and touchpoints from initial engagement to completion of the goal. This map will visualize the stages consumers go through, their feelings, motivations, and touchpoints with brands, especially when encountering new sustainability labels designed to raise environmental awareness. By creating these interactive maps, we can provide consumers with the information and influence to make more environmentally friendly purchasing decisions, aligning with the survey's goal of increasing consumer awareness of the sustainability of their fashion choices.



Jeff

	AWARENESS	CONSIDERATION	PURCHASE	USE	END OF LIFE
Customer Actions	Realizes the need for new clothing due to wear and tear.	Browses online stores sporadically; relies on friends' suggestions.	Makes quick decisions, often choosing the first reasonable option.	Wears new clothing in routine life, evaluates comfort and functionality.	Disposes of clothing when worn out, rarely considers recycling or donation.
Touchpoints	Online advertisements, recommendations from friends, university events.	E-commerce platforms, social media, peer opinions.	Online checkouts, quick-view product pages.	Daily life, academic and social events.	Generally, the broken clothes are thrown away or put in the depths of the closet
Emotions					
Pain Points	Lack of interest in shopping, difficulty in finding the motivation to start the process.	Overwhelmed by too many choices, unsure about quality and fit.	Concerns about product quality, fit, and return policies.	Difficulty repairing the product	He doesn't know what else to do with clothes other than throwing them away



Hongxia

	AWARENESS	CONSIDERATION	PURCHASE	USE	END OF LIFE
Customer Actions	Hongxia discovers a new luxury collection through exclusive brand events, influencer endorsements, or high-end fashion magazines.	She researches the collection, focusing on brand heritage, craftsmanship, exclusivity, and the uniqueness of pieces.	After receiving VIP treatment and possibly custom tailoring, she makes her purchase, ensuring the item's authenticity and exclusivity.	She enjoys the luxury item, receiving compliments that affirm her status and fashion sense. She shares her positive experience with peers.	
Touchpoints	VIP events, customer service interactions, social media.	Luxury brand stores, exclusive online platforms, VIP events, customer service interactions, social media.	Luxury brand stores, exclusive online platforms.	Brand, Fabric, Seams	Wardrobe
Emotions					
Pain Points	Difficulty in finding unique items	difficulty in finding unique items	Concerns about product authenticity	Navigating the abundance of seasonal trends	Post-purchase care and services



Jana

AWARENESS CONSIDERATION PURCHASE USE END OF LIFE

Customer Actions

Touchpoints

Emotions



Pain Points

She discovers a new fashion trend through social media or her favorite fashion influencers.	She researches affordable yet sustainable brands that offer the latest trends, using online platforms and social media.	She decides to buy an item that aligns with her style and sustainability values, preferring an engaging online shopping experience.	She incorporates the item into her wardrobe, showcasing it on her social media and in her daily life.	Once the garment is no longer in use, Sofia looks for eco-friendly ways to dispose of it, such as recycling or donation programs.
Social, app	Websites, social, app	Websites, app	Seams, Fabric	Wardrobe
●	●	●	●	●
Difficulty in verifying the authenticity of brands' sustainability claims.	Difficult balance style with eco-friendliness	Higher prices for sustainable products	Product defects	Lack of clear information about sustainability practices



Sara

AWARENESS CONSIDERATION PURCHASE USE END OF LIFE

Customer Actions

Touchpoints

Emotions



Pain Points

Sara discovers a minimalist fashion brand through a sustainable fashion blog.	Researches the brand's ethical practices and material sourcing.	Decides to purchase a versatile piece that fits her minimalist wardrobe.	Integrates the piece into her daily wardrobe for various occasions.	Considers responsible ways to extend the item's life or dispose of it.
Sustainable fashion blog, social media post.	Websites, app, social media	Websites, app, e-commerce	Brand, Fabric, Seams	Wardrobe
●	●	●	●	●
Doubt about the authenticity of the brand's sustainability claims.	Difficulty in verifying the sustainability claims.	Higher price point due to ethical manufacturing processes.	Concerns about maintaining the item without compromising its longevity.	Limited local options for textile recycling or donation.



Arjun

	AWARENESS	CONSIDERATION	PURCHASE	USE	END OF LIFE
Customer Actions	Awareness of the environmental impact of fast fashion is mainly through social media	Arjun starts considering the sustainability of his clothing choices, influenced by newfound knowledge	Decision-making leads to the purchase of clothing, where sustainability may be a key factor	The product must have a good fit, the materials must last over time and withstand frequent scuffing	When Arjun begins to feel that the dress is ruining, the fabric is sagging and has lost its shape a bit
Touchpoints	Social, app	Websites, social, app	Websites, app	Seams, Fabric	Wardrobe
Emotions					
Pain Points		It is often difficult to find information from the label	Higher prices for sustainable products	Product defects	Lack of clear information about sustainability practices

3.4 USER REQUIREMENTS

The MoSCoW method is a prioritization technique used in project management, business analysis, and product development to reach a common understanding with stakeholders on the importance of delivering various requirements. It helps prioritize user needs and preferences in a structured manner. This method categorizes requirements into four distinct groups—Must have, Should have, Could have, and Won't have— to understand what is essential for the user, what is important but not critical, what would be nice to have, and what is unnecessary.

Functional Requirements

To better design a digital label system to improve consumers' awareness of the environment, I also referred to the Digital Product Passport (DPP) electronic labeling system, so its functional requirements can be considered from multiple aspects. Ensure that consumers can more conveniently view detailed product-related information by scanning the QR code on the clothing tag when shopping in the store. Here are some key functional requirements:

Product information display

Origin and supply chain history are one of the basic functions of electronic labels, allowing consumers to understand the origin and production background of a product, which is critical to driving transparency and sustainability.

- Country of Origin:

MO	The basic country of origin information (i.e., the country where the product was manufactured) is essential. This is a critical requirement for the label as it provides the fundamental transparency about the product's geographical manufacturing location.
S	Including the city or region within the country can provide a more detailed origin context, enhancing the consumer's understanding of the product's background.
CO	Additional details such as the location's specific attributes related to craftsmanship or environmental standards, if relevant and available, could further enrich the consumer's insight but are not critical.
W	Detailed information about the exact factory or facility might be excessive for the label and could be omitted, especially if there are privacy or commercial sensitivity concerns.

- Supply Chain History:

MO	A high-level overview of the supply chain stages (from raw material to finished product) is essential. This must include basic information about key suppliers and an outline of the manufacturing processes.
S	More detailed information about each stage in the supply chain, like specific locations or methods used in manufacturing, should be included as it significantly increases transparency.
CO	Users can explore each supply chain stage in greater detail in "Your Badge."
W	Extremely granular data, such as the names of individual workers or minute operational details, would not be necessary for the label due to privacy, relevance, and complexity considerations.

