Monitor for Circular Fashion

REPORT 2024/2025

SDA Bocconi
SCHOOL OF MANAGEMENT

SUSTAINABILITY LAB
MONITOR FOR CIRCULAR FASHION

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Contents

Executive Summary

The following pages highlight the methodology and key research results of the Monitor for Circular Fashion. Further details are available in the report.

HOW TO MENTION THIS REPORT:

Rinaldi F.R. et al. (2025), "Monitor for Circular Fashion Report 2024-2025", SDA Bocconi School of Management
www.sdabocconi.it/circularfashion

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Report last update on December 31st, 2024.

1 Monitor for Circular Fashion: Year 4

WHO WE ARE

The SDA Bocconi School of Management Sustainability Lab Monitor for Circular Fashion is a:

1) multi-year research project;

2) multistakeholder community.

The Monitor for Circular Fashion (M4CF) aims at disseminating the best practices of circular fashion and promote technical, managerial and scientific skills, especially those that contribute to the transition towards circular business models.

SDA Bocconi
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MONITOR FOR CIRCULAR FASHION

Partner companies

Ingredient brands

Albini Group
Candiani Denim
Eurojersey
Gruppo Mastrotto
Manteco
RadiciGroup
Vibram
Vitale Barberis Canonico
YKK

Vendors, Brands & Retailers

Ferragamo
Giorgio Armani
Holding Moda
Hugo Boss
Kering
Oscalito
Save The Duck
TOD'S Group
Vivienne Westwood

Service Providers

Avery Dennison
Certilogo
Deda Stealth
Lectra
PLM Impianti
Temera
UL Solutions

KPIs Committee

Bip
ICEC
UNIC

Research Technical Partners

EEN
ETP
EURATEX

Visual design Partner

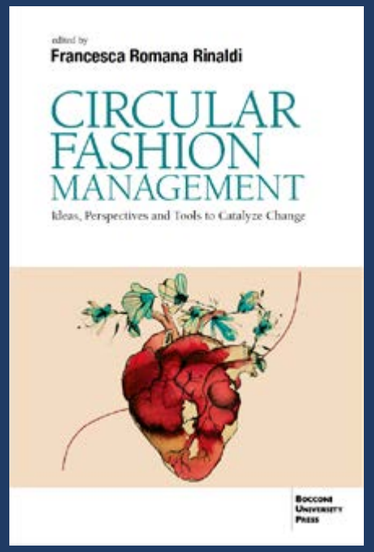
Visualmade

1 Monitor for Circular Fashion: Year 4

WHO WE ARE

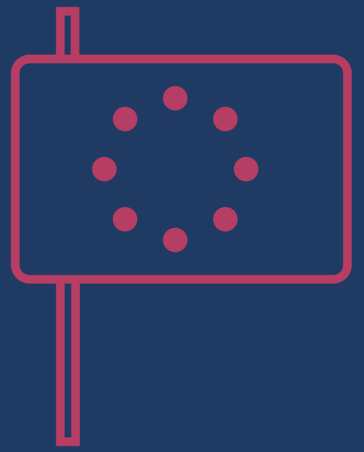
Activities of the Monitor for Circular Fashion 2024/2025

SDA BOCCONI EDUCATIONAL SESSIONS & EXPERIENCE	SDA BOCCONI RESEARCH	SDA BOCCONI CIRCULARITY PROJECTS
Training and brainstorming. Methodological sessions on circular fashion business models. Networking.	SDA Bocconi ESG survey to identify the industry specific KPIs, trade-offs, challenges and opportunities, technologies and solutions in circular fashion. SDA Bocconi co-creation workshops.	Teamwork along the value chain to design a "circular product" or a "circular service". Guidelines and technical support in the application of the ecodesign principles and in the definition of the sustainability claim.
CIRCULAR FASHION MANIFESTO	**SDA BOCCONI C-FACTOR* (Second edition)**	**CIRCULAR FASHION MANAGEMENT BOOK AND PODCAST**
Participation to multi-stakeholder initiatives and call to actions, including: • EC Textile Transition Pathway Call for commitments and pledges; • UNECE Community of Practice "Sustainability Pledge" on traceability and transparency.	Selection of 15 circular fashion startups and SMEs to create a network among sustainability innovators and provide opportunities to multiple stakeholders of the fashion industry. *See more in the dedicated section Annex I.	Additional activities dedicated to specific research topics to create awareness and education for the industry stakeholders: • "Circular Fashion Management" book published by EGEA - Bocconi University Press; • "Circular Fashion Talks" Podcast (first edition) by Monitor for Circular Fashion and Solomodasostenibile.



2 New EU Sustainability and Circularity Legislation

CIRCULARITY LEGISLATION SCENARIO



Ecodesign for Sustainable Products Regulation (ESPR)

It seeks to integrate ecodesign principles into product development, promoting products that are more durable, repairable, and recyclable.

Directive on Empowering Consumers for the Green Transition (ECGT)

It aims to enhance consumer protection against unfair commercial practices and provide better information about the environmental impact of products.

Deforestation Regulation (EUDR)

It prohibits specific commodities and their derivate products from being sold in the EU unless they meet "deforestation-free" standards, enforcing strict due diligence obligations to verify that products comply with these standards.

CorporateSustainability Due Diligence Directive (CSDDD)

It mandates that companies identify, prevent, and mitigate any negative human rights and environmental impacts associated with their operations, including both upstream and some downstream activities.

Green Claims Directive (GCD)

It aims to set clear, standardized criteria for voluntary environmental claims made by businesses to consumers.

Nature Restoration Law (NRL)

It mandates that by 2030, at least 20% of EU ecosystems, especially in Natura 2000 sites, be restored.

Corporate Sustainability Reporting Directive (CSRD)

It mandates that more companies report on environmental, social, and governance (ESG) factors following the European Sustainability Reporting Standards (ESRS).

Forced Labour Products Ban Regulation (FLR)

On April 23 2024, the European Parliament adopted the Forced Labour Regulation (FLR), empowering the EU to ban the sale, import, and export of products made with forced labor.

3 Methodology
FIELD ANALYSIS AND KPIs TESTING

Complete methodology of SDA Bocconi Research – M4CF 2024/2025

Since 2023 the Monitor for Circular Fashion (M4CF) has been implementing an ESG approach to circularity. Leveraging on an extensive literature review (see selected bibliography) the 2024 research results come from a field analysis based on two surveys (one for pipeline players and one for service providers) with both closed and open questions and co-creation workshops on ESG factors in circularity management with special focus on the following areas:

- ecodesign;
- biodiversity;
- social impact;
- governance.

Three co-creation workshops have been organized during the year with the active participation of all the Partners of the Monitor for Circular Fashion.

The three co-creation workshops organized in 2024 were the following:

1. Workshop activity on social impact & circularity;
2. Workshop activity on circularity & governance;
3. Workshop activity on circularity & logistics.

One think tank on biodiversity and one on responsible innovation for circular fashion were also organized in order to collect precious inputs from Partner companies. Both co-creation workshops and think tanks have been essential to build the research surveys.

COMPLETE METHODOLOGY OF SDA BOCCONI RESEARCH – MONITOR FOR CIRCULAR FASHION 2024/2025

FEBRUARY 2024

NOVEMBER 2024

HOW	WHAT
DESK RESEARCH	Analysis of 30+ updated sources focusing on circular fashion.
FIELD ANALYSIS	Testing the industry-specific KPIs through circularity projects and building the sustainability claims.
	Surveys, co-creation workshops on ESG factors in circularity management with special focus on: • ecodesign; • biodiversity; • social impact; • governance.
	Survey on consumers preferences on digital product passports.
	Survey on circularity & logistics.
RESULTS ANALYSIS AND VALIDATION	Plenary Meeting with Partners for collective discussion on research results.

3 Methodology
FIELD ANALYSIS AND KPIs TESTING

Testing the tailored KPIs for fashion

Both in 2022, 2023 and 2024 the KPIs have been used to substantiate the sustainability claims chosen for each circularity project with the careful verification operated during several rounds by the Monitor for Circular Fashion Legal Advisor, the overall SDA Bocconi research team and the KPIs Committee.

CIRCULAR FASHION ACTIVITIES

KPIS MAIN CHARACTERISTICS

SMART CCC

- **S**PECIFIC
- **M**EASURABLE
- **A**TTAINABLE
- **R**ELEVANT
- **T**IME BOUND

\+

- **C**LEAR
- **C**OMPARABLE
- **C**OST EFFECTIVE

PRODUCT

Most of the KPIs are related to the specific products developed for the pilot projects.

PROCESS

Some of the KPIs are related to the processes taking place in the companies during the year. For instance when the products are B2B and industrialized the KPIs are at process level.

4 Data analysis
MAIN FINDINGS

Ecodesign maturity level, organizational practices and KPIs survey results

In the regulatory context of ESPR, The M4CF proposes an adapted version of the Circular Product Design Maturity Matrix. It identifies five levels of maturity: **Inert**, where companies lack awareness of circular principles; **Conversant**, with initial, reactive steps; **Applied**, involving targeted projects; **Monitored**, where structured processes and metrics are in place; and **Optimized**, characterized by continuous improvement and stakeholder collaboration. Most companies are progressing towards higher maturity levels, driven by growing awareness and external pressures like regulations.

Findings reveal that the presence of a **dedicated team responsible for ecodesign initiatives, the use of external consultants**, and a **high number of KPIs** are key levers to achieve a high level of ecodesign maturity.

The most adopted ecodesign strategies include the use of **low-impact inputs** and **non-toxic materials**, which minimize environmental harm, and the design for physical **durability**, ensuring products last longer. Companies also emphasize the incorporation of **recycled materials**, reducing waste and promoting circularity. All the previous-mentioned strategies are measured by related **KPIs**.

While these approaches offer **substantial long-term benefits**, they often require **significant upfront investments and operational changes**, which remain key challenges for many organizations.

ECODESIGN DIMENSIONS, MOST ADOPTED STRATEGIES AND KPIs

DIMENSION	MOST ADOPTED STRATEGY	MOST SELECTED KPIS
NARROWING THE USE OF RESOURCES	**Design with low-impact inputs:** design products with materials that demand fewer resources, such as water and energy, during production, and evaluate the physical and chemical properties of materials.	• Total product weight; • Number of materials included in the product; • Specific material consumption measured as (Total material input) mass / Production Output.
REGENERATING RESOURCES	**Design with non-toxic materials:** design products considering the toxicity of materials.	• % of kg/meters/square meters/ units that respect eco-design principle of use of renewable inputs on total kg/meters/square meters/ units; • % of the chemicals with hazard information inputted in the Chemical Inventory; • Number of different hazardous material in the product.
SLOWING THE LOOP	**Design for physical durability:** design products that degrade more slowly in relation to substitute products.	• % of kg/meters/square meters/ units that respect eco-design principle of durability on total kg/meters/square meters/ units; • Number of active functionalities in the product (e.g., for textiles, fabrics functionalities such as water resistance, breathability; for garments, functionalities such as water resistance, removable linings, adjustable fits); • Number of complains and requests for technical assistance per period of time (e.g., lifespan).
CLOSING THE RESOURCE LOOP	**Design with recycled materials:** design products considering the use of material recycled from other products or components.	• Weight of total recycled material / Total weight of material used in the product in %; • Number of products in portfolio which can be reused or recycled; • % of kg/meters/square meters/ units that respect eco-design principle of use of recyclable inputs on total kg/meters/square meters/ units.

4 Data analysis
MAIN FINDINGS

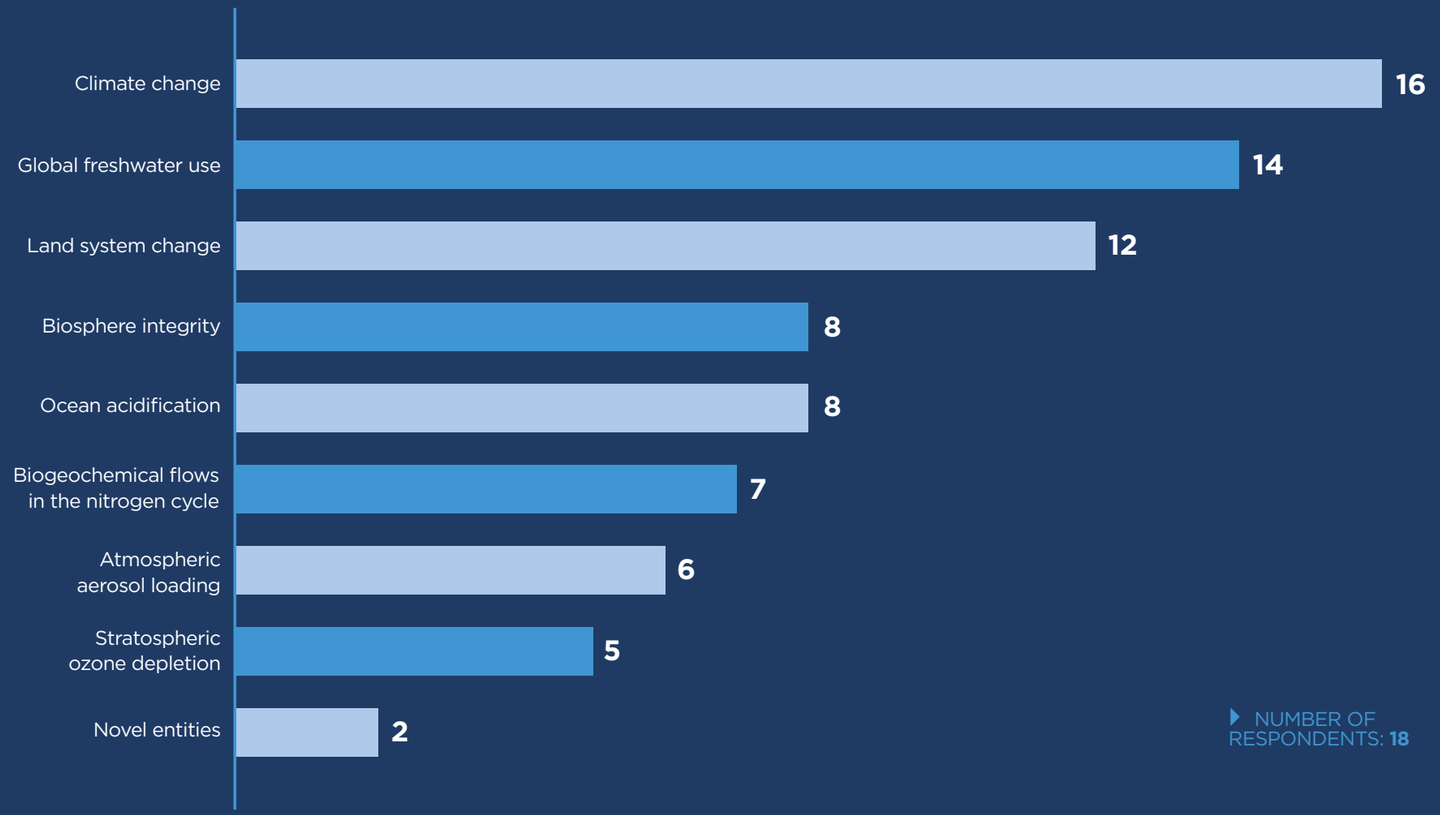
Biodiversity: a multi-factor approach towards circularity

Biodiversity, encompassing the variety of life forms on Earth, is crucial for the stability of ecosystems and human well-being. The fashion industry's activities significantly impact biodiversity through resource extraction, chemical pollution, and habitat disruption. **Adopting ecodesign principles can mitigate these effects by promoting sustainable practices and reducing environmental degradation**.

The EU Nature Restoration Law sets ambitious targets to restore degraded ecosystems, highlighting the importance of biodiversity protection in policymaking. The Monitor for Circular Fashion (M4CF) aligns with this by utilizing the planetary boundaries framework, which assesses environmental impacts beyond carbon emissions, considering factors such as land-use change, freshwater consumption, and chemical pollution.

Key findings indicate that biodiversity is gaining recognition within the fashion sector, although implementation remains limited. Cotton farming, chemical runoff, and deforestation are significant challenges, emphasizing the need for industry-wide reforms. Efforts by M4CF partners to integrate biodiversity into environmental impact assessments are growing, reflecting an evolving commitment to sustainable practices.
The fashion industry's transition toward circularity must prioritize safeguarding biodiversity to ensure long-term ecological and societal resilience.

IMPACT ON PLANETARY BOUNDARIES BY ORGANIZATIONS' ACTIVITIES
Which planetary boundaries do you think is affected by the activities of your organization? (multiple answers are available)



NUMBER OF RESPONDENTS: **18**

4 Data analysis
MAIN FINDINGS

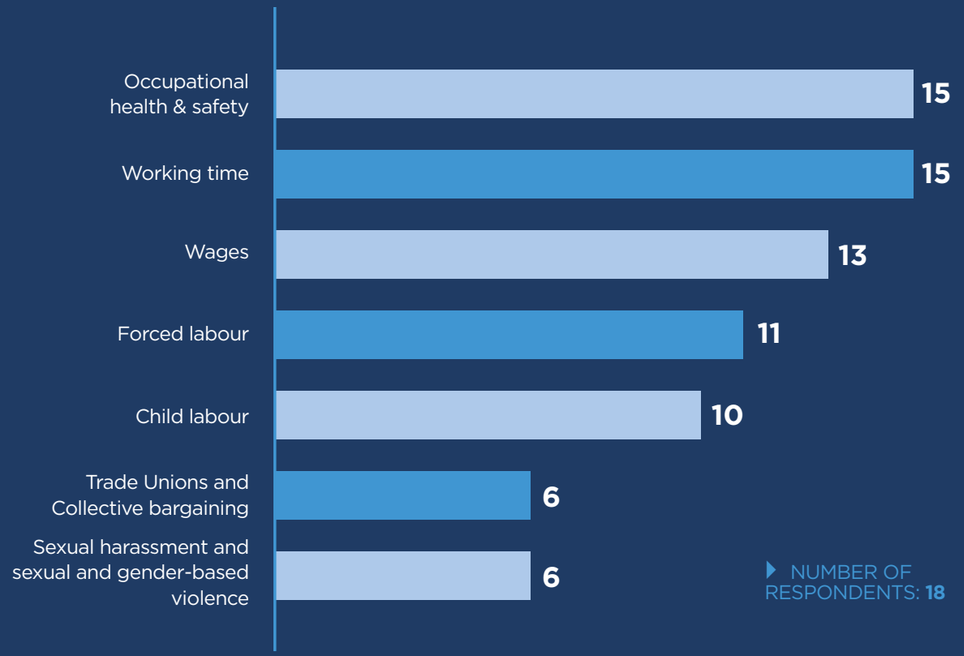
Social impact key results: getting ready for CSDDD

Relevance of social risks according to the partners

As part of the 2024 Annual Survey, a dedicated section focused on **social sustainability**. The aim was to gain a deeper understanding of how companies are currently identifying social risks, the methods they employ to collect supplier information, the most critical areas of social risk, and the key performance indicators (KPIs) that could be used to monitor these risks. While the full details are available in the complete report, a **prioritized ranking of social risks based on their perceived relevance** is highlighted in the figure on the side for immediate reference.

Among the seven prevalent risks for the garment and footwear industry outlined by the OECD, **the most frequently selected by respondents were occupational health and safety, excessive working hours, and wage-related issues**. This indicates these areas are viewed as the most pressing concerns.

SOCIAL RISKS RELEVANCE
Which are the most relevant areas of social risks identified? (multiple answers are available)



4 Data analysis
MAIN FINDINGS

In 2024, a series of workshops were held in collaboration with industry experts, focusing on relevant topics for sustainable and circular fashion. One workshop concentrated on social sustainability and due diligence. Analysis of responses from 16 participating partners highlighted the **main benefits and challenges associated with the current auditing systems**, summarized below.

Benefits and challenges of the current auditing system

BENEFITS OF THE CURRENT AUDITING SYSTEM

KEY BENEFITS	
TRANSPARENCY	Provides transparency and helps understand the scale of the entire supply chain.
RISK IDENTIFICATION AND MITIGATION	Helps in identifying and addressing risks in the supply chain.
CONTINUOUS IMPROVEMENT	Allows gap identification in social, environmental, and operational performance and offers feedback and support for continuous improvement processes.
COMPLIANCE	Ensures compliance with international standards, regulations, and codes of conduct.
REPUTATION	Prevents reputational damage and improve reputation among investors
SUPPLIER MAPPING	Supports in the mapping of suppliers' network.
OVERVIEW OF SUPPLIER'S SITUATION	Provides a snapshot or general overview of supplier conditions.
MONITORING	Helps to understand or monitor the entire supply chain, its scale, and operations.
OPERATIONAL EFFICIENCY	Enhances operational efficiency by streamlining processes.

The most commonly recognized benefits of the current auditing system include transparency, risk identification and mitigation, and continuous improvement.

CHALLENGES OF THE CURRENT AUDITING SYSTEM

KEY CHALLENGES	
LIMITED SCOPE OF THE AUDITS	For two main reasons: data gathering challenges over tier 1, and excessive focus of many brands on the most strategic suppliers
COSTS TIME AND RESOURCES	Audits require higher investmets of time, cost and human resources both from brand perspective and for suppliers
PROLIFERATION/ REDUNDANCY OF AUDITS	Multiple audits by different brands create redundancy, increasing time, costs, and demotivating suppliers.
LACK OF ALIGNMENT / COMMON FRAMEWORK	There's no unified or common framework, and demands between audits are unaligned.
VOLUNTARY NATURE OF AUDITS	Many audits remain voluntary, limiting their effectiveness or uniformity.
STANDARDIZED CHECKLISTS / INFLEXIBILITY	Checklists are often too "standard" and do not account for specific supplier locations or supply chain dimensions.

The primary challenges identified within the current auditing system include its limited scope, the high cost and the proliferation and redundancy of audits.

4 Data analysis
MAIN FINDINGS

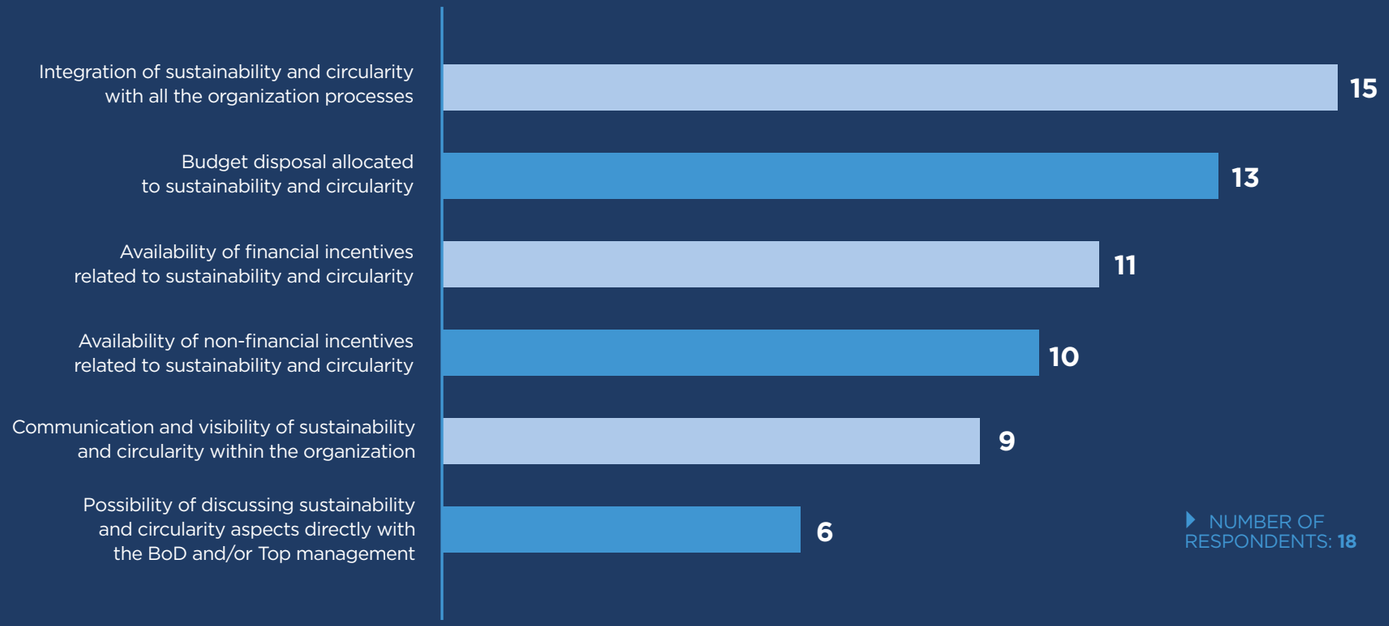
Sustainability and circularity governance survey results

In the regulatory context of CSRD, strong governance is essential for embedding sustainability and circularity into business strategies.

The report highlights the critical role of the **Board of Directors** (BoD) in driving these efforts by overseeing risk management, promoting diversity, and aligning executive incentives with environmental, social, and governance (ESG) goals.
Findings reveal that most companies are implementing **comprehensive governance structures** such as **Sustainability Committees** or appointed **Chief Sustainability Officers (CSOs)** to lead initiatives, ensuring these priorities are integrated into decision-making at the highest levels.

Despite these efforts, **challenges** persist. Many organizations **struggle to fully integrate sustainability** into their processes, often treating it as a standalone function rather than a company-wide goal. **Limited budgets and the lack of financial incentives** further hinder progress. However, companies that establish **direct communication** between governance bodies and operational teams are better positioned to align sustainability goals with overall corporate strategies, ensuring long-term success.

KEY CHALLENGES OF FULL INTEGRATION OF SUSTAINABILITY AND CIRCULARITY IN THE ORGANIZATIONS (MULTIPLE OPTIONS AVAILABLE)



5 Navigating change
ESG ROADMAPS TO CIRCULAR FASHION

The role of technology: survey results

Technology is pivotal in accelerating circularity in the fashion industry, enabling innovation across the value chain. **The M4CF 2024 survey highlights the highest projected relevance of recycling technologies, traceability online platforms and Digital Product Passports, with artificial intelligence (AI) experiencing the highest projected growth in adoption by M4CF partners over the next three years**.

These advancements align with stricter regulatory requirements, such as the EU Strategy for Sustainable and Circular Textiles, emphasizing traceability and transparency. Recycling technologies and circularity platforms are also integral to reducing waste and enhancing resource efficiency. However, traditional tools like data collection and administrative software are expected to see declining importance as the industry matures in its sustainability strategies.

The survey highlights **traceability as the top priority of M4CF partners, reflecting its critical role in tracking materials and processes throughout the supply chain. Other strategic areas include waste collection, consumer engagement, and circularity measurement and assessment.**

EVALUATION OF TECHNOLOGIES ENABLING THE TRANSITION OF FASHION PROCESSES TOWARD CIRCULARITY

	PAST 3 YEARS	NEXT 3 YEARS	▲▼
ARTIFICIAL INTELLIGENCE	2,45	3,20	▲ 30,61%
CIRCULARITY ONLINE PLATFORMS (INCLUDING IT PLATFORMS FOR WASTE MANAGEMENT)	3,27	3,90	▲ 19,27%
TRACEABILITY ONLINE PLATFORMS	3,73	4,20	▲ 12,60%
DIGITAL PRODUCT PASSPORTS	3,73	4,10	▲ 9,92%
DATA COLLECTION AND ANALYSIS TOOLS	4,36	4,00	▼ -8,26%
ADMINISTRATIVE SOFTWARES	2,55	2,40	▼ -5,88%
CHEMICALS EXTRACTION TECHNOLOGIES	3,55	3,70	▲ 4,23%
RFID TECHNOLOGIES	3,36	3,50	▲ 4,17%
LCA SOFTWARES	3,91	3,80	▼ -2,81%
RECYCLING TECHNOLOGIES	4,18	4,30	▲ 2,87%
COMPLIANCE ONLINE PLATFORMS	3,73	3,80	▲ 1,88%

Source: M4CF 2024 survey

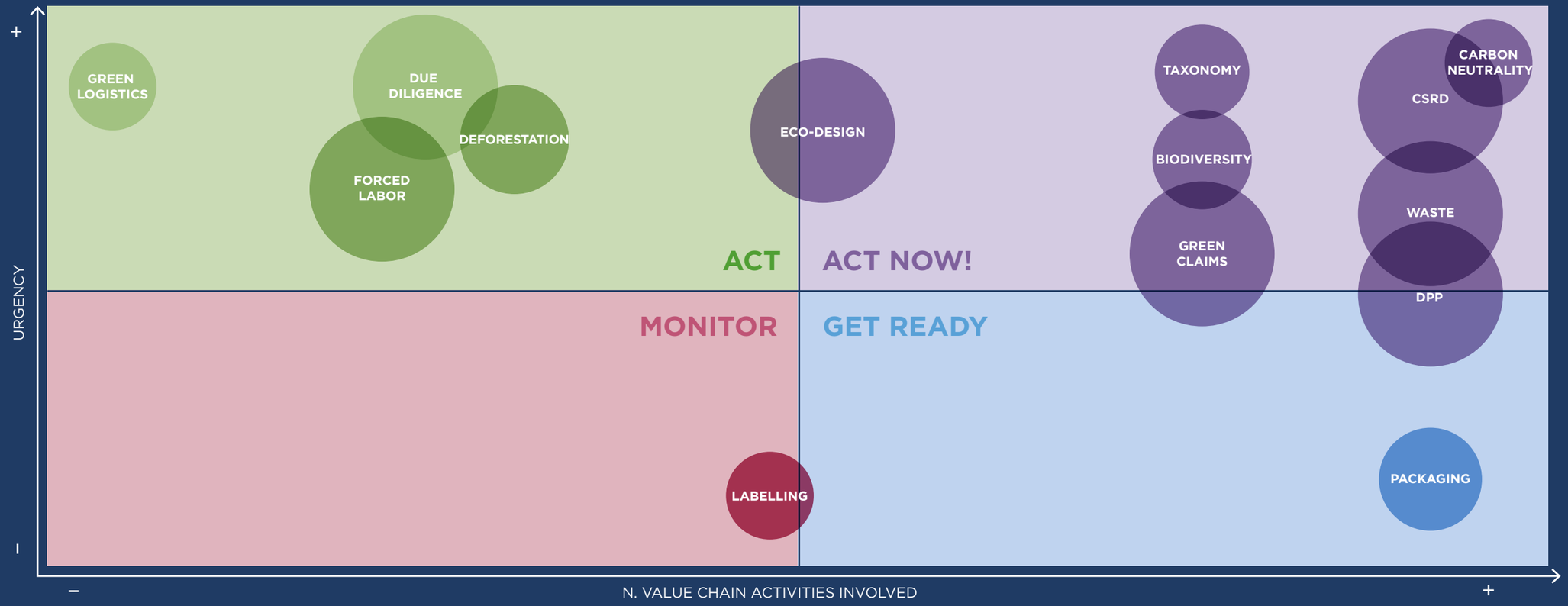
NUMBER OF RESPONDENTS: **10** NUMBER OF FASHION CLIENTS REPRESENTED BY RESPONDENTS: **24.180**

5 Navigating change
ESG ROADMAPS TO CIRCULAR FASHION

Several industry analysts and reports predict that in 2025 sustainability and circularity will be downgraded in the CEO' agendas because of the increasing volatility, uncertainty, complexity and ambiguity brought by the macroeconomic context. There are several reasons why fashion companies CEOs should continue investing on sustainability and circularity, among them:

1. Increasing legislative pressure;
2. Companies' strategic coherence with existing commitments;
3. Efficiencies in the use of resources which can be achieved through circularity.

Circular Fashion Roadmap



LEGENDA:

COMPLEXITY LEVEL
(STAKEHOLDERS INVOLVED) IS REPRESENTED BY BUBBLE SIZE:
LARGE - HIGH COMPLEXITY
SMALL - LOW COMPLEXITY

URGENCY LEVEL
IS REPRESENTED
IN THE VERTICAL AXIS

NUMBER OF VALUE CHAIN ACTIVITIES INVOLVED
IS REPRESENTED
IN THE HORIZONTAL AXIS

5 Navigating change
ESG ROADMAPS TO CIRCULAR FASHION

Circular Fashion Roadmap

MANAGERS' ACTIONS:

Measure and assess circularity

Finding common KPIs is important to set priorities and targets, and to be able to compare results within the companies alongside other industry players. KPIs shall be selected on clear and long-term strategic objectives, in coherence with the brand identity.

Starting from the **implementation of eco-design principles such as durability, recyclability and recycled contents** will be key.

Engage final users in circularity initiatives

In order to accelerate the transformation of the industry towards circularity it is important to involve the final users along the Circular Fashion Value Chain, starting **from educating the final users on repairing their products, and bringing back the products in stores or other collection points to start a new cycle.** A more effective communication with users through **awareness and behavioral campaigns** is needed in order to educate them to consume responsibly and extend the life of products. Technologies, such as DPP, may be considered as accelerators of these changes.

KEY 2025 MANAGERS', COLLABORATIVE INDUSTRY AND POLICY MAKERS ACTIONS TO INCREASE CIRCULARITY PERFORMANCE

MANAGERS' ACTIONS	COLLABORATIVE INDUSTRY ACTIONS TO INCREASE CIRCULARITY PERFORMANCE	POLICY MAKERS ACTIONS TO INCREASE CIRCULARITY PERFORMANCE
Measure and assess circularity	Invest in R&D for technological innovations	Support the development of waste infrastructure
	Work on collaborative projects among companies and other stakeholders	Support collaborative and multi-stakeholder projects
Engage final users in circularity initiatives	Focus on supplier engagement strategies	Enhance transparency and traceability
	Increase the dialogue with policy makers to harmonize data collection and measurement	Provide incentives for lower impact
		Support the competitiveness of the industry

Monitor for Circular Fashion: Year 4

WHO WE ARE

1

1.1 Monitor for Circular Fashion 2024/2025

The Monitor for Circular Fashion, part of the SDA Bocconi School of Management Sustainability Lab, is a multistakeholder scientific and technological community comprising of leading companies in the Italian fashion industry and players in its supply chain. The Monitor for Circular Fashion includes several activities (see Figure 1.1), disseminates the best practices of circular fashion, and promotes technical, managerial and scientific skills, especially those that contribute to the transition towards circular business models.

www.sdabocconi.it/circularfashion

SDA Bocconi SCHOOL OF MANAGEMENT

SUSTAINABILITY LAB
MONITOR FOR CIRCULAR FASHION

FIGURE 1.1: ACTIVITIES OF THE MONITOR FOR CIRCULAR FASHION 2024/2025.