Environmental impact indicators

Providing environmental indicators is directly related to the purpose of electronic labels - that is, to enhance consumers' understanding of the environmental impact of products and promote environmental awareness. Therefore, providing environmental impact indicators is the core function of electronic labeling systems, aiming to help consumers make more environmentally friendly choices.

- Carbon Footprint:

MO	Showing the total carbon emissions generated over the entire product life cycle
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- Water Consumption

MO	The total amount of water required for product production. Water use is an important environmental issue and providing this information supports the label's goal of promoting sustainable choices.
----	---

- Recyclability:

MO	A product's recyclability rating (including materials used and recycling guidelines). This information enables consumers to make environmentally responsible decisions about product end-of-life.
----	---

- Recyclability:

S	Provide a product's recyclability rating (including materials used and recycling guidelines).
---	---

CO	Information on product serviceability, including guidance on replacing consumable parts and details on repair services. While important for extending product life and reducing waste, it may not be as important as direct environmental impact indicators such as carbon footprint and water consumption.
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W	Specific details about repair service providers or repair costs
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Usability Requirements

For digital labeling systems, usability requirements analysis is used to ensure that the system design can meet user expectations in terms of ease of use, accessibility and user experience. The following is an analysis of usability requirements for electronic label systems:

- **Intuitiveness**

Electronic labeling systems should be intuitive and easy to understand, allowing users to quickly understand how to scan the QR code and obtain the required information without additional guidance.

MO

Users can learn how to scan QR codes and easily access information

- **Consistency**

The system interface and interaction methods should be consistent to ensure that users are not confused when using different parts.

MO

Consistent design and interaction throughout the system.

- **Responsiveness**

The system should respond quickly to user operations, whether scanning a QR code or loading information, to ensure a smooth user experience.

MO

The system must respond promptly to user operations to ensure a smooth and efficient user experience. For example, instant confirmation of QR code scanning.

- **Feedback**

Users should receive immediate feedback when interacting with the system, such as confirmation after successfully scanning a QR code.

S

While immediate feedback is important, there may be other ways to notify the user of the status or operation of the system and the core functionality (information retrieval) can still be accomplished.

- **Personalization**

The system should provide some degree of personalization options, such as language selection or adjusting the way content is displayed, to suit different user preferences.

CO

Personalization can enhance the user experience but is not critical to the basic functionality of an electronic labeling system. Options such as language selection can add value but are not necessary for all users.

- **Minimize Cognitive Load**

The presentation of information and the operation of the system should be as simple and direct as possible to avoid users feeling overloaded with information or complicated operations.

MO

Simplify information presentation and system operation, especially given the potentially complex data involved in sustainability indicators.

User Interface Requirements

User interface (UI) requirements analysis focuses on design elements and interactive components with which users directly interact. For digital label systems, UI requirements are critical to ensuring that the system is user-friendly, attractive, and effectively communicates information. Here is an analysis of the UI requirements for such a system:

- Clear and simple

The user interface should be clean and present information in a simple manner to avoid overwhelming the user. Icons, labels, and buttons should be clearly labeled and self-explanatory.

MO	Presenting simple geometric elements on the launch screen helps in instant understanding of the user.
----	---

- Visual hierarchy

Important information and controls should be highlighted to direct users' attention to key actions or data. This can be achieved through size, color and location.

MO	Different sized elements and contrasting colors to highlight the "Start" button are helpful in guiding the user to what to do next. Articles, videos, and badges must be well differentiated on the home screen.
----	--

- Consistency

The UI should maintain consistency in terms of colors, fonts, button styles, and layout from different screens or sections. This helps create a cohesive user experience and shortens the learning curve.

MO	Consistent typography, button styles, and a consistent color palette.
----	---

- Interactivity

Interactive elements such as buttons, links, or sliders should provide immediate feedback upon interaction, such as changing colors.

S	Start button on the launch screen and Scan function on the scan screen. Other interactive elements such as drop-down menus for filtering badges or selecting environment report details.
---	--

- Languages

The UI should support multiple languages and cultural contexts, allowing for localization of content and formatting to suit the user's preferences and location.

CO	Language selection is available for both the app and the web page.
----	--

- Loading States

When the system is processing data or loading content, clear indicators should be provided to the user.

S	In the statistics screen, where data visualization indicates the potential loading status of environment indicators. These are implemented with delays in data rendering.
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4.