SDA BOCCONI EDUCATIONAL SESSIONS & EXPERIENCE	SDA BOCCONI RESEARCH	SDA BOCCONI CIRCULARITY PROJECTS
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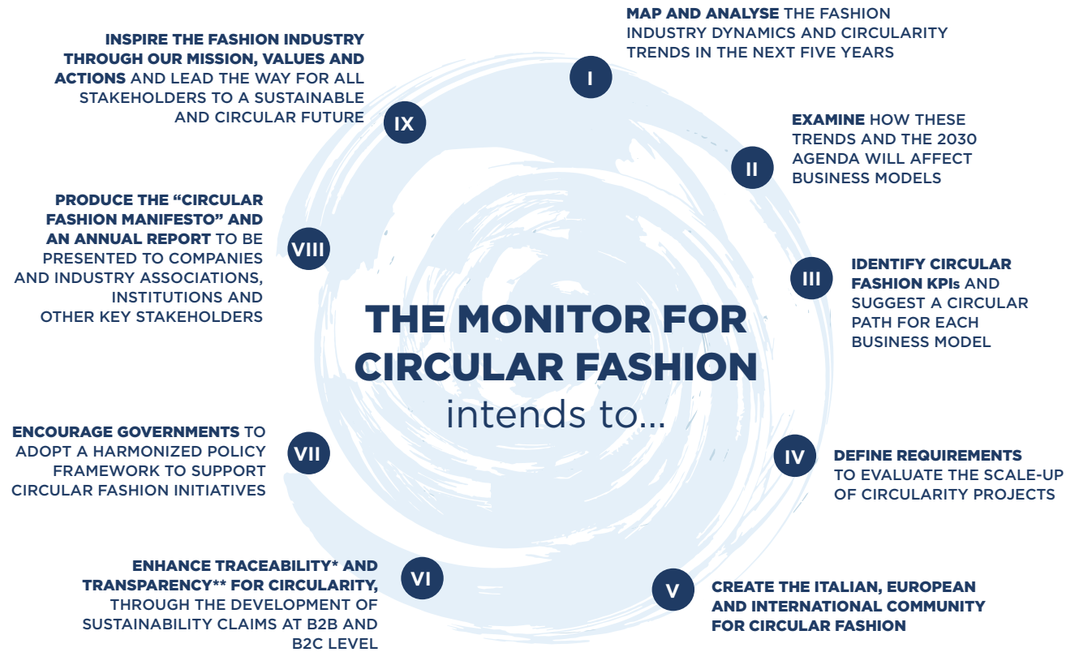
Participation to multi-stakeholder initiatives and call to actions, including: • EC Textile Transition Pathway Call for commitments and pledges; • UNECE Community of Practice "Sustainability Pledge" on traceability and transparency.	Selection of 15 circular fashion startups and SMEs to create a network among sustainability innovators and provide opportunities to multiple stakeholders of the fashion industry *See more in the dedicated section Annex I.	Additional activities dedicated to specific research topics to create awareness and education for the industry stakeholders: • "Circular Fashion Management" book published by EGEA - Bocconi University Press; • "Circular Fashion Talks" Podcast (first edition) by Monitor for Circular Fashion and Solomodasostenibile.

Who we are

SDA BOCCONI SCHOOL OF MANAGEMENT

SDA Bocconi School of Management has been a leading institution in management training for more than 50 years. The school's mission is to help individuals, companies and institutions grow by promoting managerial culture, knowledge and innovation. SDA Bocconi is among the leading Business Schools in Europe and is among the few to have gained the triple accreditation - EQUIS, AMBA and AACSB - which puts it in the élite of Business Schools worldwide. According to the Bloomberg Business Week ranking, it is the top business school in Europe. The latest Financial Times rankings place it 3rd in the world among Full-Time MBA programs and 5th in Europe among business schools. SDA Bocconi Sustainability Lab is a multidisciplinary think tank aiming at developing and spreading relevant and innovative research to support enterprises and financial institutions, policy makers and non-profit organizations in their path towards sustainability.



* **Traceability** is understood as "the ability to trace the history, application or location of an object" in a supply chain. (Source: ISO 9001: 2015, "Quality Management Systems Requirements"). It is the ability to "identify and trace the history, application, location and distribution of products, parts and materials to ensure the reliability of sustainability claims in the areas of human rights, labour (including health and safety), the environment and anti-corruption" (United Nations Global Compact Office, 2014, "A Guide to Traceability A Practical Approach to Advance Sustainability in Global Supply Chains") and "the process by which enterprises track materials and products and the conditions in which they were produced through the supply chain" (OECD, 2018, "Due Diligence Guidance for Responsible Supply Chains in the Garment and Footwear Sector").

** **Transparency** relates directly to relevant information been made available to all elements of the value chain in a standardized way, which allows common understanding, accessibility, clarity, and comparison (European Commission, 2017, "A Background Analysis on Transparency and Traceability in the Garment Value Chain").

Partner companies

ALBINI GROUP

Founded in 1876 in Albino (Bergamo, Italy), the **Albini Group** is the largest European manufacturer of shirting fabrics and has always been a family-run business. Today, having reached its 146th year of activity, it is led by the fifth generation of the family with Stefano, Fabio and Andrea Albini, whose actions guarantee a long-term business vision and a strong ethical commitment.
The fabrics designed and weaved by Albini Group are the result of a strong attention to R&D, focused on sustainable innovation. Thanks to its vertical integrated supply chain, Albini Group has the opportunity to innovate and to raise the standard at every step, in order to experiment new models for implementing low-impact and circular industrial processes.

AVERY DENNISON

Avery Dennison Corporation (NYSE: AVY) is a global materials science and digital identification solutions company that provides branding and information labeling solutions, including Intelligent labels (RFID,NFC..), inlays and tags, and a variety of converted products and solutions.The company employs approximately 36,000 employees in more than 50 countries.
Avery Dennison Solutions Group including Apparel and Digital Solutions supports a wide range of segments like Fashion & Luxury, Performance, Team Sports, Retail, Factories, Recyclers, Brand Protection. Combining decades of materials science innovation with secure, global supply chain capabilities, our external embellishment solutions helps brands create the right impact. Today our portfolio includes high stretch, decorative, and durable transfers,reflective and low temperature applications, embroidery, woven patches, specialty products and beyond.
Avery Dennison also offers a suite of digital ID technologies that authenticate product history, provide tracking and inventory solutions. In a world of big data and massive amounts of information, digital ID technologies help create certainty, showing how a connected world can be a better world, full of greater possibilities. With our unique combination of materials expertise, innovative, end-to-end technologies and global capacity for supporting customers, Avery Dennison is partnering with companies across multiple industries including apparel, footwear, beauty, introducing transformative benefits through connecting the physical and digital worlds.

Candiani DENIM

Candiani SpA, a family-owned Italian denim mill founded in 1938, is nestled in Ticino Park, a nature reserve between Milan and the Alps. Now in its fourth generation, Candiani is a globally recognized leader in premium denim, supplying top fashion brands. Their values—Made in Italy, Sustainability, and Innovation—are woven into every fabric, ensuring unparalleled quality and uniqueness. Candiani aims to revolutionize denim with 100% compostable fabrics, creating a positive impact throughout its life cycle. With over 500 employees, Candiani operates from its headquarters in Robecchetto con Induno, retail spaces in Milan, and the Denim Design Center in Los Angeles.

CERTILOGO

Certilogo is Fashion & Luxury's most widely adopted solution for secure Digital Product IDs, Digital Product Passports and counterfeit-proof authentication worldwide. We help brands capture and preserve the value of their traceability and circularity initiatives by safeguarding the brand and consumers from replicas, thus establishing effective relationships built on trust. Our unique AI-powered technology and "Secure by Design™" methodology empower brands to deliver the most reliable authentication, compelling services and engaging experiences directly through their products, while collecting insights that support traceability, commercial, marketing, brand protection and sustainability strategies, throughout the entire circular product lifecycle.

deda.stealth
POWERING YOUR FASHION JOURNEY

Deda Stealth helps Fashion and Luxury companies grow and develop local and global markets. Over the last 30 years, its expertise and attitude have won it an enviable stable of iconic clients. As a leader in its market, Deda Stealth aims to generate positive change for people and our planet, releasing technology solutions supporting sustainable business models and circular fashion. Deda Stealth is a Deda company, one of the most crucial players in the “Made in Italy”Information Technology industry.

EUROJERSEY Spa represents in the field of warp-knitted technical fabrics the style and creativity of Made in Italy interpreted by Sensitive® Fabrics, chosen by leading brands in the ready-to-wear, sportswear, swimwear and lingerie sectors. The Company is at the top of the global textile industry thanks to a state-of-the-art factory designed by the famous architect Antonio Citterio and represents a unique example of efficiency and productivity. An area of 40,000 square metres, with a team of 240 people and a single plant with a completely verticalized cycle, from knitting to dyeing, finishing and printing. Always committed to integrating sustainability into its corporate strategy through the SensitivEcoSystem® programme since 2007 it has been implementing a series of virtuous behaviours and actions across the entire production process.
EUROJERSEY is the first Italian textile company to be certified MADE GREEN IN ITALY. This certification declares the environmental performance of Sensitive® Fabrics' range. Established by the Italian Ministry of the Environment and Energy Security, this national scheme evaluates the environmental footprint of products through the PEF Product Environmental Footprint method, as defined by the European Commission in recommendation 2013/179/EU.

The **Salvatore Ferragamo Group** is one of the leaders in the luxury industry, whose origins date back to 1927. Ferragamo is renowned for the creation, production and worldwide distribution of luxury footwear, leather goods, clothing, silk products and other accessories for men and women, including glasses, watches and perfumes. Embedding the spirit of its Founder, Ferragamo reinterprets its heritage with creativity, innovation and sustainability. Uniqueness and exclusivity, along with the blend of exquisite style and "Made in Italy" savoir-faire, are the hallmarks of all Ferragamo's products. The Group is present in more than 90 countries around the world and counts more than 3600 employees.

Established in 1975 by Giorgio Armani, Chairman and CEO, the **Armani Group** is one of the leading fashion and luxury goods companies in the world. The Group designs, manufactures, distributes and directly retails fashion and lifestyle and operates in the areas of food and beverage and hotellerie. The Group focuses on three key brands: Giorgio Armani, Emporio Armani and A|X Armani Exchange. The constant pursuit of style and the diversification of the offer enables the Group to respond extremely quickly to market developments, targeting a wide-ranging client base with different purchasing opportunities and assigning a distinct image to each brand. Always with a long - term perspective, the Group is committed to adopting the concept of sustainability in every aspect, in full respect of its values, to protect the brand, the quality of the products, and customer satisfaction. The sustainability strategy is defined around three main areas of action: People, Planet and Prosperity. The Group's commitment translates into valuing its people, reducing its environmental impact, supporting the territory in which it operates, raising customer awareness of social and environmental sustainability aspects, monitoring the supply chain by promoting the adoption and implementation of sustainable practices. Based on internal strategic planning and analysis processes, reinforced by stakeholder input and participation in national and international working groups, the Group's Sustainability Plan is aligned with the Sustainable Development Goals (SDGs) defined by the United Nations.

Gruppo Mastrotto has been shaping the fabric of Arzignano's tanning district since 1958, promoting innovation and growth both locally and internationally. Local, like the prosperity and industrial growth that the group brings to the area, and international, like the commercial success that has placed the company among the global leaders in the production of high-quality leather.
In this dynamic duality, Gruppo Mastrotto synthesises its mission with the company's new payoff 'Leather Forward', which incorporates the noun 'leather' turning it into a motion verb, enriched by 'forward' as a powerful concept of evolution.
Gruppo Mastrotto is currently the leading tanning group in Italy and one of the top players at global level, with over 364 million euro in sales and over 2000 employees worldwide. The company has 15 production plants, 11 in Italy and 4 abroad (Brazil, Indonesia, Mexico and Tunisia), and a sales network that reaches more than 110 countries. Founded by Arciso Mastrotto with his sons Bruno and Santo, it is now led by the second generation: Chiara and Graziano Mastrotto.

HModa is a hub of Made in Italy manufacturing excellences operating in the luxury fashion sector and is promoted by Holding Industriale SpA (Hind), headquartered in Turin and Milan. Founded in 2011, Hind invests in the capital of SME with the aim of fostering growth, internazionalization and generational turnover processes. The project involves the best fashion production realities acquisition and their enhancement through a management and develop strategy, which encourages technical, productive, commercial and financial coordination, maximizing synergies between companies. The companies of the Group can count on savoir faire of highly qualified workers who make it possible to creare high fashion garments in different product categories such as jersey, leathers, softs, outerwear, leather goods, shoes, printing, embellishment, textiles. The "HPlanet" sustainability department was created internally across the three ESG areas linked to the business pillar of Sustainability, Made in Italy, Innovation and Culture, in order to support the business growth and to add value to human resources, social and environmental ecosystem and supply chain.

HUGO BOSS, headquartered in Metzingen (Germany), is a leading global fashion and lifestyle company in the premium segment, offering a comprehensive range of high-quality women's and men's apparel, shoes, and accessories. The Company pursues a portfolio strategy, with the HUGO BOSS platform currently consisting of two globally renowned brands – BOSS and HUGO. Both brands are clearly distinguished by individual characteristics. At the same time, they share equally high standards in terms of quality, innovation, and sustainability, while ensuring that consumers are perfectly dressed 24/7 and for every occasion. The 2025 growth strategy "CLAIM 5" is closely linked to the vision of being the leading premium tech-driven fashion platform worldwide.

A global Luxury group, **Kering** manages the development of a series of renowned Houses in Fashion, Leather Goods and Jewelry: Gucci, Saint Laurent, Bottega Veneta, Balenciaga, Alexander McQueen, Brioni, Boucheron, Pomellato, DoDo, Qeelin and Ginori 1735, as well as Kering Eyewear and Kering Beauté. By placing creativity at the heart of its strategy, Kering enables its Houses to set new limits in terms of their creative expression while crafting tomorrow's Luxury in a sustainable and responsible way. We capture these beliefs in our signature: "Empowering Imagination". In 2023, Kering had 49,000 employees and revenue of €19.6 billion.

A major player in the fashion, automotive and furniture markets, **Lectra** contributes to the development of Industry 4.0 with boldness and passion, fully integrating Corporate Social Responsibility (CSR) into its global strategy.
The Group offers industrial intelligence solutions - software, cutting equipment, data analysis solutions and associated services - that facilitate the digital transformation of the companies it serves. In doing so, Lectra helps its customers push boundaries and unlock their potential. The Group is proud to state that its 3,000 employees are driven by three core values: being open-minded thinkers, trusted partners and passionate innovators. Founded in 1973, Lectra reported revenues of 478 million euros in 2023. The company is listed on Euronext, where it is included in the following indices: SBF 120, CAC Mid 60, CAC Mid&Small, CAC All Shares, CAC All-Tradable, CAC Technology, EN Tech Leaders and ENT PEA-PME 150.
For more information, visit lectra.com.

Manteco S.p.A. is a leading textile company for sustainability and high-quality fabrics since 1943. It is fully committed to circular fashion and has developed numerous projects in order to achieve it: a zero-waste system to recover all the scraps coming from production phases, a sustainable design philosophy to create recyclable fabrics, projects to take back and recycle the cuts produced during garment making or unsold knits.
Manteco S.p.A. is adhering to the principles of the UN Agenda 2030 for sustainable development through its roadmap to sustainability MantEco for Planet® and applies science-based LCA studies on its recycled wool fabrics.

Oscalito has been producing quality underwear and knitwear for men and women since 1936, using an ethically responsible and sustainable production process. Oscalito commitment to social and environmental sustainability is seen in seven main key aspects: all their products are 1) 100% Made in Italy; 2) made of natural (or of natural origin) fibers; 3) made with raw materials with environmental or health protection certifications (OEKO TEX, GOTS); 4) the output of a short supply chain, using only Italian or European suppliers of raw materials; 5) high quality items; 6) produced with respect for workers; 7) made using renewable energy and sustainable packaging.

PLM Impianti is a leading company in the design and production of machinery and automation applied to inspection, cutting, handling and packing in the textile, automotive, denim, technical and non-woven sectors. Since 1960, the company has contributed to the productivity and sustainability of their customers through solutions designed specifically to optimize and rationalize processes, increase the firstchoice product and reduce consumption, costs and waste. Sustainability is a core value in the day to day ongoings of the company, in the production processes and at the basis of their machinery.

RadiciGroup, a leading chemical multinational group, works everyday to make circularity its business model. The Group optimizes the use of materials while fine-tuning processes, reducing waste, promoting recyclability from the earliest product design phases. RadiciGroup supports recycling whenever it is the best environmental solution. It is always looking for low-impact solutions in terms of natural resources and energy, such as making green power the first choice. RadiciGroup relies on certified management systems for Safety, Environment and Energy to keep companies in line with the highest sustainability standards.

Save The Duck, the 100% animal-free outerwear & lifestyle brand is counted among companies that are leading a global movement, that meets high standards of social and environmental impact. The brand, which is also a "Società Benefit" since 2019, caters to the global market and to a growing target audience, that is highly sensitive to environmental and animal welfare issues. The Company is engaged in a carbon footprint mitigation plan, in line with the European climate reducing targets.

Temera, a Beontag company, has grown to become one of the world's leading product traceability and serialization companies for the fashion and luxury markets. By leveraging a range of IoT and blockchain technologies, Temera's range of DPP-related solutions help to trace all information and data related to the full product life cycle including raw material sourcing, production, logistics and distribution, inventory management, sales, after-sales, and upcycling or end-of-life processes. Temera was founded in Italy in 2009, and became part of Beontag in 2022. Beontag is a global business enabler that serves as one of the world's leading providers of IoT solutions and graphic and label materials.

With operations in more than 15 countries and a footprint in over 40 markets, the multinational company offers end-to-end product capabilities for a range of industries and businesses, driving seamless communication between companies, products, and people.Our Mission: Our primary goal is to guide brands on their sustainability journey, providing comprehensive tools and strategies for full-cycle sustainability and end-to-end traceability while facilitating circularity. We support brands at every stage, from flow analysis and data collection to certification, ensuring sustainable and ethical standards throughout the entire supply chain. By optimizing procedures and fostering accountability, we drive positive change within the industry, particularly focusing on raw material sourcing to maximize impact. Engaging a forward-thinking audience, we align with emerging regulatory standards, preserving the planet and promoting ethical practices.