Design Outputs

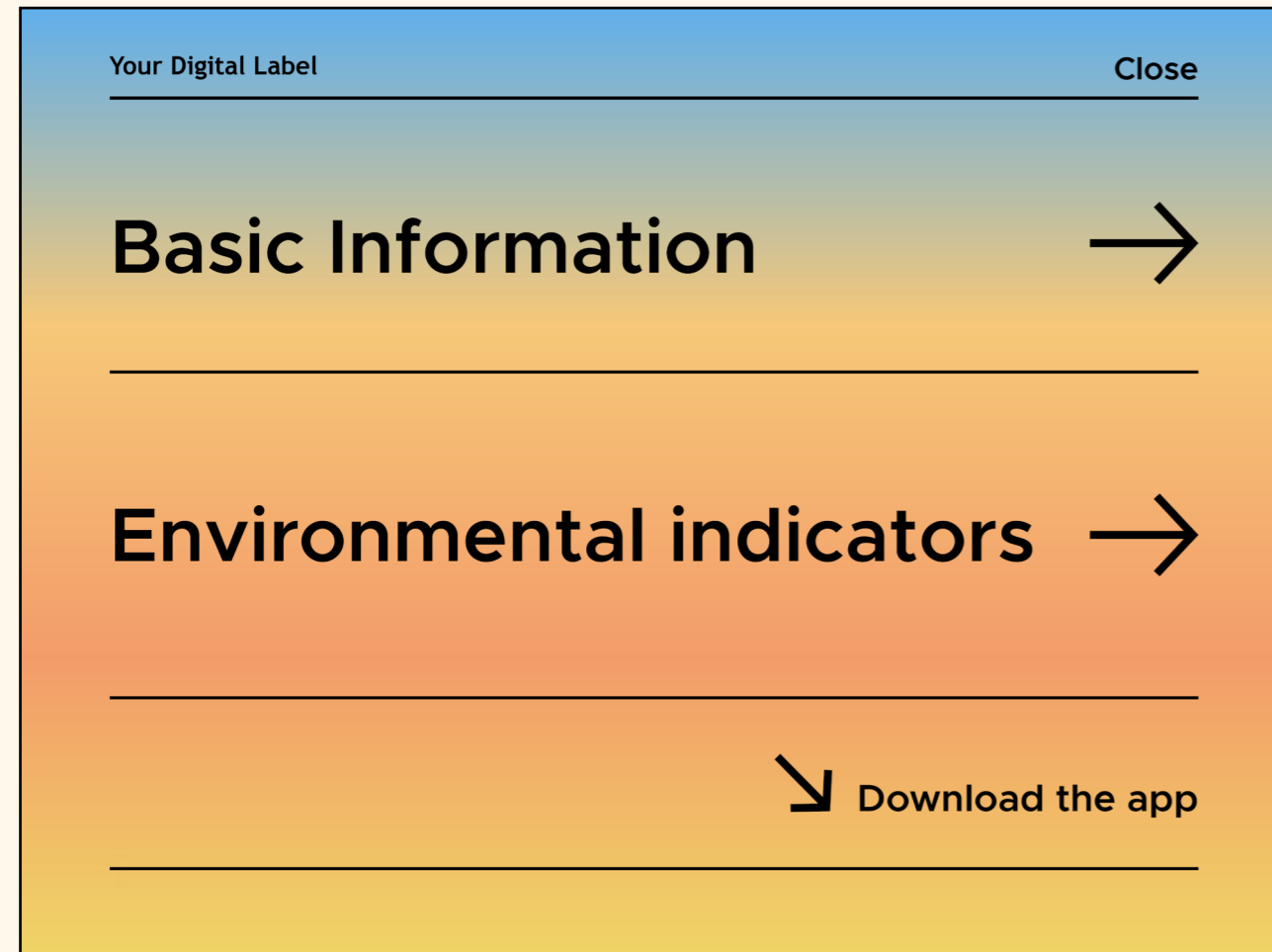
4.1 DIGITAL LABEL

When designing a digital label, it is critical to clearly display the product's environmental impact and other relevant information.

Therefore, I want to design a new DPP based on the results of the questionnaire survey in the previous chapter. When consumers enter the store to purchase products, they can scan the QR code on the tag with their mobile phone to quickly obtain information about related products. To affect their purchasing decisions aligning with the survey's goal of increasing consumer awareness of the sustainability of their fashion choices.

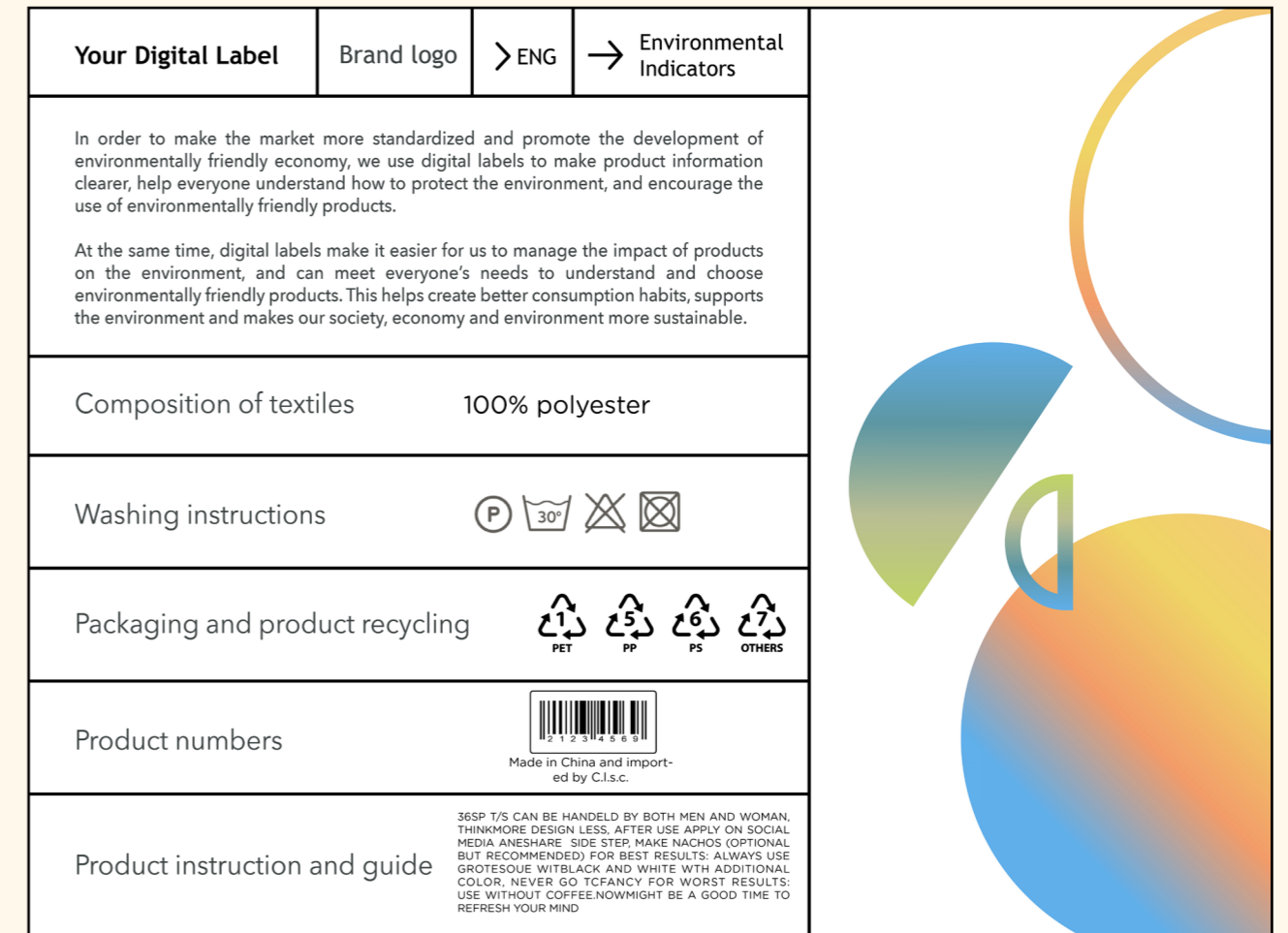
Home page Section

This is the homepage of the web version of the electronic label that appears when the user scans the QR code. It provides users with a simple and intuitive interface to guide them to understand the basic information and environmental indicators of the product in depth. At the top of the page is a title "Your Digital Label", as well as a close button that allows users to exit easily. The tabs are divided into two main sections, each with an arrow indicating further navigation.