The **TOD'S Group** is a symbol of Italian excellence. It is deeply rooted in Italy's artisan traditions, with a passion for craftsmanship, superb quality and timeless style. At the turn of the 20th century, Filippo Della Valle, Diego's grandfather, set up a small shoemaking workshop. Under the guidance of Diego and Andrea Della Valle, this clear vision has enabled the Group to become a benchmark in the international luxury market.
TOD'S Group includes 4 brands, each with its own identity: TOD'S, Roger Vivier, Hogan and Fay. The Group has a leading position in the footwear, leather goods and clothing sectors with a significant presence in all the global markets.

A global leader in applied safety science, **UL Solutions** transforms safety, security and sustainability challenges into opportunities for customers in more than 100 countries. UL Solutions delivers testing, inspection and certification services, together with software products and advisory offerings, that support our customers' product innovation and business growth. With wide expertise in the fashion and luxury industry, we help companies access their destination markets and navigate complex regulatory landscapes and supply chains to support their authentic path toward sustainability. We help deliver safer, more sustainable and high-quality products consumers can trust.

Vibram Group manufactures and licenses the production of high performance rubber soles for footwear. Vibram aims to make the best soles in the world and is working towards minimizing its environmental and social impact without compromising its quality. Vibram The Sustainable Way strategy focuses on Vibram Values: People, Quality, Durability, Innovation, Inspiration, Test and No Waste. The company measures progress and sets goals in all impact areas in order to grow responsibly and continually decrease its impact on the planet with the ambition of inspiring all stakeholders to continuous improvement.

Vitale Barberis Canonico has been creating prestigious "Made in Italy" textiles for the clothing industry in the historical factory in Pratrivero, in the heart of Piedmont, for over 360 years, operating in a harmonious way with the environment and the surroundings. Vitale Barberis Canonico is the largest global exporter with more than 450 employees, 40 agents throughout the world and two state-of-the-art factories in the Biella region of Italy. Heritage, Innovation and Sustainability are the key words of the company philosophy. The company annually publishes its Sustainability Report to trace the results achieved and to set challenging goals.

Vivienne Westwood Srl is part of one of the last independent global fashion houses that design, develop, manufacture, and sell luxury goods. In the last ten years, the Italian business unit had to rethink the production paradigm of the sector, to align it with a model sensitive to environmental and social issues. Social, environmental and circularity goals drive the company in the selection of raw materials, of manufacturing suppliers and motivate Vivienne Westwood to implement innovative processes until downstream. The company is willing to progressively map and trace the entire supply chain, monitoring the lifecycle of the products manufactured, mitigating the environmental and social risks.

YKK solves the most complex fastening and attaching challenges. Since the company's founding in Tokyo in 1934, YKK has continuously set industry standards for quality, innovation, and sustainability in the production of zippers, plastic hardware, hook and loop fasteners, webbing tapes, and snap and buttons. YKK's "solutions-first" approach leverages its extensive product and machinery portfolio, engineering expertise, and integrated production, service, and supply chain solutions in 70+ countries/regions, leaving it well-positioned to support the growth of customers of all sizes and adapt to their evolving business needs. Guided by the CYCLE OF GOODNESS® philosophy – no one prospers without rendering benefit to others – YKK aims to contribute to a sustainable society through its products and manufacturing operations and constantly seeks new ways to serve the changing needs of its customers while at the same time investing in its employees and giving back to its communities. "YKK" and "YKK Little Parts. Big Difference." are registered trademarks or trademarks of YKK CORPORATION in Japan and other countries/regions.

KPIs Committee

BIP is an international consulting company born in 2003 in Italy, now based in 15 countries and more than 5500 employees globally. BIP services cover 16 industries, and it also supports large and medium companies to adopt sustainable and circular transformation principles into their own organization and processes, improving corporate, energy & environmental, social and financial sustainability. BIP supports its clients , on the fashion and luxury sector, with action aimed at implementing sustainable approaches to supply chain and production by measuring the consequent level of sustainability achieved.

ICEC, Quality Certification Institute for the Leather Sector, located in the heart of Milan, is the accredited certification body working in Italy and worldwide focusing exclusively on the leather sector. Founded in 1994, the company has extensive experience in the industry and offers the best expertise in its field. Its members include the main Associations in the leather sector e.g. of Tanneries, Fashion, Footwear, Leather Goods, Chemicals, NGOs, subcontractors, Scientific Institutes, and Universities. ICEC clients include tanneries, brands, manufacturers, raw material suppliers, and companies operating in the leather sector.

ACCREDIA accredits ICEC to issue certificates of quality management systems (ISO 9001), environmental management systems (ISO 14001), EMAS, occupational health and safety management systems (ISO 45001), leather products (according to UNI standards or manufacturer's specifications) and made in of leather (EN 16484). ICEC is also a solution provider qualified by ZDHC. According to private standards ICEC certifies traceability (TS410/412), chemicals products (TS419/420), laboratories (TS406), code of conduct and social accountability. ICEC makes use of a qualified staff and selected auditors who understand the complexities of the tanning industry and work to assure that clients achieve the standard requirements. ICEC is committed to promote sustainable leathers and best practices in the industry providing a competitive advantage to companies that choose to be certified.

UNIC ITALIAN TANNERIES

UNIC Italian Tanneries is the non-profit trade association officially representing the Italian tanning industry since 1946. The Italian tanning industry, made up of over 1,100 companies and approximately 18,000 employees, for a total annual turnover of €4.5 billion (of which over 70% deriving from exports to over 110 countries each year), is a key strategic player in the national and international leather manufacturing value chain, as well as an excellent component of the Made in Italy. A member of Confindustria, the UN Global Compact, Confindustria Moda, Cotance (Confederation of European tanning industries) and ICT (International Council of Tanners), UNIC's mission is to promote knowledge of Italian leather and industry at all levels, support its capacity for innovation and growth in the field of environmental and social sustainability, fostering its role as an ethically responsible economic actor, providing specialized and professional assistance services to its members in all areas of their interest.

Research Technical Partners

Enterprise Europe Network is the world's largest support network for small and medium-sized enterprises (SMEs) with international ambitions.

The **European Technology Platform for the Future of Textiles and Clothing** (Textile ETP) is the largest European open expert network of professionals involved in textile and clothing-related research and innovation.

EURATEX is the European Apparel and Textile Confederation, representing the interests of the European textile and clothing industry at the level of the EU institutions. As the voice of the European industry, EURATEX aims to create favorable environment within the European Union for manufacturing of textile and clothing products.

Visual design partner

Visualmade, corporate communication agency, develops complex identity and information systems to meet specific communication needs, on paper, in the web, and in architectural spaces. During the last 15 years Visualmade has been developing more and more communication strategies and systems, focusing on sustainability as a corporate value.

1.2 Acknowledgements

Authors

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This Report is the result of great community collaboration.

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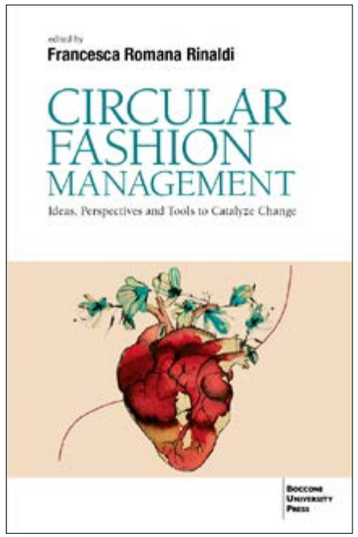
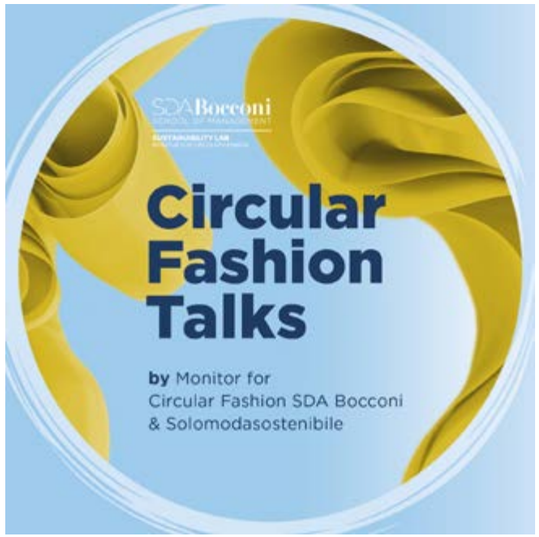


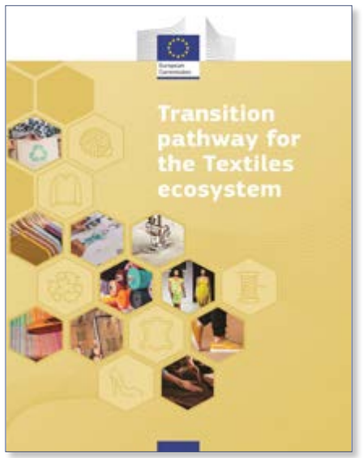


1.3 Circular Fashion Manifesto

BEST PRACTICES UPDATE

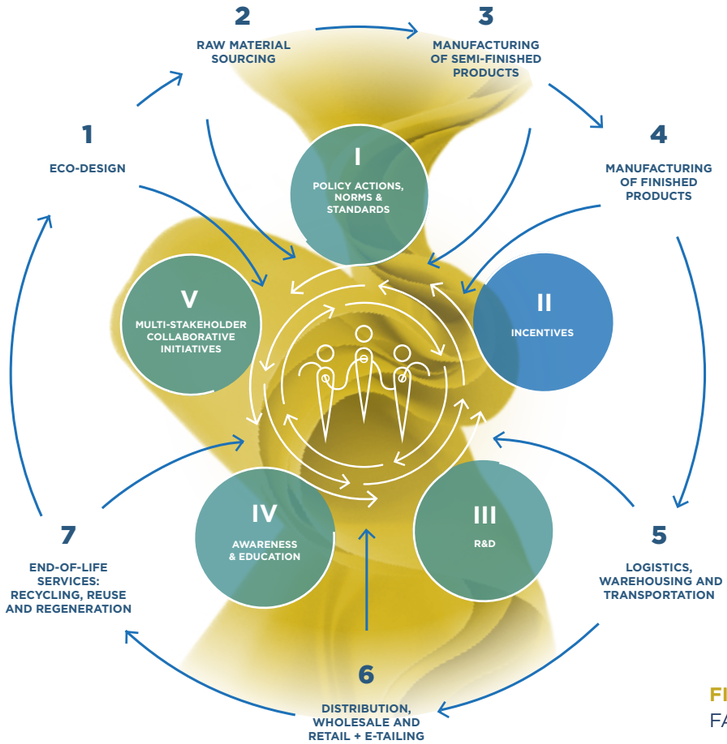
The Monitor for Circular Fashion through its commitment is answering the UNECE "Sustainability Pledge" (Figure 1.2) inviting all actors in the garment and footwear industry to take action for traceability and transparency in order to accelerate the sustainability and circularity of value chains in this industry, in line with the United Nations 2030 Agenda for Sustainable Development. The initiative aims to establish a mechanism to support the uptake of measures in the UNECE Recommendation No. 46 as well as relevant UN/ CEFACT standards, and to support the monitoring of their implementation. The Circular Fashion Manifesto has been presented to the United Nations Economic Commission for Europe (UNECE) starting from 2021.

Since 2023 the Pledge has been also highlighting 8 actions identified in the Textiles Ecosystem Transition Pathway (Figure 3)**.** The Textiles Ecosystem Transition Pathway was published by the European Commission on 6 June 2023. The policy report includes 50 specific actions to support the twin transitions and the long-term resilience and competitiveness of the textiles ecosystem. The Companies of the Monitor for Circular Fashion have been presenting their Pledge also to the European Commission call for commitments for stakeholders in the textiles ecosystem, highlighting the consistency of the existing "Circular Fashion Manifesto" and the related actions already implemented since 2021, with 8 actions identified in the Transition Pathway for the Textiles ecosystem.



OBJECTIVES OF THE CIRCULARITY PROJECTS

1. ESTABLISHING TEAMWORK BETWEEN INGREDIENT BRANDS, BRANDS & RETAILERS AND SERVICE PROVIDERS
2. BUILDING RELIABLE SUSTAINABILITY CLAIMS TO FIGHT GREENWASHING
3. IMPLEMENTING AND TESTING INDUSTRY SPECIFIC KPIS INTO A REAL-LIFE PRODUCT OR SERVICE, REFERRING TO THE CIRCULAR FASHION ACTIVITIES
4. IMPLEMENTING THE ECO-DESIGN PRINCIPLES INTO A REAL LIFE PRODUCT
5. ENHANCING CIRCULARITY THROUGH SERVICES



THE PLEDGE

The companies participating in the M4CF commit to:

- **gather information** required to positively boost progress towards sustainability and, more importantly, reduce their negative impact on our planet;
- **enhance circularity and sustainability of value chains** through transparency and traceability;
- **implement circular business processes** along their value chains;
- **adopt common indicators** to measure progress on circularity in their value chains and report the results;
- **encourage high quality waste management**;
- **promote and implement corporate social responsibility** for pursuing long-term benefits to all stakeholders;
- **raise public awareness and educate all relevant stakeholders** on the positive impacts of sustainable and circular production and consumption;
- **exchange experiences and cooperate** with other multi-stakeholder circular initiatives.

FIGURE 1.2: THE MONITOR FOR CIRCULAR FASHION MANIFESTO 2024.

8 ACTIONS IDENTIFIED IN THE TRANSITION PATHWAY FOR THE TEXTILES ECOSYSTEM

BUILDING BLOCK 1: SUSTAINABLE COMPETITIVENESS

1. Promote, support and implement circular and sustainability practices, services and business models, including social economy enterprises (such as product-as-service models, take-back services, second-hand and repair services, innovative sorting and recycling) including through Horizon Europe, LIFE, and the 'ReSet the Trend #ReFashionNow' campaign and actions from the Social Economy Action Plan.

11. Create more demand for sustainable products and onboard consumers in the green transition by launching consumer campaigns to create awareness and to reshape consumption patterns including under the motto ReSet the Trend #ReFashionNow, as well as supporting emotional durability by designing products that people want to keep.

BUILDING BLOCK 2: REGULATION AND PUBLIC GOVERNANCE

14. Follow-up on actions in the EU Strategy for Sustainable and Circular Textiles, including specific ecodesign requirements, the Digital Product Passport, circular and sustainable management of textile waste and possible extended producer responsibility rules, and encourage industry participation in the relevant consultations.

16. Finding common methods to assess and compare the sustainability performance of textile products in the context of the foreseen ecodesign requirements.

17. Improving traceability and transparency in the textile value chain through the proposed Digital Product Passport.

BUILDING BLOCK 3: SOCIAL DIMENSION

21. Support up-and reskilling, access to lifelong learning and training opportunities through for example, the EU Pact for Skills for the Textiles ecosystem, to ensure workers are skilled for the twin transition.

BUILDING BLOCK 4: R&I, TECHNIQUES AND TECHNOLOGICAL SOLUTIONS

25. Increase access and interaction of SMEs in the textiles ecosystem to/with tech support structures (for example through tech federations, digital innovation hubs, campuses, incubators, clusters, industry alliances).

BUILDING BLOCK 5: INFRASTRUCTURE

BUILDING BLOCK 6: SKILLS

40. Organise events and awareness-raising activities on the attractiveness of the sector and new opportunities to work in the industry around the European Year of Skills.

BUILDING BLOCK 7: INVESTMENTS AND FUNDING

BUILDING BLOCK 8: ECOSYSTEM'S READINESS TO SUPPORT EU STRATEGIC AUTONOMY AND DEFENCE EFFORTS

FIGURE 1.3: 8 ACTIONS IDENTIFIED IN THE TEXTILES ECOSYSTEM TRANSITION PATHWAY.

SIGNATORIES

Signatory Partners

Signatory KPIs Committee*

Research Technical Partners

KEY FACTS

28
SIGNATORIES

123,000**
EMPLOYEES

€ 34 BN**
TOTAL REVENUES (2023)

*The KPIs identification has been supported by the KPIs Committee of the Monitor for Circular Fashion composed by Bip Group, ICEC and UNIC..
**UNIC data is excluded from the figures reported above. UNIC represents the Italian tanneries whose figures are 4.3 Billion EUR and 17,882 employees in 2023.

New EU Sustainability and Circularity Legislation

CIRCULARITY LEGISLATION SCENARIO

As part of its commitment to achieving climate neutrality by 2050, the European Union (EU) has introduced several legislative initiatives aimed at transforming industries for a sustainable, circular, and resource-efficient economy. This comprehensive set of measures includes legislation on sustainability reporting, eco-design, extended producer responsibility (EPR) for textiles, green claims, consumer empowerment, and due diligence. Together, these measures target the environmental and social impact of industries with a significant environmental footprint, such as fashion.

2.1 Ecodesign for Sustainable Products Regulation (ESPR)[1]

The Ecodesign for Sustainable Products Regulation (ESPR), effective from July 18 2024, is a critical part of the EU's efforts to promote sustainable and circular products. Unlike the previous 2009 directive, which focused only on energy-related products, the new regulation applies to nearly all goods placed on the EU market, including those produced outside the EU. Specific sustainability criteria will be developed for various products, with resource-intensive groups like textiles. The European Commission will introduce detailed requirements through periodic workplans.
The ESPR impacts all actors in the value chain of companies operating within the EU. This includes manufacturers (even those outside the EU), as well as importers, distributors, dealers, and service providers.
It seeks to integrate ecodesign principles into product development, promoting products that are more durable, repairable, and recyclable. The regulation focuses on the entire lifecycle of a product, from material sourcing to disposal and sets guidelines for product durability, recyclability, and energy/resource efficiency.

> IT SEEKS TO INTEGRATE ECODESIGN PRINCIPLES INTO PRODUCT DEVELOPMENT, PROMOTING PRODUCTS THAT ARE MORE DURABLE, REPAIRABLE, AND RECYCLABLE.