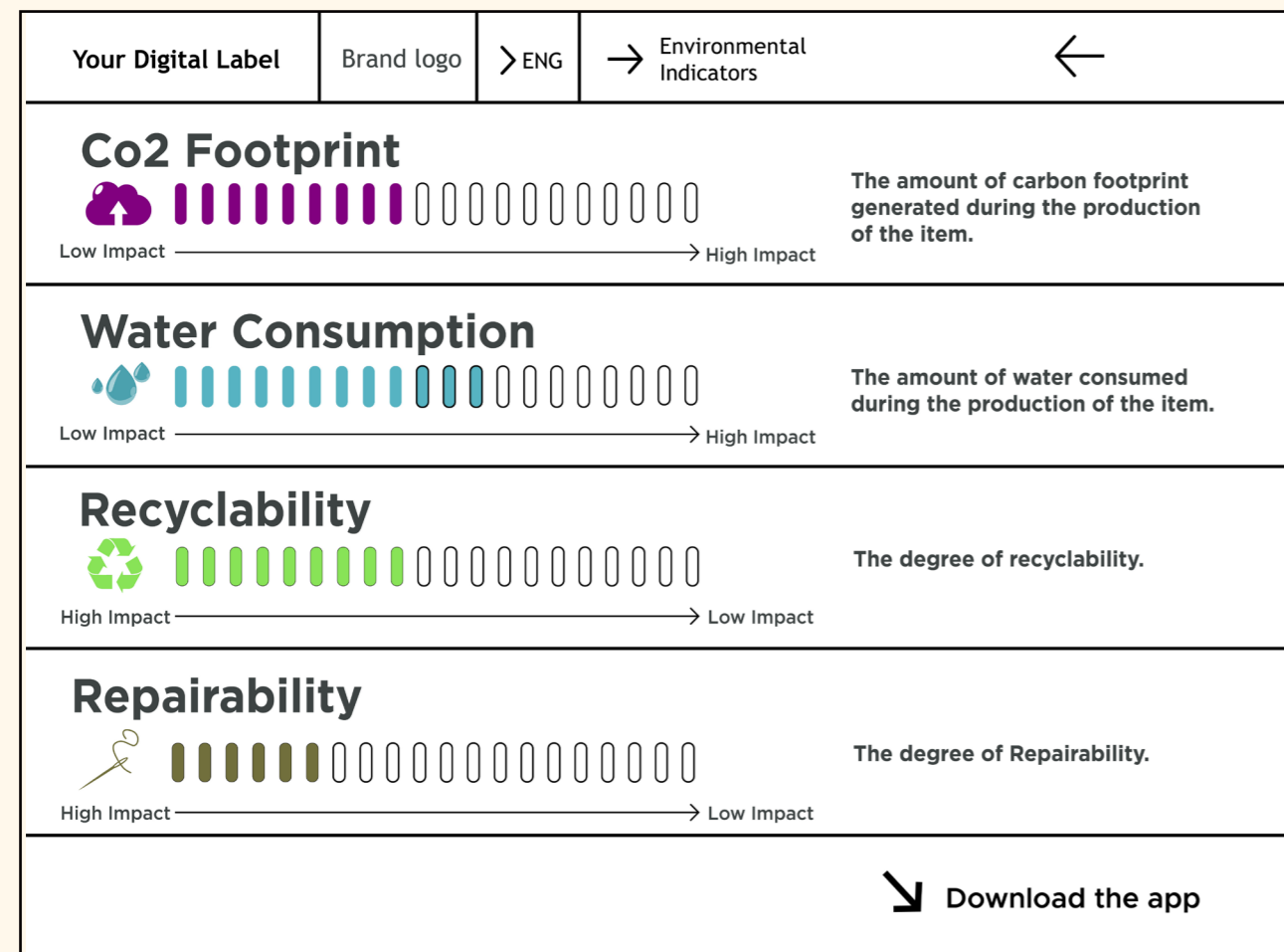
Basic information Section

The basic information section of this e-label website allows you to easily view all the important details of your garment. It will have an option to select any language. Additionally, this section provides information about what the garment is made of, how to wash it, how to recycle it, and its serial number. At the same time, colors are used to help you distinguish different environmental information, such as how much the production of clothes affects the environment. If you want to know more, you can also download an app to track your environmental indicators. The purpose of this design is to help everyone better choose environmentally friendly clothes, while also making the process easy and fun.



Environmental indicators section

The environmental indicators section of this e-label shows the product's carbon footprint, water consumption, recyclability and repairability. Each metric is accompanied by an explanation and a color bar graph, allowing users to quickly assess the environmental characteristics of a product. The color shade changes in the bar chart show how the product is performing on each environmental indicator. The page also provides a convenient download app button, allowing users to get more details and more in-depth analysis. This design is designed to make understanding the environmental impact of products simpler and more straightforward, helping consumers make more environmentally friendly purchasing decisions.



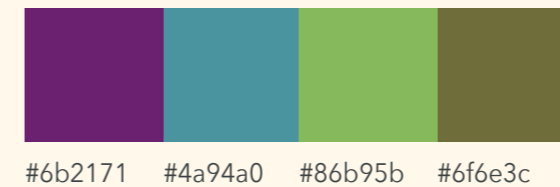
Design elements:

The home page uses transitional colors from warm to cool colors as the background, symbolizing the diversity of the environment and the different levels of environmental impact of products. In the display of environmental indicators, the bar chart uses colors from dark to light to represent the degree or level, with dark colors representing higher environmental impacts and light colors representing lower impacts, providing users with intuitive visual cues. Text uses high-contrast colors to ensure readability.

Home page color:

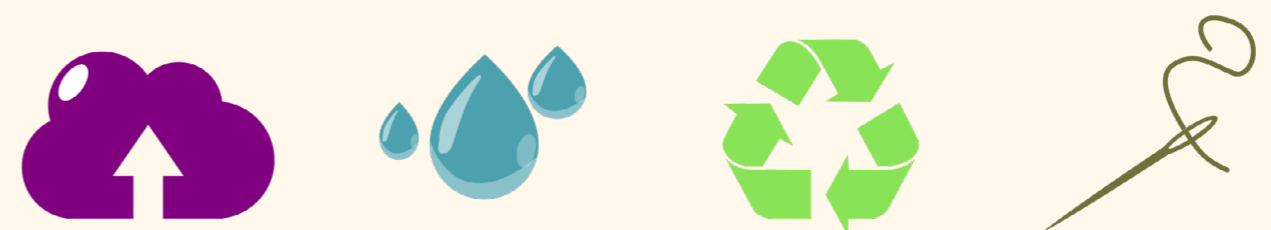


Icons color:



Icons and Symbols

Icons are used next to each environmental indicator to represent the corresponding content, such as a cloud shape representing carbon footprint, a water droplet representing water consumption, a recycling symbol representing recyclability, and a tool shape representing repairability. The style of the icons remains consistent, with simplified line graphics that are easy to identify and do not distract users. The color used for the icon is black or dark, making sure it stands out against the gradient background.



4.2 DIGITAL WARDROBE APPLICATION

Layout:

The page layout is clear and divided into several parts, including title bar, basic information, environmental indicators and download App button. Each part has clear separation, making the page structure orderly.

The top of the page includes the App's name and brand logo, as well as a language switching button to facilitate user navigation.

The basic information section and environmental indicator section adopt a card-style design. There is an arrow pointing to the right next to each piece of information, prompting users to click to obtain more information.

The layout focuses on user flow and ease of use, guiding users from understanding basic information to in-depth exploration of environmental indicators, and finally encouraging users to download the App for further interaction.

Designing an app that raises consumer awareness of the environmental impact of fashion requires in-depth consideration of all aspects of user experience (UX) to ensure that the app not only provides necessary information, but is also easy to use, interactive, and stimulates user interest.

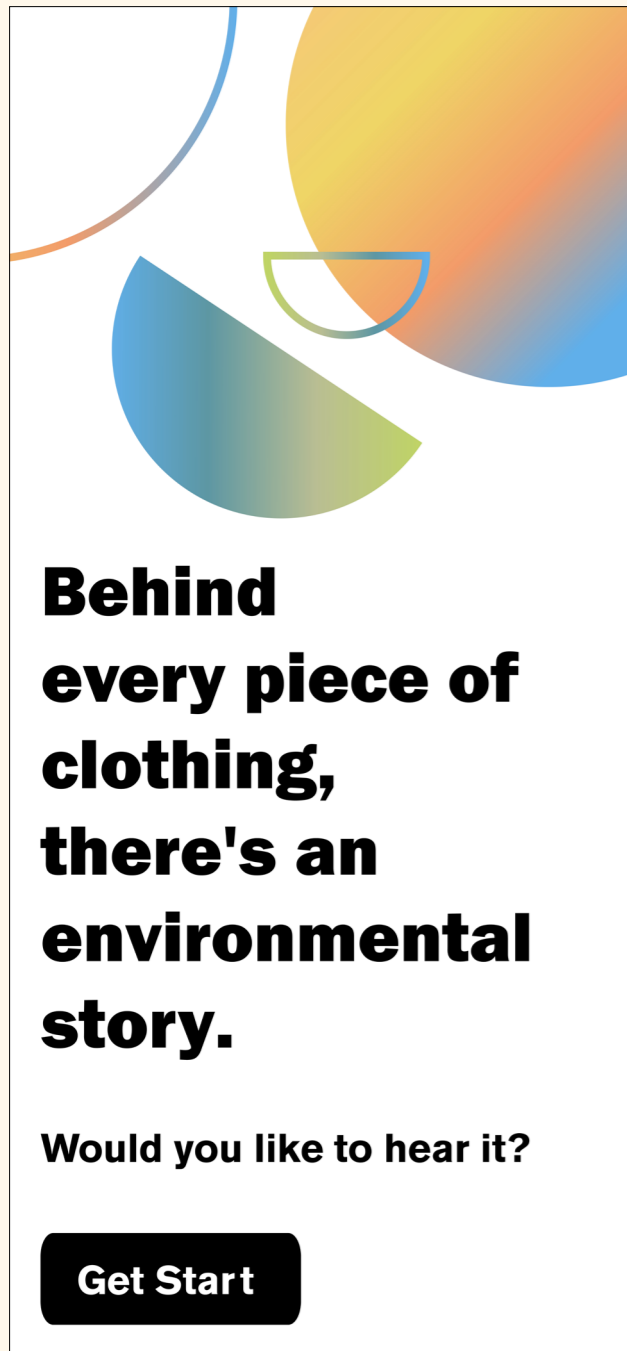
The design consists of four key parts:

1. An educational section dedicated to sustainability and environmental impact.
2. A home screen with scanning capabilities.
3. A details screen showing scan results.
4. A "My Wardrobe" screen that summarizes the user Environmental labeling information for all garments.

The app is named "EcoWardrobe" considering it aims to raise consumers' awareness of the environmental impact of fashion and encourage sustainable consumption behaviour. The name combines "Eco" (ecology, environmental protection) and "Wardrobe" (wardrobe), intuitively conveying the core functions and goals of the App, which is to help users build a wardrobe with less impact on the environment and enhance sustainability. Sustained fashion awareness and engagement.

The color used is green, which is associated with nature and sustainability, to emphasize the environmental theme. Choose a clear and easy-to-read font. The font is a round and friendly Eds Market Bold Script font to enhance the brand's affinity.



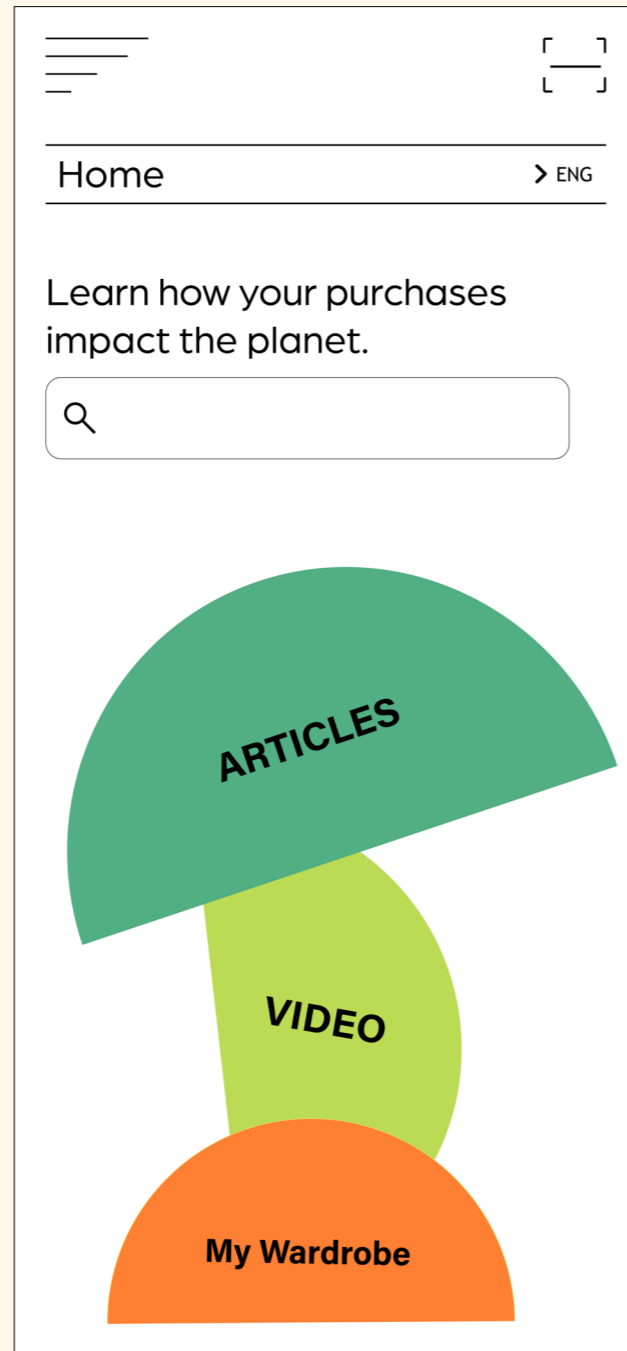


Welcome Screen

A welcome screen with a call-to-action, inviting users to learn about the environmental story behind their clothing.