A Digital Product Passport (DPP) will be established including details about a product's sustainability, environmental footprint, circularity, substances of concern, value retention, and recycling. The European Commission, in collaboration with relevant stakeholders, will define the specific information to be included.

Additionally, the regulation prohibits the destruction of unsold textiles and footwear. The ban will start to apply from 2026 to large enterprises and from 2030 for medium-sized enterprises. Economic operators will also need to report the quantities of discarded unsold goods and implement measures to prevent their destruction. Products containing substances of concern will be regulated to meet heightened information-sharing requirements and lifecycle tracking.

> A DIGITAL PRODUCT PASSPORT (DPP) WILL BE ESTABLISHED INCLUDING DETAILS ABOUT A PRODUCT'S SUSTAINABILITY, ENVIRONMENTAL FOOTPRINT, CIRCULARITY, SUBSTANCES OF CONCERN, VALUE RETENTION, AND RECYCLING.

> ADDITIONALLY, THE REGULATION PROHIBITS THE DESTRUCTION OF UNSOLD TEXTILES AND FOOTWEAR.

EU member states will establish specific rules for addressing violations of national provisions, including penalties like fines for non-compliance. Although, these penalties may differ among member states, fines and exclusion from public procurement will be set as baseline requirements.

To support SMEs in meeting ESPR requirements across their value chain, the European Commission plans to issue additional acts and guidelines, though the timeline for these is still pending. EU Member States are also expected to assist these companies, maintaining open communication to identify best practices and useful tools.
Products will be required to meet information and performance requirements starting in 2027. Following the formal approval of the main ESPR, the European Commission will issue delegated acts specifying these requirements, with textiles identified as a priority in the first working plan, anticipated in early 2025. After each delegated act is adopted, companies will have at least 18 months to transition to full compliance, placing the earliest expected compliance date around 2027.

DPP standards are set to be completed by the end of December 2025, allowing the industry time to adjust by 2027. Reporting obligations on the disposal of unsold goods will start in 2025, and apparel and footwear will be subject to compliance requirements beginning in 2026.The new ecodesign requirements introduced by the ESPR will affect the supply chains of global companies, as they will need to meet updated sustainability standards. Once in place, these standards will be uniformly enforced across all EU Member States. The ESPR represents a major step towards achieving a circular economy in the EU. Although requirements will be phased in by 2027, businesses need to prepare now to ensure compliance considering that implementing the ESPR may present various challenges.

1-Regulation (EU) 2024/1781 of the European Parliament and of the Council of 13 June 2024 establishing a framework for the setting of ecodesign requirements for sustainable products, amending Directive (EU) 2020/1828 and Regulation (EU) 2023/1542 and repealing Directive 2009/125/EC https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32024R1781&qid=1719580391746

2.2 Directive on Empowering Consumers for the Green Transition[2]

On March 30, 2023, the proposal for a Directive on Empowering Consumers for the Green Transition (EmpCo) was published to amend the Unfair Commercial Practices Directive and the Consumer Rights Directive. This Directive aims to enhance consumer protection against unfair commercial practices and provide better information about the environmental impact of products.

THIS DIRECTIVE AIMS TO ENHANCE CONSUMER PROTECTION AGAINST UNFAIR COMMERCIAL PRACTICES AND PROVIDE BETTER INFORMATION ABOUT THE ENVIRONMENTAL IMPACT OF PRODUCTS.

Following its entry into force on March 26 2024, EU Member States have 24 months to integrate the Directive's measures into national laws, with implementation required by September 27 2026. This Directive represents a significant advancement in the EU's Green Deal framework and aims to combat greenwashing by regulating misleading environmental claims and ensuring consumers can make informed purchasing decisions.
Unlike the Green Claims Directive, the EmpCo directive does not establish a new regulatory framework specifically for unfair practices related to green claims. It amends two existing directives, firstly the Unfair Commercial Practices Directive (2005/29/EC, or "UCPD" for short) and secondly the Consumer Rights (2011/83/EU).
Additionally, the EmpCo complements the Green Claims Directive, which mandates companies to substantiate their environmental claims. Overall, the Directive is expected to change how companies market products and enhance scrutiny of sustainability claims by national authorities.
Although there is still time before Member States are required to enforce the measures under the Empowering Consumers Directive (starting on 27 September 2026), companies should begin assessing their internal processes for making environmental claims.

2.3 Green Claims Directive[3]

In March 2023, the European Commission proposed the Green Claims Directive, setting minimum requirements for substantiating, communicating, and verifying environmental claims. Key is the need for certain claims to be verified by independent third parties (ex ante verification). On 17 June 2024, the European Council adopted its position, which will guide negotiations with the European Parliament. Once enacted, EU member states will have two years to implement it into national law.

THE GREEN CLAIMS DIRECTIVE AIMS TO SET CLEAR, STANDARDIZED CRITERIA FOR VOLUNTARY ENVIRONMENTAL CLAIMS MADE BY BUSINESSES TO CONSUMERS.

This initiative seeks to reduce misleading claims and combat greenwashing, improve environmental safeguards, empower consumers with reliable information for informed choices, and offer companies greater legal clarity. To support these objectives, the directive outlines specific requirements for businesses making voluntary environmental claims and using eco-labels.

2-Directive (EU) 2024/825 of the European Parliament and of the Council of 28 February 2024 amending Directives 2005/29/EC and 2011/83/EU as regards empowering consumers for the green transition through better protection against unfair practices and through better information https://eur-lex.europa.eu/eli/dir/2024/825/oj
3-Proposal for a Directive of the European Parliament and of the Council on substantiation and communication of explicit environmental claims (Green Claims Directive) https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2023%3A0166%3AFIN

The directive applies to all companies operating in the EU market, even if based outside the EU and includes several important measures, such as:

- Establishing specific criteria for how companies must validate their environmental claims and labels.
- Mandating that these claims and labels receive prior approval from an independent, accredited third-party verifier.
- Allowing new official eco-labeling schemes only if they are created at the EU level.
- Ensuring that public authorities, rather than competitors, enforce penalties for infringements.

The European Council has suggested multiple amendments designed to achieve a balance between safeguarding consumers, easing the responsibilities on businesses, and fostering environmental enhancement. Although the legislative process continues, it is gradually reaching its conclusion.
Unlike the EmpCo Directive, the Green Claims Directive exempts small companies and the EU Parliament proposes giving companies with fewer than 250 workers an extra year to comply.

2.4 Nature Restoration Law[4]

On June 17, 2024, the EU Council of Environment Ministers adopted the Nature Restoration Law, setting binding targets to restore diverse ecosystems—from land to marine, freshwater, and urban areas. A narrow majority, secured its passage, despite objections from some EU countries concerned over costs and regulations.
The Law mandates that by 2030, at least 20% of EU ecosystems, especially in Natura 2000 sites, be restored. Key targets include restoring habitats, reversing pollinator decline, improving soil health, and expanding urban green spaces. Forests must see increased biodiversity and tree planting, and agricultural lands are to enhance biodiversity while reducing emissions from drained peatlands.
To support food security, the Law includes an "emergency brake", allowing suspension of targets if they threaten EU food production. Member states must submit national restoration plans and report progress.

The Regulation is part of the EU's broader environmental strategy under the Green Deal, aligning business practices with sustainability goals[5].

THE LAW MANDATES THAT BY 2030, AT LEAST 20% OF EU ECOSYSTEMS, ESPECIALLY IN NATURA 2000 SITES, BE RESTORED.

4-Regulation (EU) 2024/1991 of the European Parliament and of the Council of 24 June 2024 on nature restoration and amending Regulation (EU) 2022/869 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32024R1991&qid=1722240349976
Frequently Asked Questions and related Answers can be accessed here:
5-https://ec.europa.eu/commission/presscorner/detail/en/qanda_22_3747

2.5 Deforestation Regulation[6]

The Deforestation Regulation (EUDR) is designed to block products tied to illegal deforestation from entering the EU market. The EUDR, effective as of June 2023, is set to have wide-ranging impacts both within the EU and internationally. It prohibits specific commodities and their derivate products from being sold in the EU unless they meet "deforestation-free" standards, enforcing strict due diligence obligations to verify that products comply with these standards.

> IT PROHIBITS SPECIFIC COMMODITIES AND THEIR DERIVATE PRODUCTS FROM BEING SOLD IN THE EU UNLESS THEY MEET "DEFORESTATION-FREE" STANDARDS, ENFORCING STRICT DUE DILIGENCE OBLIGATIONS TO VERIFY THAT PRODUCTS COMPLY WITH THESE STANDARDS.

To comply, operators and traders who offer regulated products in the EU must ensure that the raw materials used were produced and harvested without deforestation and in adherence to local laws. They are also required to submit a due diligence statement, certifying that they have assessed the supply chain thoroughly. The EUDR applies directly to operators and traders established in the EU irrespective of their size.
Commodities covered under EUDR include cattle, cocoa, coffee, palm oil, rubber, soy, and wood. The scope of EUDR's impact goes beyond the primary sectors engaged in cultivating and commercializing these raw materials, reaching industries that use them in secondary forms, such as the leather sector within textiles.

In December 2024 the European Union granted a 12-month additional phasing-in period, making the law applicable on 30 December 2025 for large and medium companies and 30 June 2026 for micro and small enterprises[7]. Starting from these dates December 31, 2024 (or June 30, 2025, for small and medium-sized enterprises, or SMEs), these commodities and products can only be sold on the EU market if they meet the conditions set by the EUDR that requires businesses to:

- assess supply chains to identify risks associated with deforestation or forest degradation;
- conduct due diligence, including gathering geolocation data on production sites, ensuring alignment with local regulations;
- report periodically to relevant authorities to verify that products are deforestation-free and do not originate from deforested regions;
- ensure full traceability of products.

To comply with the EUDR, companies must understand the legal frameworks in the countries where their regular suppliers produce relevant goods. This includes familiarizing themselves with specific land use rights, environmental protections, and forest-related regulations in those markets.

A benchmarking system operated by the Commission will classify countries, or parts thereof, in three categories (high, standard and low risk) according to the level of risk of producing in such countries commodities that are not deforestation-free. Staying updated on any EU implementation acts, guidance, and applicable Member State laws in this area will also be essential.

6-Regulation (EU) 2023/1115 of the European Parliament and of the Council of 31 May 2023 on the making available on the Union market and the export from the Union of certain commodities and products associated with deforestation and forest degradation and repealing Regulation (EU) No 995/2010 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32023R1115&qid=1687867231461.
7-https://eur-lex.europa.eu/eli/reg/2024/3234/oj/eng

2.6 Corporate Sustainability Reporting Directive[8]

The Corporate Sustainability Reporting Directive (CSRD), effective as of January 2023, replaces the Non-Financial Reporting Directive (NFRD) to broaden corporate sustainability disclosures. The CSRD mandates that more companies report on environmental, social, and governance (ESG) factors following the European Sustainability Reporting Standards (ESRS). This move supports sustainability in business strategy, aiding investors and stakeholders in making informed decisions.

The CSRD applies to large and certain medium-sized companies, including insurers, non-EU firms with significant EU activity, and large firms meeting at least two of these criteria: over 250 employees, €40+ turnover, or €20+ turnover. SMEs and micro-enterprises aren't required to comply but may choose to report voluntarily.

The CSRD's goal is to standardize sustainability reporting, enhancing transparency, quality, and trustworthiness of ESG data. This allows for better assessment of a company's commitment to sustainable activities and helps stakeholders evaluate its reliability.
Companies must report annually on "double materiality," covering both the environmental and social impacts of their operations and how sustainability goals affect financial health. This information, submitted in Management Reports, must be independently audited to ensure accuracy, strengthening data credibility.
Non-compliance can lead to penalties such as public notices, mandatory changes in conduct, or fines. Penalties vary by country but must be effective and consider factors like the seriousness of the breach and the company's financial strength. Additionally, inadequate reporting risks losing investor interest, while compliance can attract green investments.

> THE CSRD MANDATES THAT MORE COMPANIES REPORT ON ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) FACTORS FOLLOWING THE EUROPEAN SUSTAINABILITY REPORTING STANDARDS (ESRS).

8-Directive (EU) 2022/2464 of the European Parliament and of the Council of 14 December 2022 amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU, as regards corporate sustainability reporting https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022L2464

2.7 Corporate Sustainability Due Diligence Directive[9]

The Corporate Sustainability Due Diligence Directive (CSDDD) took effect on July 25 2024. According to the EU Commission, the Directive aims to encourage sustainable and responsible corporate practices within companies and throughout their global value chains. It mandates that companies identify, prevent, and mitigate any negative human rights and environmental impacts associated with their operations, including both upstream and some downstream activities.

IT MANDATES THAT COMPANIES IDENTIFY, PREVENT, AND MITIGATE ANY NEGATIVE HUMAN RIGHTS AND ENVIRONMENTAL IMPACTS ASSOCIATED WITH THEIR OPERATIONS, INCLUDING BOTH UPSTREAM AND SOME DOWNSTREAM ACTIVITIES.

Companies in scope are required to embed due diligence into their policies, assess risks, apply measures to prevent or lessen these impacts, and create complaint channels. They must also monitor the effectiveness of these measures and publicly disclose their due diligence efforts.
Member States have two years to incorporate the Directive into national law.

The Directive primarily applies to large companies based in the EU and certain non-EU companies operating within it. Beginning on July 26 2027, the following entities will be required to comply: (i) EU companies with an average of over 5,000 employees and a global net turnover exceeding €1.5 billion in the previous financial year, (ii) non-EU companies with a net turnover over €1.5 billion within the EU, regardless of employee count, and (iii) both EU and non-EU parent companies of a group that meets these thresholds on a consolidated level. Its focus is on promoting responsible corporate behavior, requiring companies to minimize environmental and human rights impacts throughout their value chains. This includes obligations around due diligence, risk mitigation, and reporting.
Non-compliance can lead to civil liability, and national authorities must establish effective penalties, including fines of up to 5% of a company's global revenue.

The Directive will impact in-scope companies and their supply chains, as companies are likely to encourage their suppliers to follow these requirements. Member States must incorporate the Directive into national law by July 25 2026.

9-Directive (EU) 2024/1760 of the European Parliament and of the Council of 13 June 2024 on corporate sustainability due diligence and amending Directive (EU) 2019/1937 and Regulation (EU) 2023/2859 https://eur-lex.europa.eu/eli/dir/2024/1760/oj

2.8 Forced Labour Products Ban Regulation[10]

ON APRIL 23 2024, THE EUROPEAN PARLIAMENT ADOPTED THE FORCED LABOUR REGULATION (FLR), EMPOWERING THE EU TO BAN THE SALE, IMPORT, AND EXPORT OF PRODUCTS MADE WITH FORCED LABOR.

On April 23 2024, the European Parliament adopted the Forced Labour Regulation (FLR), empowering the EU to ban the sale, import, and export of products made with forced labor. This regulation applies to all businesses selling products in the EU, including online retailers, and enables authorities to seize or remove non-compliant products from the market. Companies must now conduct due diligence to ensure their supply chains are free from forced labor.
Investigations into potential violations will be conducted by the EU Commission and member states, supported by a public submission point for reporting suspected forced labor. Businesses are required to provide due diligence information within 30 days if requested, and investigations may be reopened if new evidence emerges. If a violation is confirmed, authorities will order the removal of the offending products.
Compliance will be enforced by member states, with penalties determined under national regulations. The law will take effect 36 months after its entry into force, making the ban likely applicable between Q2 and Q4 of 2027.
Unlike the CSDDD, which applies based on factors like company size, turnover, and workforce, the FLR is broad in scope, affecting any company supplying goods that could involve forced labor. This means that even suppliers who do not meet CSDDD's thresholds may still fall under the FLR's requirements. Moreover, the FLR does not directly mandate additional due diligence obligations, as the CSDDD does. However, companies will be encouraged to implement comprehensive due diligence checks and monitoring to lower the risk of investigation or product withdrawal from the market.
These measures will support the investigations carried out by relevant authorities.

In this way, the new regulation works alongside the CSDDD, broadening corporate accountability across the supply chain and strengthening the EU's efforts to eliminate forced labor practices. Without strong accountability measures for downstream entities, such as manufacturers, wholesalers, and retailers, forced labor risks may persist across supplier networks, allowing these violations to continue further up the value chain.
This selection of measures well represents the strong legislative driver that is pushing fashion companies to strengthen their investments towards sustainability and circularity.

10-European Parliament legislative resolution of 23 April 2024 on the proposal for a regulation of the European Parliament and of the Council on prohibiting products made with forced labour on the Union market (text adopted) https://www.europarl.europa.eu/doceo/document/TA-9-2024-0309_EN.pdf

Methodology

FIELD ANALYSIS AND KPIs TESTING

3

3.1 Complete methodology of SDA Bocconi Research – Monitor for Circular Fashion 2024/2025

Since 2023 the Monitor for Circular Fashion (M4CF) has been implementing an ESG approach to circularity (see table 3.1 for the complete methodology). Leveraging on an extensive literature review (see selected bibliography) the 2024 research results come from a field analysis based on two surveys (one for pipeline players and one for service providers) with both closed and open questions and co-creation workshops on ESG factors in circularity management with special focus on the following areas:

- ecodesign;
- biodiversity;
- social impact;
- governance.

Three co-creation workshops have been organized during the year with the active participation of all the Partners of the Monitor for Circular Fashion with the objectives of:

- stimulating the discussion among the Partners of the Monitor for Circular Fashion on specific topics, SDA Bocconi M4CF team and external experts;
- collecting the inputs of the Partners of the Monitor for Circular Fashion on specific topics for SDA Bocconi M4CF research purposes;
- sharing the M4CF point of view on specific topics.

The three co-creation workshops organized in 2024 were the following:

1. Workshop activity on social impact & circularity;
2. Workshop activity on circularity & governance;
3. Workshop activity on circularity & logistics.