Home screen (with scanning function):

A home screen or menu screen that provides options to access articles and videos, possibly related to sustainable practices and environmental impact, and a section titled "My Wardrobe," possibly allowing users to view and manage their outfits within the app.

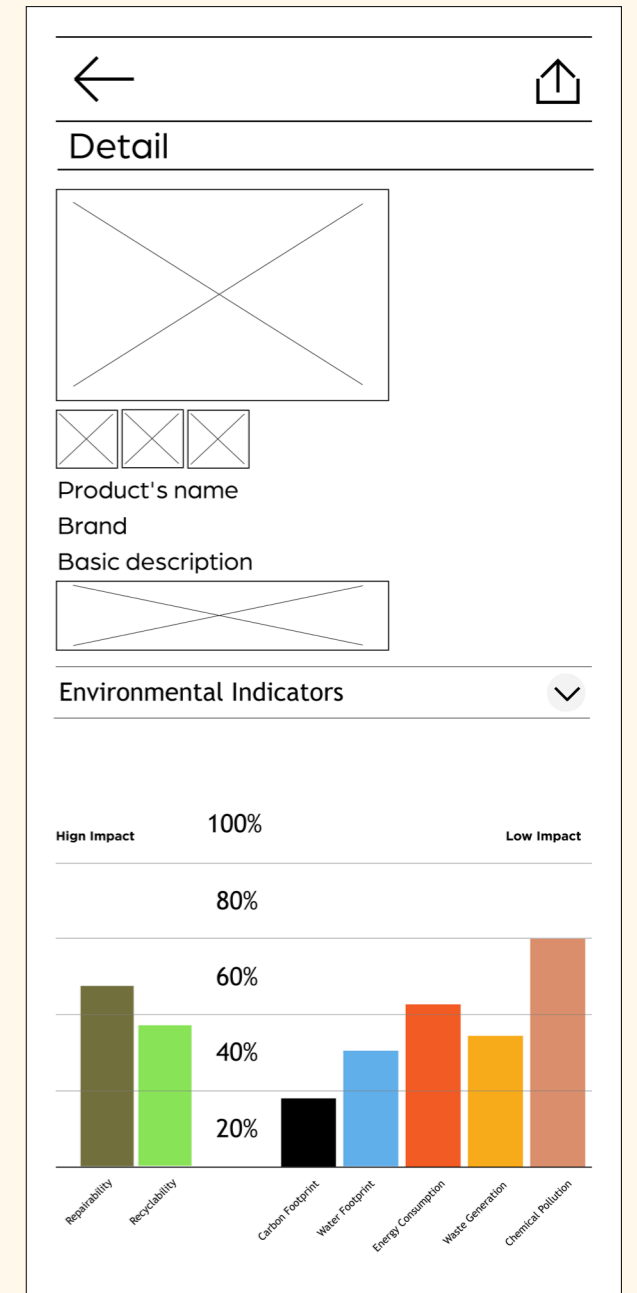


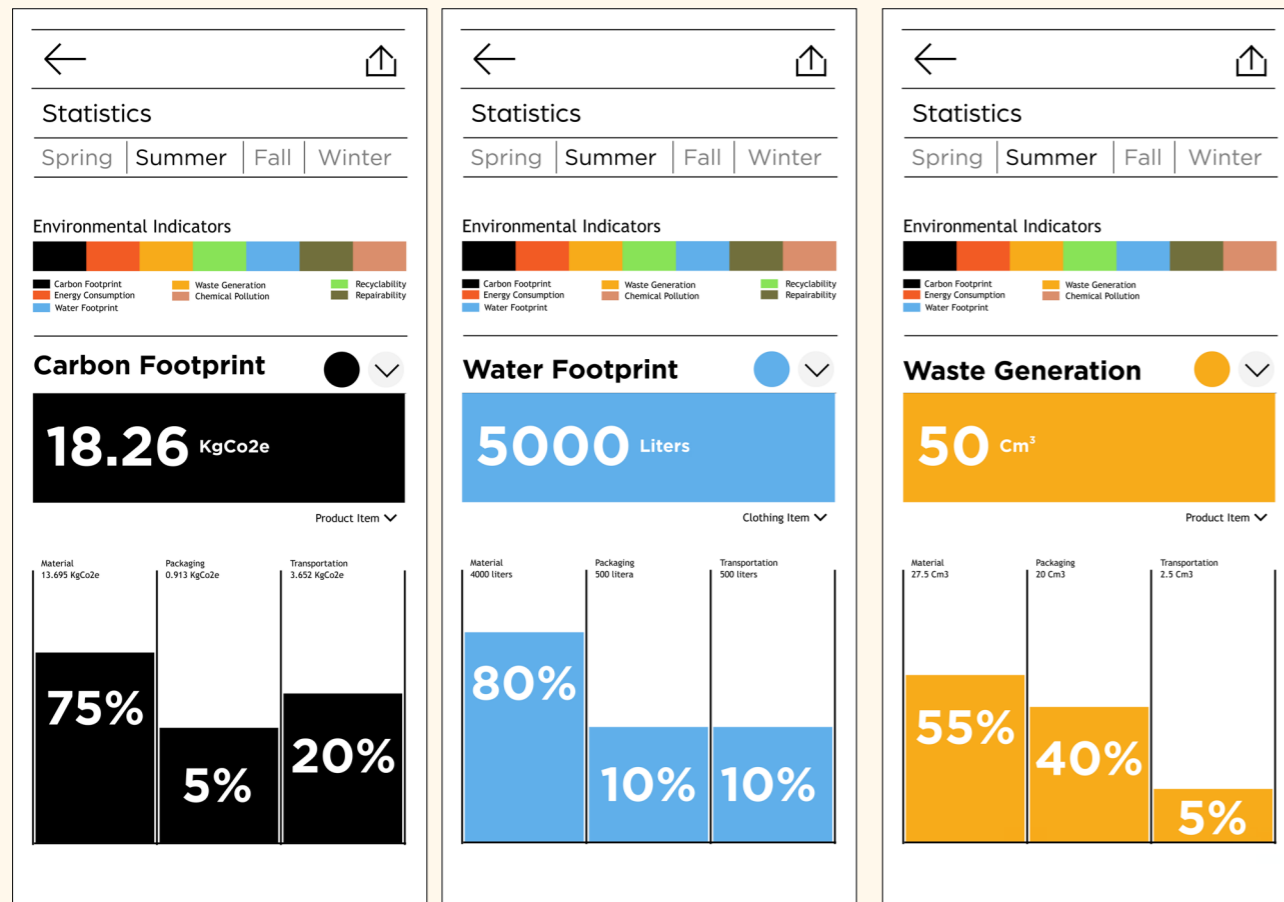
Scan section:

A scanning interface that allows users to scan QR codes on labels to receive more information. Below the scanner interface, there is a navigation area with options to access My Wardrobe, a personal environmental impact report, a history list of scanned items, and a "See more" option.

Basic information section:

A detailed view of the scanned item with placeholders for the product image as well as the product name, brand, and basic description. Below is the section titled "Environmental Metrics" which shows a bar chart containing various metrics such as repairability, recyclability, carbon footprint, water footprint, energy consumption, waste generation and chemical pollution. Used to inform users of specific environmental impacts associated with the garments they scan.

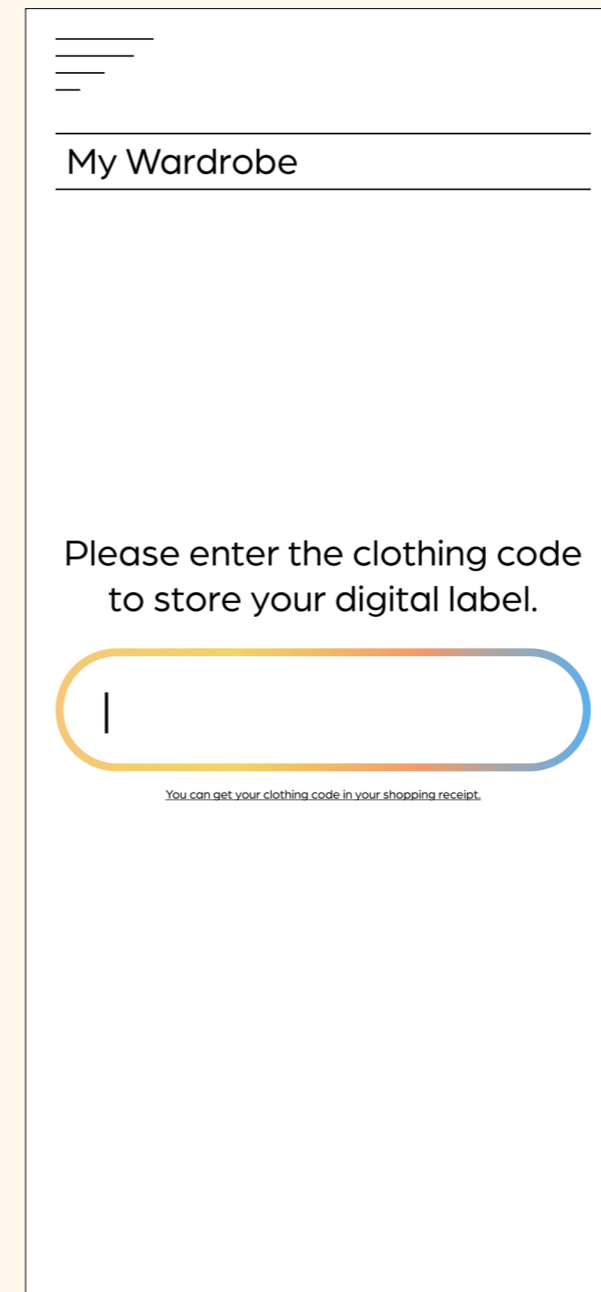




Product information display section:

This is part of a feature that allows users to track and understand different environmental indicators at different stages. For example, a detailed breakdown of the carbon footprint, including total emissions and the contribution of materials, packaging and transportation, among others.

Statistics are only from the clothes uploaded in the wardrobe, and that seasonal split are thought to check clothes regarding when a customer buy them.



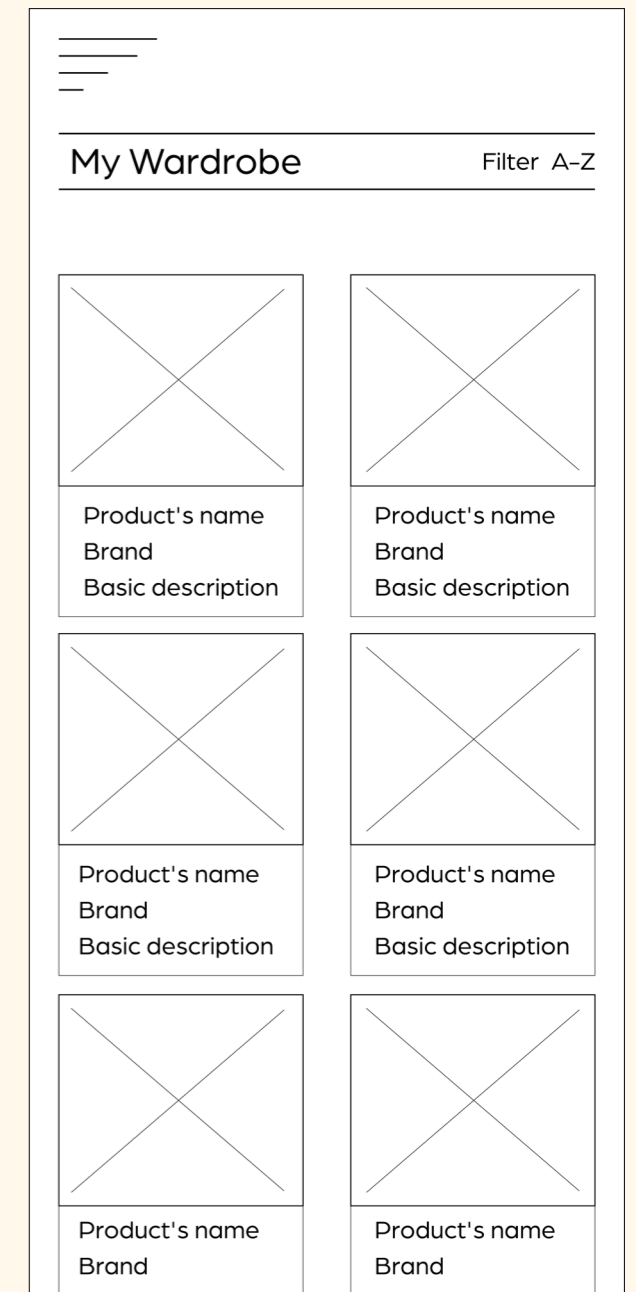
Clothing code section:

The section that prompts the user for the garment code, which is used to store or register the digital label in the application. Users can find their clothing code on their shopping receipt.