One think tank on biodiversity and one on responsible innovation for circular fashion were also organized in order to collect precious inputs from Partner companies. Both co-creation workshops and think tanks have been essential to build the research surveys.

In addition, thanks to the collaboration with Certilogo, a brief survey on understanding consumers preferences on digital product passports was shared this year with an extensive Certilogo panel of 1741 respondents.
During the retail & logistics workshop co-organized with BIP, a dedicated survey was shared with the Partner companies: the key results can be found in a dedicated box drafted by BIP Group in Chapter 4.

Key results from all the surveys are presented in Chapter 4.

The following paragraph is explaining how the KPIs have been tested through the circularity projects.

TABLE 3.1: COMPLETE METHODOLOGY OF SDA BOCCONI RESEARCH – MONITOR FOR CIRCULAR FASHION 2024/2025.

FEBRUARY 2024 → NOVEMBER 2024

HOW	WHO	WHAT
DESK RESEARCH	**SDA Bocconi team**	Analysis of 30+ updated sources focusing on circular fashion.
FIELD ANALYSIS	**SDA Bocconi team**	Testing the industry-specific KPIs through circularity projects and building the sustainability claims.
	SDA Bocconi team	Surveys, co-creation workshops on ESG factors in circularity management with special focus on: • ecodesign; • biodiversity; • social impact; • governance.
	SDA Bocconi team and Certilogo team	Survey on consumers preferences on digital product passports.
	SDA Bocconi team and BIP Group team	Survey on circularity & logistics.
RESULTS ANALYSIS AND VALIDATION	**SDA Bocconi team & Partners**	Plenary Meeting with Partners for collective discussion on research results.

3.2 Testing the tailored KPIs for fashion

Since year One, among the objectives of the Monitor for Circular Fashion (M4CF) there is the identification of tailored KPIs that fashion companies can adopt to assess their progress in sustainability, circularity, value chain traceability and transparency (TT) performance (see Box 3.1).

In 2021 the identification of 40+ fashion industry-specific KPIs was based on primary and secondary data, gathered by the SDA Bocconi research team through desk research, an online survey and semi-structured interviews to the companies that are part of the community. Partner companies were asked to suggest adoptable KPIs based on their knowledge of the fashion industry through surveys. In 2022, 2023 and 2024 the KPIs have been used to substantiate the sustainability claims chosen for each circularity project – either pilot or industrialized, B2B or B2C or a mix - with the careful verification operated during several rounds by the Monitor for Circular Fashion Legal Advisor, the overall SDA Bocconi research team and the KPIs Committee. The responses from the surveys were analyzed via qualitative methods by the SDA Bocconi Sustainability Lab research team to map out a coherent framework of indicators based on shared definitions and measure units. The KPIs Committee validated and further refined the KPIs list, suggesting some KPI guidelines for measurement. The Monitor partners discussed the identified performance indicators during a Plenary Meeting meant to include the perspective of brands, ingredient brands and service providers. Finally, the KPIs Committee carried out a closing review with the Sustainability Lab research team. In 2022, eco-design and chemical management KPIs have been added. In 2023 the KPIs have been fine-tuned and adapted to the additional value chain of leather. In 2024 the Monitor for Circular Fashion started a discussion on possible social impact KPIs to be tested and implemented in the next years. Starting from 2022, the industry-specific KPIs have been implemented and tested onto real life product, referring to the Circular Fashion Activities (Figure 3.1.).

KPIs have been tested through several circularity projects in 2022, 3 projects in 2023 and 4 new projects in 2024. KPIs selection for circularity projects was made by implementing the SMART + CCC criteria: good KPIs need to be "specific", "measurable", "attainable", "relevant", "time-bound", "clear", "comparable", "cost effective". Some of the KPIs are "product" related, some are "process" related (Figure 3.2).

FIGURE 3.1: CIRCULAR FASHION ACTIVITIES

Source: Monitor for Circular Fashion Report 2022

FIGURE 3.2: KPIs MAIN CHARACTERISTICS

Source: Monitor for Circular Fashion Report 2022

Temera, Partner in the implementation of all pilot projects, created the online experiences of the individual products. Certilogo, Partner in the implementation of the first industrialized project created the online experience for the circularity service offered. Through these customer journeys, Temera and Certilogo provided a digital voice to the products and services, sharing the TT information, accessible by scanning the QR codes available in chapter 4 and in the Circular Fashion Manifesto 2024.

BOX 3.1

FOCUS ON CORPORATE LEVEL AND PRODUCT AND MATERIAL LEVEL TT KPIs

The Sustainability Pledge 3-year monitoring report presents the results of monitoring activities conducted by UNECE in the context of its Call to Action named the Sustainability Pledge[1].

In 2024 the UNECE Advisory Board of the Sustainability Pledge identified 25 TT KPIs at the corporate level and 10 TT KPIs at the product and material level. The KPIs are made available in the UNECE report as a transparent tool to all industry actors, who are willing to take the first steps in measuring commitments related to TT.

These TT KPIs will be highly considered by the Monitor for Circular Fashion for the next steps of the Research Observatory activities in the 2025/2026.

Source: UNECE (2024), Enhancing traceability and transparency of sustainable value chains in the garment and footwear industry. The Sustainability Pledge 3-year monitoring report, paged 32-36 https://thesustainabilitypledge.org/media/The-Sustainability-Pledge_Report_09-07-24.pdf

1-United Nations Economic Commission for Europe (UNECE), Call to Action for Traceability, Transparency, Sustainability and Circularity of Value Chains in the Garment and Footwear Sector (Geneva, 2021). Available at: https://unece.org/sites/default/files/2021-03/ECE_ TRADE_C_CEFACT_2020_06_Rev1E_1.pdf.

Both in 2022, 2023 and 2024 the KPIs have been used to substantiate the sustainability claims chosen for each circularity project with the careful verification operated during several rounds by the Monitor for Circular Fashion Legal Advisor, the overall SDA Bocconi research team and the KPIs Committee.

Data analysis
MAIN FINDINGS

4

Chapter 4 presents the main findings of the M4CF 2024 survey implementing the ESG approach to circularity.
4.1 describes the research sample. The environmental approach is presented in section 4.2 which is focusing on the Ecodesign and 4.3 on biodiversity. This section is concluded with Box 4.1 focusing on the Role of Circular Logistics in Sustainable Fashion.
The social approach is presented in section 4.4 and the governance approach is presented in section 4.5.

4.1 SDA Bocconi research sample and key results

During 2024 the partners of the M4CF have been asked to answer an extensive survey focused on the following topics: circularity and ecodesign (see section 4.2), circularity and biodiversity (see section 4.3), circularity and social impact (see section 4.4), circularity and governance (see section 4.5).

The M4CF pipeline respondents are both SMEs and Large companies (table 4.1) and cover both B2B and B2C business models.

TABLE 4.1: VENDORS, INGREDIENTS AND BRANDS & RETAILERS RESPONDENTS BY SIZE* AND BUSINESS MODEL

18 VENDORS, INGREDIENTS AND BRANDS & RETAILERS	
SME	5
Large	13

The 10 service providers (table 4.2) partner of the M4CF bring the point of view of more than 24.000 fashion clients.

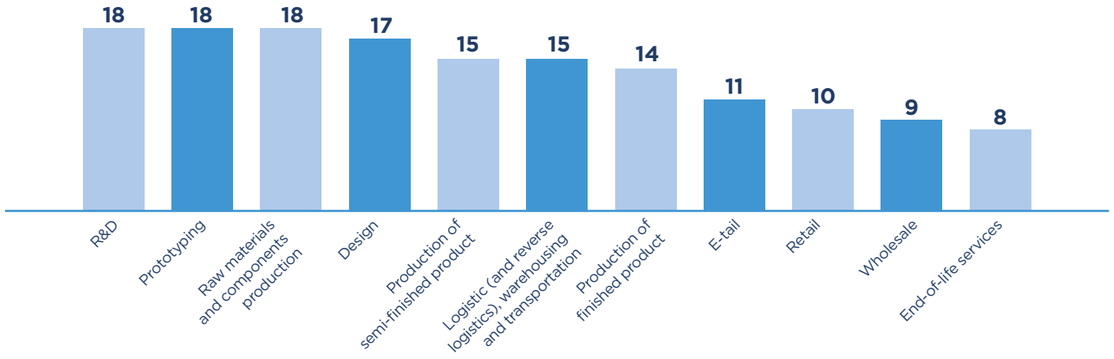
TABLE 4.2: SERVICE PROVIDERS RESPONDENTS BY SIZE* AND BUSINESS MODEL

10 SERVICE PROVIDERS	
SME	5
Large	5

In this report, the point of view of consumers has been considered as well, and will also be presented in chapter 5. The M4CF partners cover all value chain activities (figure 4.1).

*The classification about the dimension is based on the number of employees.

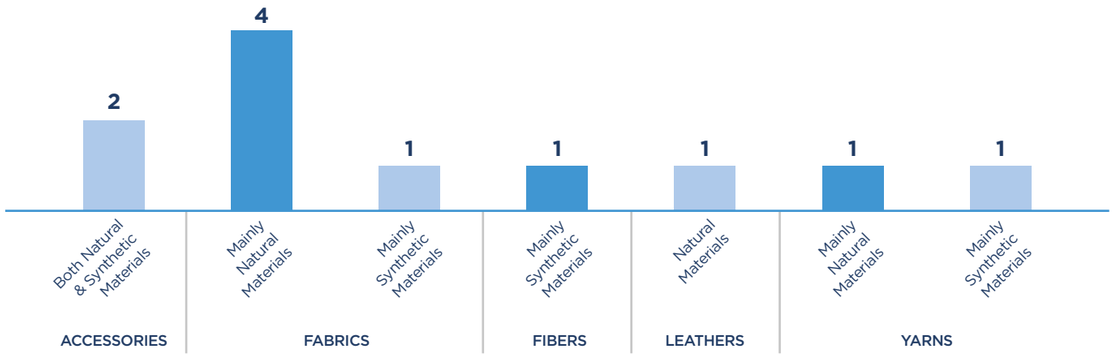
FIGURE 4.1: VALUE CHAIN ACTIVITIES COVERED BY VENDORS, INGREDIENTS AND BRANDS & RETAILERS RESPONDENTS



M4CF partners include leading premium brands and related groups such as Salvatore Ferragamo, Giorgio Armani, Hugo Boss, Kering, Oscalito, Save The Duck, TOD's Group, and Vivienne Westwood, alongside key representatives from the full spectrum of textile manufacturing system such as RadiciGroup, a global leader in polyamide, synthetic fibers, and and high performance polymers, and Albini Group, renowned for its superior-quality fabrics and yarns, play a crucial role. In denim, Candiani Denim leads the way, while Gruppo Mastrotto excels in leather production, and Manteco provides innovative new-generation wool. Eurojersey supplies high-performance technical fabrics, while Vitale Barberis Canonico is a wool mill player, symbol of the Made in Italy excellence. Vibram offers durable, high-performance soles while YKK Italia is among the world's largest manufacturers of fastening accessories. Holding Moda completes the variety as a vendor specialized in the manufacturing of finished products covering several other fashion pipeline phases.

This robust network of partners ensures a comprehensive and integrated approach to circularity and sustainability, supporting a good number of stages of the fashion pipeline (figure 4.2).

FIGURE 4.2: MATERIALS REPRESENTED BY VENDORS, INGREDIENTS AND BRANDS & RETAILERS RESPONDENTS



4.2 Ecodesign maturity level, organizational practices and KPIs survey results

As highlighted in Chapter 2 of this report, ESPR[1] is pushing fashion companies to introduce ecodesign principles in the collections.
One section of the survey completed by the ingredient brands, vendors, brands and retailers of the M4CF focused on ecodesign maturity level, organizational practices and ecodesign KPIs. **The aim was to investigate how factors like training programs, internal collaboration efforts, external consultant engagement, dedicated ecodesign teams' presence and incorporation of environmental KPIs contribute to facilitate or impede the adoption of ecodesign.**

4.2.1 The ecodesign maturity model

The Circular Product Design Maturity Matrix[2] was applied, considering 9 out 11 ecodesign dimensions, to assess the ecodesign maturity level (figure 4.3). This synthetic index, ranging from 1 to 5, corresponds to the following 5 maturity levels of the pipeline partners:

- **Inert**: companies show minimal knowledge and experience with circular product design. They have not yet recognized benefits of integrating circular economy principles into product design;
- **Conversant**: companies have taken initial steps toward ecodesign and recognize its importance in product design, but their effort is limited and reactive to immediate problems;
- **Applied**: companies apply circular strategies in specific product design projects, giving importance to data to measure them, and considering the entire product lifecycle;
- **Monitored**: companies have a proactive and structured integration of ecodesign principles into product design, with established structures, processes, and performance metrics;
- **Optimized**: companies implement continuous improvement of circular product development performance, driven by performance indicators and active stakeholder and value chain involvement.

FIGURE 4.3: M4CF PARTNERS' ECODESIGN MATURITY ASSESSMENT

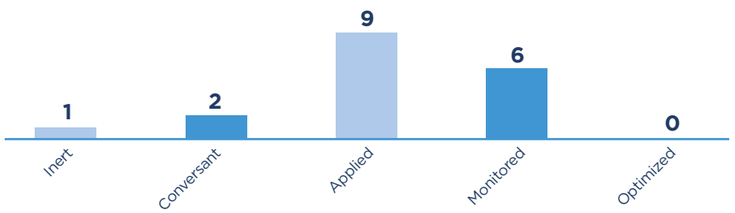


Figure 4.3 shows that the majority of Partners is already confident with ecodesign practices.

Based on the answers a focus on the most relevant ecodesign dimensions of the model (i.e., categories of ecodesign strategies based on their macro-objective) is presented in table 4.3, highlighting the average[3] most adopted ecodesign strategies[4] of the pipeline partners at a more operational level and the average most selected KPIs to measure them.

TABLE 4.3: ECODESIGN DIMENSIONS, MOST ADOPTED STRATEGIES AND KPIs

DIMENSION	MOST ADOPTED STRATEGY	MOST SELECTED KPIs
NARROWING THE USE OF RESOURCES	**Design with low-impact inputs:** design products with materials that demand fewer resources, such as water and energy, during production, and evaluate the physical and chemical properties of materials.	• Total product weight; • Number of materials included in the product; • Specific material consumption measured as (Total material input) mass / Production Output.
REGENERATING RESOURCES	**Design with non-toxic materials:** design products considering the toxicity of materials.	• % of kg/meters/square meters/ units that respect eco-design principle of use of renewable inputs on total kg/meters/square meters/ units; • % of the chemicals with hazard information inputted in the Chemical Inventory; • Number of different hazardous material in the product.
SLOWING THE LOOP	**Design for physical durability:** design products that degrade more slowly in relation to substitute products.	• % of kg/meters/square meters/ units that respect eco-design principle of durability on total kg/meters/square meters/ units; • Number of active functionalities in the product (e.g., for textiles, fabrics functionalities such as water resistance, breathability; for garments, functionalities such as water resistance, removable linings, adjustable fits); • Number of complains and requests for technical assistance per period of time (e.g., lifespan).
CLOSING THE RESOURCE LOOP	**Design with recycled materials:** design products considering the use of material recycled from other products or components.	• Weight of total recycled material / Total weight of material used in the product in %; • Number of products in portfolio which can be reused or recycled; • % of kg/meters/square meters/ units that respect eco-design principle of use of recyclable inputs on total kg/meters/square meters/ units.

1-https://commission.europa.eu/energy-climate-change-environment/standards-tools-and-labels/products-labelling-rules-and-requirements/ecodesign-sustainable-products-regulation_en
2-Adapted from Aguiar and Jugend (2022).
3-The average level of adoption was calculated for each ecodesign strategy and related KPIs to measure them. The most adopted ecodesign strategies on average were reported under the related ecodesign dimension.
4-The detailed list of ecodesin strategies has been shared with 4CF Partners through the SDA Bocconi survey.

The analyses reported the availability of a dedicated team responsible for ecodesign initiatives, the use of external consultants, and the number of adopted KPIs to be positively correlated with the maturity of ecodesign practices.[5]

Results highlighted the relevant role of having a dedicated ecodesign team to achieve a higher ecodesign maturity level. These teams should not only be composed of experts with specialized technical knowledge but also be granted a certain level of autonomy within the organization to propose innovative solutions and develop eco-friendly products considering all product lifecycle. Most companies cited market competitiveness and brand image as the main ecodesign benefits and reported concerns regarding the costs associated with the purchase of sustainable raw materials. Establishing these teams would enable the development of business plans and risk management projects to assess the positive and negative impacts of ecodesign and have consistent planning.[6]

> PRESENCE OF A DEDICATED TEAM RESPONSIBLE FOR ECODESIGN INITIATIVES BRINGS TO HIGHER ECODESIGN MATURITY LEVEL

The analysis showed that the use of external consultants is positively correlated with the ecodesign maturity level. Even if companies aiming for higher maturity levels should establish a dedicated team, the reliance of external consultants to support the growth of the internal dedicated team might become the best organizational strategy. Managers should therefore plan for the transition from outsourcing to creating specialized teams with knowledge that would remain within the organization. Nevertheless, external consultants remain key for an independent point of view for the company.[7]

> USE OF EXTERNAL CONSULTANTS IS POSITIVELY CORRELATED WITH THE ECODESIGN MATURITY LEVEL

Managers should prioritize the integration of relevant KPIs into their strategic planning processes to measure and track progress but also to identify opportunities to drive sustainable effort. This continuous measurement and improvement process is necessary to achieve and maintain high levels of ecodesign maturity.