"My Wardrobe" section:

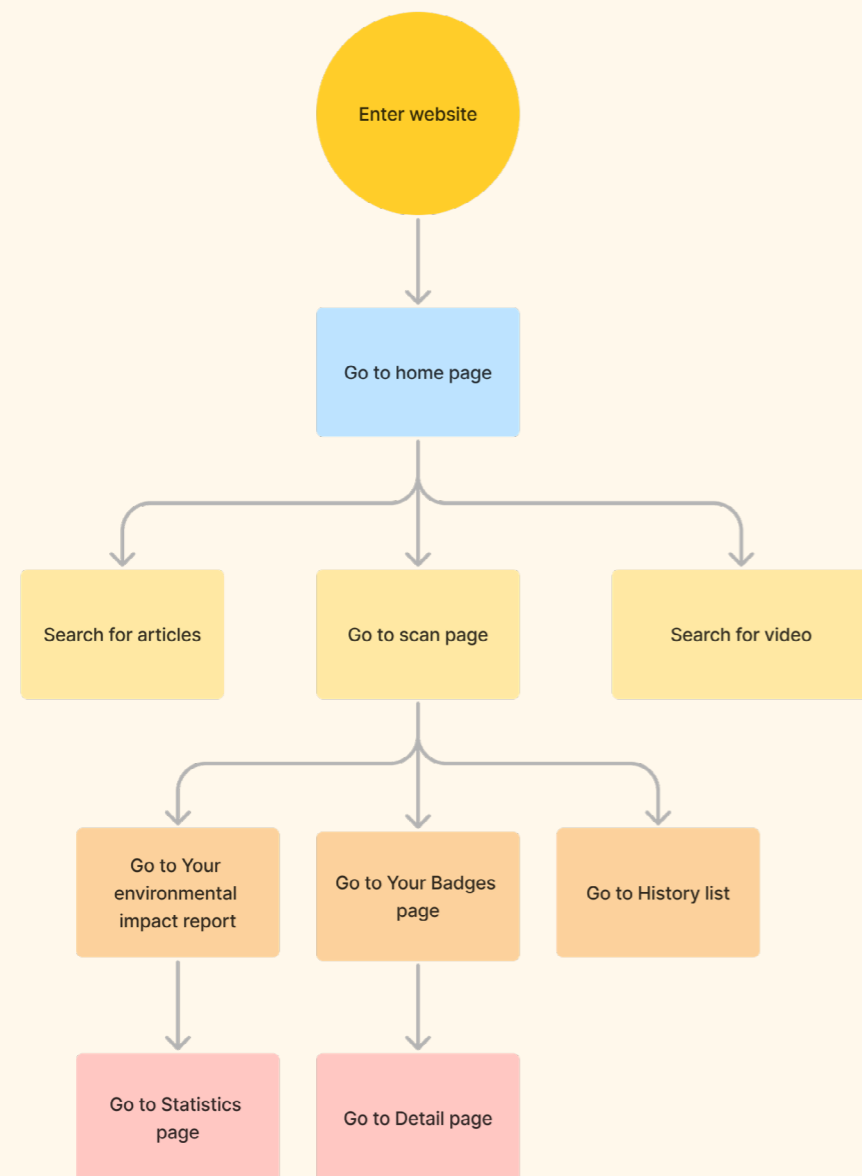
Displays a collection of environmental labels for all of a user's clothing so they can understand the sustainability status of their overall wardrobe. Design a "wardrobe index" function to summarize and analyze the environmental protection degree of the user's wardrobe and give suggestions for improvement.

Offers a sharing feature that allows users to share the sustainability status of their wardrobe with friends or social media.



Usability Requirements

In this application, users first enter the welcome page, and by clicking "Start" to enter the home page, users can choose to read articles, watch videos, or view electronic tags they have obtained by scanning. Furthermore, users can view the detailed environmental impact of specific clothing items and track their environmental behavior through the statistics page. The entire user experience is designed to encourage users to continuously learn and make greener choices, aiming to build awareness and reflection on sustainable consumption habits.



Bibliography

- A NEW TEXTILES ECONOMY: REDESIGNING FASHION'S FUTURE
- Sustainable Fashion and Textiles: Design Journeys by Kate Fletcher.
- Textiles and Environment by N. N. Mahapatra.
- International Journal of Life Cycle Assessment
- Circular Economy in Textiles and Apparel: Processing, Manufacturing, and Design edited by Subramanian Senthilkannan Muthu.
- "A New Textiles Economy: Redesigning Fashion's Future" by the Ellen MacArthur Foundation
- Noémie Gelati Jade Verplancke, The effect of influencer marketing on the buying behavior of young consumers, p11
- A blog on the contec website titled Linear economy vs circular economy: Key differences and how to make the change
- Digital Product Passport: A Pathway to Circularity and Sustainability in Modern Manufacturing by Foivos Psarommatis and Gökan May

Website

- Good on you's article: <https://goodonyou.eco/what-is-fast-fashion/>
- <https://oceangeneration.org/the-history-of-fast-fashion/>
- <https://www.thecommons.earth/blog/11-fast-fashion-and-ultra-fast-fashion-brands-to-avoid>
- <https://www.sustainyourstyle.org/en/whats-wrong-with-the-fashion-industry#anchor-fast-fashion>
- <https://www.theguardian.com/sustainable-business/2015/mar/20/cost-cotton-water-challenged-india-world-water-day>
- <https://brenmicroplastics.weebly.com/project-findings.html>
- <https://www.plymouth.ac.uk/news/wearing-clothes-could-release-more-microfibres-to-the-environment-than-washing-them>
- <https://www.eea.europa.eu/publications/textiles-in-europes-circular-economy>
- <https://www.theatlantic.com/business/archive/2014/07/where-does-discarded-clothing-go/374613/>
- <https://www.sustainyourstyle.org/en/toxic-clothing>
- <https://world.time.com/2012/12/14/what-if-the-worlds-soil-runs-out/>
- <https://www.treehugger.com/how-rainforest-destruction-hides-our-clothes-4855604>
- <https://www.meltwater.com/en/blog/fashion-influencers>
- <https://www.harpersbazaar.com/uk/fashion/fashion-news/a42094247/bella-hadid-weird-girl-style/>
- <https://planetark.org/newsroom/news/what-is-the-linear-economy-and-why-do-we-need-to-go-circular>
- https://environment.ec.europa.eu/strategy/circular-economy-action-plan_en
- https://environment.ec.europa.eu/strategy/circular-economy-action-plan_en
- https://environment.ec.europa.eu/topics/chemicals/reach-regulation_en
- https://environment.ec.europa.eu/topics/circular-economy/eu-ecolabel/product-groups-and-criteria/clothing-and-textiles_en
- https://hadea.ec.europa.eu/calls-proposals/digital-product-passport_en
- <https://qrmaking.com/blog/4MjaLHjFddE7fdTFUse6cQ>
- <https://wornwear.patagonia.com/>
- <https://www.patagonia.com/stories/the-cleanest-line/story-17851.html>
- <https://golabagency.com/portfolio/napapijri-ss20-campaign/>



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