> THE HIGHER THE NUMBER OF ADOPTED KPIS THE HIGHER IS THE LEVEL OF ECODESIGN MATURITY

Results from previous studies confirm the positive impact of the number of KPIs on ecodesign maturity.[8] It is important, however, to consider the direction of this relationship and whether it implies causality. The association between the increase in the adoption of KPIs and higher ecodesign maturity could stem from the fact that companies which implement sustainability related KPIs have likely an approach more structured in improving their practices. However, it is possible that companies with higher ecodesign maturity are more inclined to adopt a greater number of KPIs. That is, as correlation does not imply causation, the relationship observed could be influenced by other factors not considered that could simultaneously drive both KPIs adoption and ecodesign maturity.[9]

5-The Spearman's rank-order correlation was utilized to analyze the relationship between organizational strategies, the number of adopted KPIs, and the maturity of ecodesign practices. About the organizational strategies, the tested independent variables were the offering of specific training for designers or all relevant employees on ecodesign principles, the internal collaboration across departments for ecodesign projects, the availability of a dedicated team responsible for ecodesign initiatives, the use of external consultants. These variables have already been considered in previews literature, as highlighted below.
6-Dermody and Hanmer-Lloyd (1995); Ritzén (2000); Goffin (2012).
7-Gond et al. (2024).

8-Delai & Takahashi (2011); McCool & Stankey (2004); Veleva & Ellenbecker (2001); Short et al. (2012); Herva et al. (2011)
9-Delai & Takahashi, 2011; McCool & Stankey, 2004; Veleva & Ellenbecker, 2001; Short et al., 2012; Herva et al. (2011)

4.2.2 Cost and benefits of ecodesign implementation

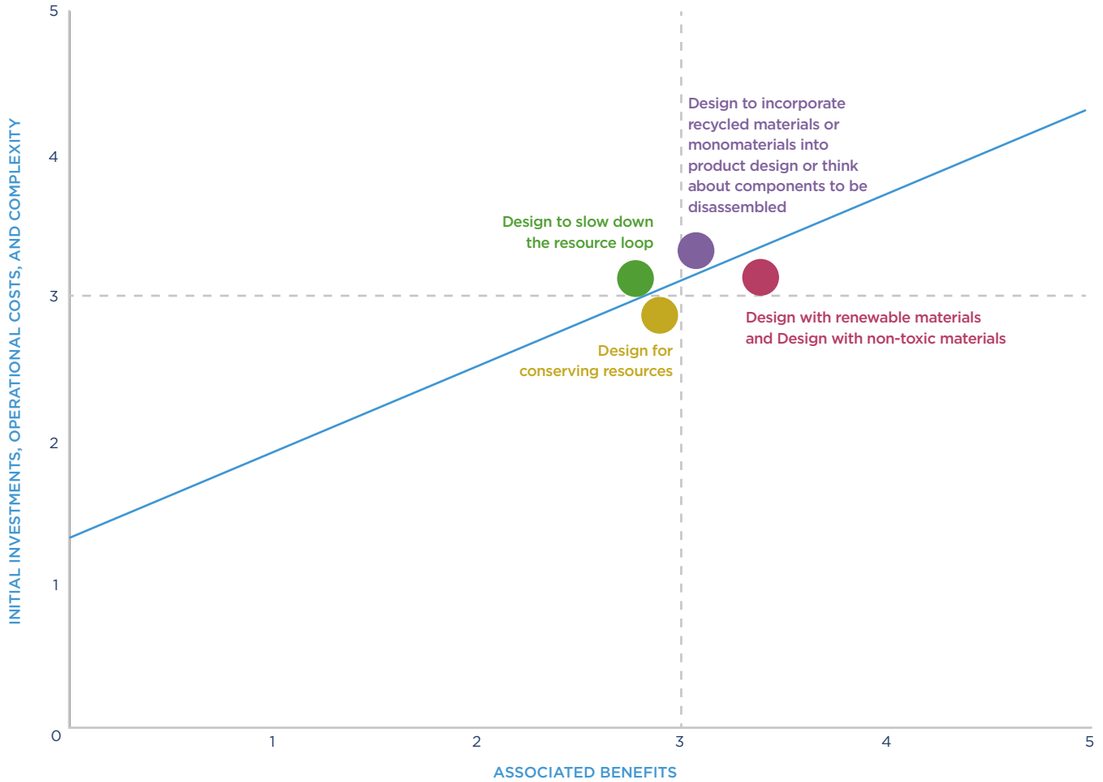
Another part of the ecodesign section of the survey was focused on costs and benefits of ecodesign implementation (figure 4.4).

Figure 4.4 is showing that ecodesign strategies implementation that require higher initial investments, operational costs, and complexity are associated with higher expected benefits. These results were both common to pipeline players (Figure 4.4a) and service providers (Figure 4.4b). Moreover, considering the complexity and relevance assessment (figure 4.5), the "Design with renewable materials" and "Design with non-toxic materials" (Reach-compliant) are the most effective strategies.

ECODESIGN STRATEGIES IMPLEMENTATION THAT REQUIRE HIGHER INITIAL INVESTMENTS, OPERATIONAL COSTS, AND COMPLEXITY ARE ASSOCIATED WITH HIGHER EXPECTED BENEFITS

"DESIGN WITH RENEWABLE MATERIALS" AND "DESIGN WITH NON-TOXIC MATERIALS" (REACH-COMPLIANT) ARE THE MOST EFFECTIVE STRATEGIES.

FIGURE 4.4a: COST AND BENEFITS OF ECODESIGN IMPLEMENTATION - **PIPELINE PLAYERS**



- Design for conserving resources
  (i.e. Design with low-impact inputs; Design for light weighting; Design for energy efficiency; Design for modularity)
- Design with renewable materials and Design with non-toxic materials
- Design to slow down the resource loop
  (i.e. Design for multiple functions; Design for physical durability; design for emotional durability; Design for easy maintenance and repair; Design for reliability; Design for reuse; Design for remanufacturing; Design for Product-Service Systems)
- Design to incorporate recycled materials or monomaterials into product design or think about components to be disassembled
  (i.e. Design with recycled materials; Design with only one material; Design with materials adequate for primary recycling; or Design with recyclable materials; Design for disassembly)

FIGURE 4.4b: COST AND BENEFITS OF ECODESIGN IMPLEMENTATION - **SERVICE PROVIDERS**

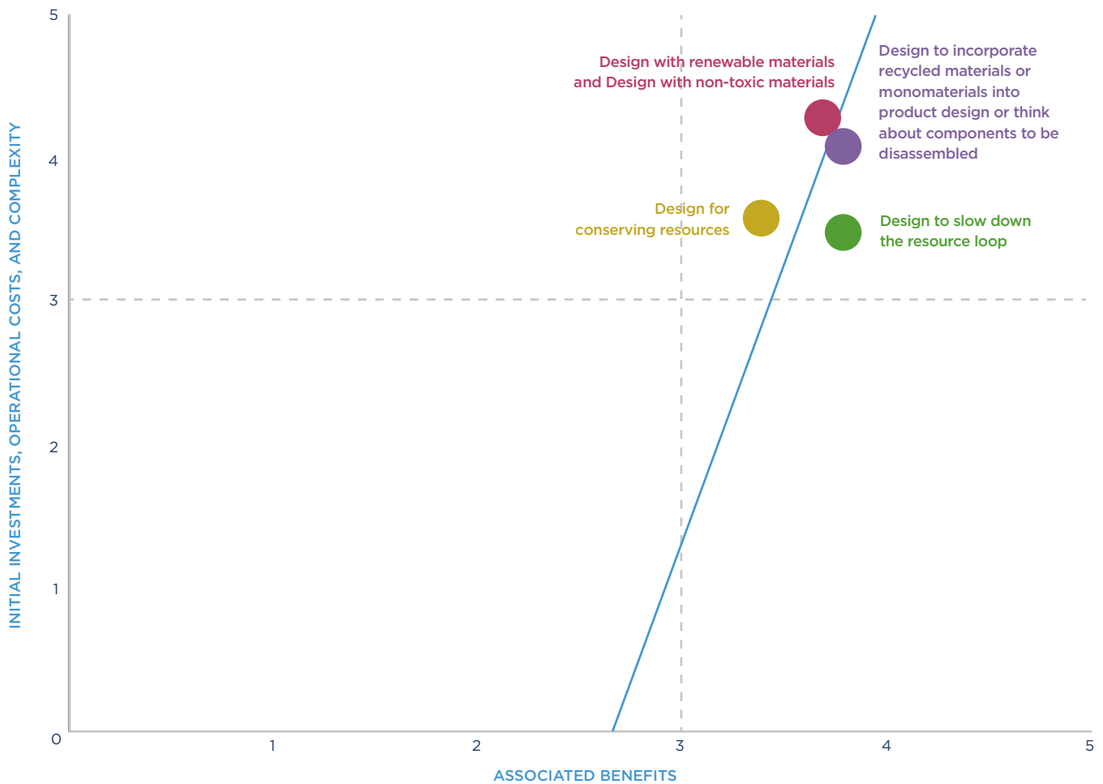
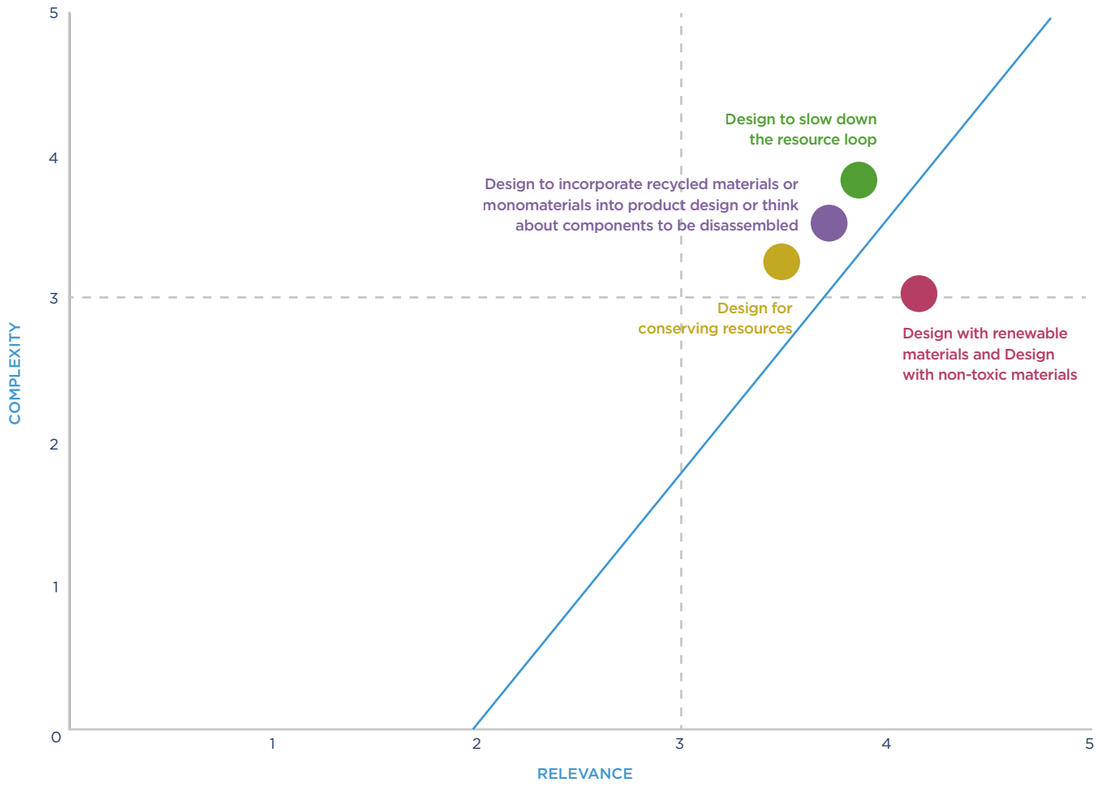


FIGURE 4.5: COMPLEXITY AND RELEVANCE OF ECODESIGN STRATEGIES - **PIPELINE PLAYERS**



Design for conserving resources
(i.e. Design with low-impact inputs; Design for light weighting; Design for energy efficiency; Design for modularity)

Design with renewable materials and Design with non-toxic materials

Design to slow down the resource loop
(i.e. Design for multiple functions; Design for physical durability; design for emotional durability; Design for easy maintenance and repair; Design for reliability; Design for reuse; Design for remanufacturing; Design for Product-Service Systems)

Design to incorporate recycled materials or monomaterials into product design or think about components to be disassembled
(i.e. Design with recycled materials; Design with only one material; Design with materials adequate for primary recycling; or Design with recyclable materials; Design for disassembly)

Ability to estimate costs and revenues of ecodesign practices implementation

Through the M4CF 2024 survey, the Partners were asked to estimate the operational costs for the next 3 seasons of implementation of ecodesign strategies in their company, considering all areas such as product design and development, training, supply chain management, processes redesign, and other operational costs. The majority of Partners was unable to provide an estimate at this time. The same answer was collected about the prediction of revenues for the next 3 seasons of implementation of ecodesign strategies in their company.

"Ecodesign somewhat promises to become the "holy grail" of circularity. This mainly by forcing designers and companies to watch beyond the limited boundaries of their narrow fields of interest, to devise solutions that will streamline multiple lives for products and materials, to creatively develop ideas allowing reduction of environmental impacts all along asset's lifecycle".

ENRICO DEGARA
Chief Sustainability Officer YKK Italia S.p.A

"For RadiciGroup, promoting ecodesign means considering the environmental impacts of products right from the design phase. In this way it is possible to identify and apply improvement solutions from the very beginning, fully supporting the circular economy and working within a life cycle perspective. Full circularity can only be achieved through a global vision and balanced action on all product life stages - from cradle to cradle."

CHIARA FERRARIS
Chief Communication Officer, RadiciGroup

"At HUGO BOSS, circularity and ecodesign are at the heart of our vision for a sustainable future of fashion. With this partnership we have deepened our understanding of integrating ecodesign principles into every stage of product development. This focus empowers us to create fashion that minimizes resource use and extends product lifecycles."

HUGO BOSS

"Luxury is no longer defined by opulence alone, but by its conscious creation. True elegance lies in harmony with nature, and the future of luxury fashion is rooted in ecodesign. With the Monitor for Circular Fashion KPIs, we have the ingredients for an alchemical transformation, and we are in the process of discovering the perfect recipe."

ANNA ZAMBALDO
Value Chain Sustainability Manager Ferragamo

"Fashion should be like a circle, which is drawn in one continuous motion, with no interruptions, and perfectly balanced. With the Monitor for Circular Fashion activity and KPIs, we are trying to make this change happen and help fix the industry."

MANTECO

"Leather represents a veritable example of circular economy: from a by-product to a high added value material through the application of eco-design principles.
Through partnerships like Monitor for Circular Fashion, we aim to improve our internal practices and, above all, inspire a systemic change, showing how innovation in materials can drive a more sustainable future for the fashion industry."

CHIARA MASTROTTO
President Gruppo Mastrotto

"The Italian leather production is circular by nature: the raw material, that are the raw hides and skins recovered from food industry waste, and the production processes have unique characteristics according to the Ecodesign principles. Leather is renewable, biodegradable, durable and reparable and the tanning process made in Italy, based on integrated circular approach, enables recovery of production waste and other Animal By Products (ABPs - Reg. UE 1069/2009) that are upcycled in other industrial sectors."

UNIC

"The traceability of leather refers to its geographical identification and traceability at every stage of production. Starting from the information on the slaughter (and where possible breeding) of the animals in the food industry from which it derives as a by product, moving on to its processing and transformation phases into finished leather, arriving up to its use for the creation of finished articles for the consumer (footwear, leather goods, clothing, furniture, automotive)."

SABRINA FRONTINI
ICEC Director

"We believe that sharing information about the physical durability of a garment with the end user also increases its emotional durability and can have a positive impact on a paradigm shift in consumption habits. The dematerialization of fabric also supports the concept of ecodesign. Eurojersey has been the first textile manufacturing company in Europe to invest on the digitalization of its Sensitive® Fabrics, as a key tool for innovation and sustainability. Building solid digital libraries and creating digital twins represent the first crucial steps towards true eco-compatible design. In a circular economy perspective, Eurojersey's journey is completed with innovative projects for the regeneration of textile waste produced in our manufacturing plant or in garment making."

ANDREA CRESPI
CEO Eurojersey

"The main complexity is the technological limitations on natural fibers recycling in finest counts and poor attention paid by the market to these values, where price is still the only driver. So far, we are trapped between two options: using recycled fibers with less environmental impact upstream but much less durable and quality garments downstream or using virgin fibers which give rise to much more qualitative and durable product."

DARIO CASALINI
CEO Maglificio Po s.r.l. - Oscalito 1936

"Giorgio Armani has created a style that has, with remarkable consistency, continued to explore countless variations and possibilities over the years. In expressing a precise and unique vision, it is a style in the truest sense of the word: a way of being and presenting oneself, certainly incorporating clothing and accessories, but also including gestures, ways, behaviours and attitudes; something that goes beyond the sum of its parts, and well beyond what one wears. Through his authentic style, the designer expresses fundamental and enduring values. With his uncompromising nature, he fully embraces the concept of inclusion, rejecting mainstream status symbols in favour of strong personalities and bright figures. In his relentless pursuit of continuous improvement, he crafts creations that stand the test of time because they are based on the idea that less is more, on the conviction that good design has no expiration date and has nothing to do with irresponsible consumption.
Style thus becomes a sustainable way of life."

ARMANI GROUP

4.3 Biodiversity: a multi-factor approach towards circularity

Ecodesign in the fashion industry is essential for preserving biodiversity, as it promotes sustainable practices that reduce environmental degradation, resource depletion, and the release of harmful pollutants, all of which are significant contributors to habitat loss and the disruption of ecosystems.

According to European Union Glossary, biodiversity can be defined as a contraction of the two words 'biological' and 'diversity', and it refers to the variety of life on earth in general, or the variety of living things in an ecosystem or region. Biodiversity covers all living things, ranging from bacteria, plants and animals to humans[10].

As mentioned in Chapter 2, biodiversity has received legislative attention from the European Union, exemplified by the Nature Restoration Law entered into force in July 2024. The law sets legally binding targets for EU countries to restore at least 20% of degraded ecosystems by 2030 and all degraded ecosystems by 2050 and focuses on safeguarding ecosystems like forests, wetlands, and agricultural lands, which are crucial for biodiversity and resilience against climate change[11].

To understand the extent to which the fashion industry impacts biodiversity, the M4CF utilized the planetary boundaries as its main guide.

> PLANETARY BOUNDARIES ARE USEFUL BECAUSE THEY HELP IDENTIFY THE ENVIRONMENTAL LIMITS WITHIN WHICH HUMAN ACTIVITIES CAN OCCUR SAFELY, ENSURING THE STABILITY OF EARTH'S SYSTEMS.

Planetary boundaries are useful because they help identify the environmental limits within which human activities can occur safely, ensuring the stability of Earth's systems. They provide a scientific framework to prevent critical ecological tipping points, guiding sustainable decision-making in areas like climate change, biodiversity, and resource use. By staying within these boundaries, societies can avoid crossing thresholds that could lead to catastrophic environmental and social consequences, thus promoting long-term planetary health and human well-being.

In the context of the fashion industry, planetary boundaries provide a multi-factor view of the overall impact of the value chain. This is because, differently from other impact measurement systems, planetary boundaries do not only focus on CO_2 emissions but also consider other different types of environmental damage.

Table 4.4 provides one sample data of the fashion industry's impact on each Planetary Boundary.

10-https://eur-lex.europa.eu/EN/legal-content/glossary/biodiversity.html#:~:text=It%20covers%20all%20living%20things,%2C%20fuel%2C%20fibre%20and%20medicines.
11-https://ec.europa.eu/commission/presscorner/detail/en/qanda_22_3747

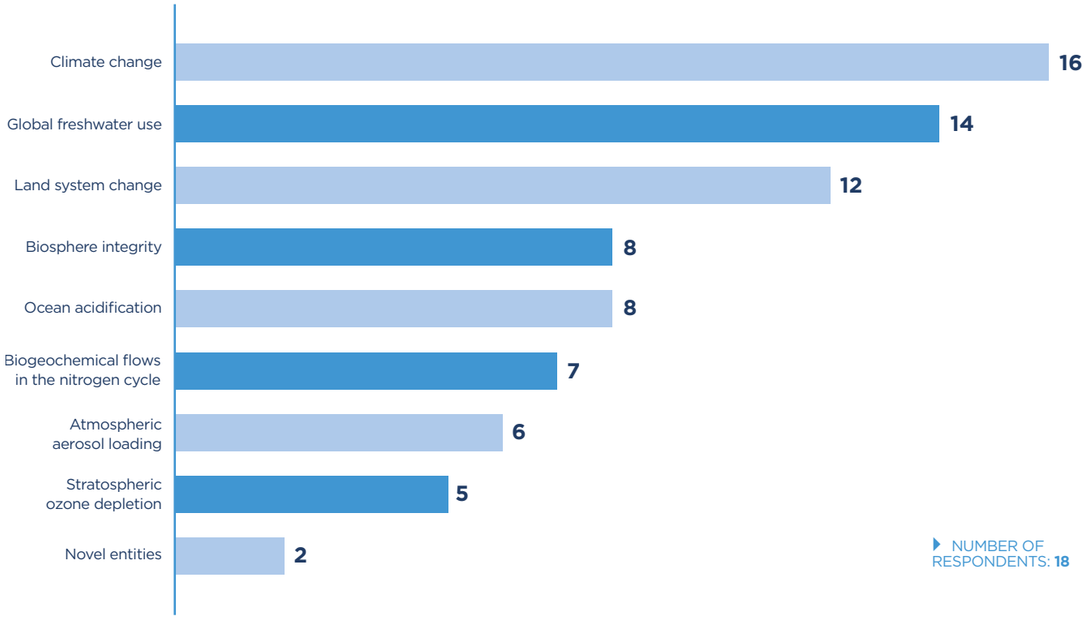
TABLE 4.4: FASHION INDUSTRY'S IMPACT ON PLANETARY BOUNDARIES

PLANETARY BOUNDARY	FASHION INDUSTRY SAMPLE DATA
CLIMATE CHANGE	The fashion industry is responsible for 10% of annual global carbon emissions.[12]
BIODIVERSITY LOSS	Cotton farming uses 2.5% of the world's agricultural land but accounts for 16% of all insecticide use and 6% of herbicides, impacting biodiversity and ecosystems.[13]
OCEAN ACIDIFICATION	Textile dyeing contributes to around 20% of global industrial water pollution, with chemical runoff contaminating freshwater sources and ultimately oceans.[14]
FRESHWATER USE	According to research, each ton of wool fiber consumes about 2.3–2.5 tons of water.[15]
CHEMICAL POLLUTION (NOVEL ENTITIES)	One environmentally toxic chemical commonly used in the fashion industry is chromium VI, a byproduct of leather tanning. Chromium VI is highly toxic, carcinogenic, and persistent in ecosystems. It contaminates water and soil during the tanning process, posing significant environmental and health risks.[16]
LAND-SYSTEM CHANGE	An estimated 200 million trees are logged every year for cellulose-based fabrics, including trees from peatland forests cleared for plantations.[17]
NITROGEN & PHOSPHORUS FLOWS	Synthetic fertilizer use in cotton farming has significantly increased nitrogen runoff into water bodies, leading to eutrophication and dead zones in aquatic ecosystems.[18]
ATMOSPHERIC AEROSOL LOADING	Synthetic textiles contribute significantly to atmospheric aerosol loading, as demonstrated by higher concentrations of microfibers indoors compared to outdoors.[19]
STRATOSPHERIC OZONE DEPLETION	Some textile manufacturing processes release chemicals, such as chlorofluorocarbons (CFCs), that contribute to ozone layer depletion.[20]

12-European Parliament, 2020 - https://www.europarl.europa.eu/topics/en/article/20201208STO93327/the-impact-of-textile-production-and-waste-on-the-environment-infographics
13-Soil Association, 2015 - https://www.soilassociation.org/media/11662/coolcotton.pdf
14-UN Environment Programme (UNEP), 2019 - https://www.unep.org/news-and-stories/story/cleaning-couture-whats-your-jeans
15-W.P. Duan, (2022), Analysis of the factors influencing the sustainable development of textile industry, Science and technology management Research
16-Zhao, Z., Li, J., Zhang, X. et al. Perfluoroalkyl and polyfluoroalkyl substances (PFASs) in groundwater: current understandings and challenges to overcome. Environ Sci Pollut Res 29, 49513–49533 (2022). - https://doi.org/10.1007/s11356-022-20755-4 - https://link.springer.com/article/10.1007/s11356-022-20755-4#citeas
17-Canopy, 2024 - https://canopyplanet.org/change-together/canopystyle
18-European Commission, 2019 - https://publications.jrc.ec.europa.eu/repository/bitstream/JRC130293/JRC130293_01.pdf
19-Henry, B., Laitala, K. & Klepp, I.G., (2019). Microfibres from apparel and home textiles: Prospects for including microplastics in environmental sustainability assessment. Science of The Total Environment, 652, pp.483-494. Available at: https://doi.org/10.1016/j.scitotenv.2018.10.166.
20-Scientific American, 2020 - https://www.scientificamerican.com/article/a-mysterious-rise-in-banned-chemicals-is-warming-the-planet/

The vendors, ingredients, brands and retailers partners of the Monitor for Circular Fashion were asked were asked which Planetary Boundaries are affected the most by their activities. Results are shown in figure 4.6.

FIGURE 4.6: IMPACT ON PLANETARY BOUNDARIES BY ORGANIZATIONS' ACTIVITIES
Which planetary boundaries do you think is affected by the activities of your organization? (multiple answers are available)



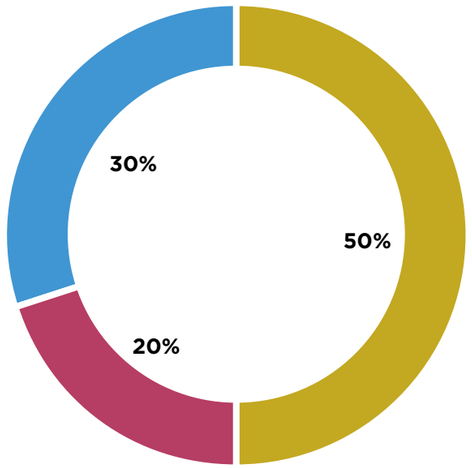
The most significant concerns highlighted by M4CF respondents are climate change, global freshwater use, and land system change, indicating a stronger focus on these key environmental issues. Additionally, aspects such as biosphere integrity and ocean acidification also present notable challenges, reflecting the broad range of environmental pressures. Lesser attention is given to areas like novel entities, though it remains a part of the broader environmental discussion. This diverse range of responses underscores the multifaceted nature of sustainability challenges faced by the organization.

> THE MOST SIGNIFICANT CONCERNS HIGHLIGHTED BY M4CF RESPONDENTS ARE CLIMATE CHANGE, GLOBAL FRESHWATER USE, AND LAND SYSTEM CHANGE

The pie charts in figures 4.7 and 4.8 reflect the Partner organization's current stance on integrating **biodiversity** considerations into their environmental impact assessments. Figure 4.7 provides the point of view of pipeline players, while figure 4.8 provides the point of view of service providers.

FIGURE 4.7: BIODIVERSITY CONSIDERATION IN ENVIRONMENTAL IMPACT ASSESSMENT FOR PIPELINE ACTORS

Do your fashion clients consider biodiversity when assessing the environmental impact of products produced?

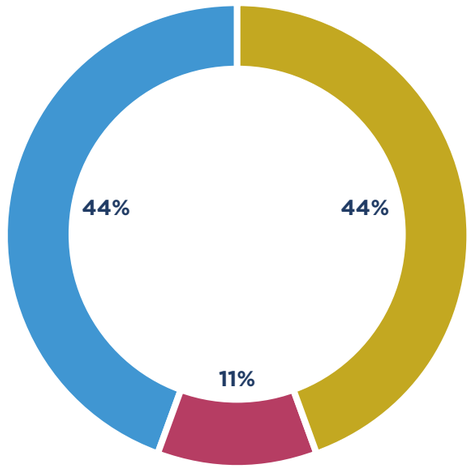


▸ NUMBER OF RESPONDENTS: **10**

▸ NUMBER OF SERVICE PROVIDERS' CLIENTS REPRESENTED: **24.180** (2023 DATA)

FIGURE 4.8: BIODIVERSITY CONSIDERATION IN ENVIRONMENTAL IMPACT ASSESSMENT FOR SERVICE PROVIDERS

Does your organization consider biodiversity when assessing the environmental impact of products produced?



▸ NUMBER OF RESPONDENTS: **18**

Yes No Not yet, but organization is planning on considering biodiversity in the future

The two graphs show similar stances when it comes to both kinds of respondents. A significant portion (around half) of respondents indicate that biodiversity is not yet a focus. Still, there are plans to address it in the future, suggesting an evolving recognition of its importance. A smaller but substantial group has already incorporated biodiversity into their assessments, highlighting room for growth in this area as organizations strive toward more comprehensive environmental responsibility.

The smallest group reports that biodiversity is not currently considered at all.

BOX 4.1
GREENER PATHWAYS: THE ROLE OF CIRCULAR LOGISTICS IN SUSTAINABLE FASHION[21]

With only a mere 1% of clothing made from recycled garments, fashion remains far from being circular, and logistics play a big role in creating this gap. Consider that when an item is bought online, it may take over sixty days and travel averaging 4,502 kilometers per delivery and return, mostly by truck, across thirteen countries, resulting in 2.78 kg of CO_2 emissions per single garment, 16% of which generated by packaging only. Overproduction and a widespread lack of maturity on circular processes also takes its toll.[22]

Sustainability in logistics requires balancing efficiency with eco-conscious practices, along the whole product value chain, from suppliers to end clients. Achieving this balance can be difficult, as high energy consumption, extensive transportation, and multiple logistical layers often lead to increased environmental impacts, especially when prioritizing quick deliveries.

Aside from regulatory reforms happening worldwide[23], consumers themselves increasingly call for sustainable practices and greater transparency from companies. A significant portion of consumers (54%) expressed a willingness to accept longer lead times from an environmentally conscious company, allowing greater flexibility in optimizing delivery efficiency, and, in turn, contributing to reduced carbon footprint.[24]
Despite the less-than-ideal conditions, new challenges are pushing brands to collaborate more closely with logistics partners to develop circular systems. These initiatives are aimed to tackle stricter regulations, rising scrutiny on environmental impacts, supply chain disruptions, and changing consumer behaviors.

A workshop held with some partners of the SDA Bocconi Monitor for Circular Fashion provided valuable qualitative insights into what is occurring within certain companies, both in the B2B and B2C sectors. The conversation revealed fairly coherent results along the logistics process but substantial differences across the ESG dimensions, with companies showing a tendency to focus on improving the environmental aspect, primarily through waste management efforts and a focus on optimizing transportation and warehousing. On the other hand, the social dimension emerged as the most overlooked, and there is a lack of clear and consistent tracking of sustainable initiatives in the area of Governance.

> *"While the groundwork for circular logistics is being laid, there is still room for significant improvement, particularly in repair services and industry-wide collaboration; adopting shared and systematically circular logistics models is not just an operational adjustment, but a strategic necessity for the transition towards a more circular fashion industry."*
>
> **BIP GROUP**

21-The text in this Box has been drafted by Francesca Pilla, Chiara Bergonzi and Francesco Lottero, part of BIP Group team.
22-"Fast-fashion, indagine di Greenpeace traccia i resi online: vestiti comprati e restituiti più volte percorrono fino a 10 mila km. I danni ambientali", Greenpeace Italy, 12th February 2024
23-"The Year Ahead: What to Expect as New Sustainability Rules Roll In", Business of Fashion January 4 2024 https://www.businessoffashion.com/articles/sustainability/the-state-of-fashion-2024-report-sustainability-regulations-eu-fashion-value-chain/
24-"Retailers: Sustainability is Not a Challenge, It's an Opportunity", Descartes Research Report, 2022

Company efforts for sustainability across Transport, Warehouse and Packaging along the Environmental, Social and Governance areas were mapped through a dedicated survey (see table 4.5), and a score was elaborated based on the rate of positive answers over total respondents for each intersection between ESG and logistics processes.

TABLE 4.5: COMPANY EFFORTS FOR SUSTAINABILITY ACROSS LOGISTICS AND ESG DIMENSIONS (N = 8)

	TRANSPORT	WAREHOUSE	PACKAGING	TOTAL
ENVIRONMENTAL	15/28 = 5,4	24/48 = 5	22/32 = 6,9	17,3
SOCIAL	9/21 = 4,3	15/35 = 4,3	6/16 = 3,8	12,4
GOVERNANCE	21/49 = 4,3	27/48 = 5,6	14/40 = 3,5	13,4
TOTAL	14	14,9	14,2	

The Environmental dimension is by far the one with the highest degree of maturity. In particular, at warehousing level, waste management programs and optimization of capacity and operations are the highest-ranked actions, while route optimization and carbon compensation for transport and biodegradable, use of reusable and mono-material packaging are the most commonly adopted practices. Companies lag behind especially in hosting repair activities, last-mile delivery optimization and establishing partnerships with suppliers for packaging optimization.

The Social dimension is the most neglected, with good scorings in personnel care and training and safe workplace standards adoption – which may be considered as a given, due to the high European standards on the matter – but low rates especially on providing employees with sustainable means of commuting, D&I programs, and communication of second-life options to customers.

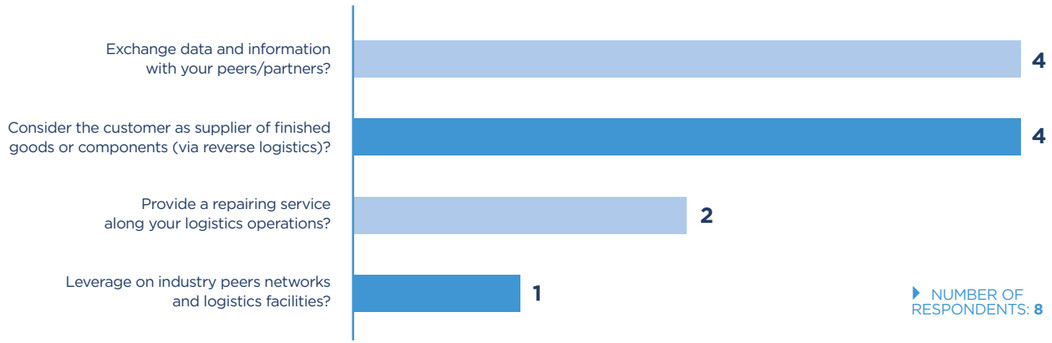
Finally, regarding Governance, companies are mixed in their initiatives: no action mapped ranked higher than 50% except for the adoption of sustainable procurement guidelines. The other most relevant points were the presence of an ESG responsible for operation, setting target levels of emissions and integrating traceability tools.

Circularity Maturity in Logistics Processes – The Results of our Study

The survey also assessed maturity levels among companies regarding the adoption of circular practices within logistics operations. Notably, a significant number of companies appear well-equipped to exchange data and information with their peers and partners, as well as to consider customers as suppliers through reverse logistics[25]. This suggests that many organizations are recognizing the value of closed-loop systems, where product returns and customer-supplied components can be reintegrated into the supply chain. These practices are pivotal for sustainability, enabling companies to reclaim materials and reduce waste. However, providing a repair service as part of logistics operations, though essential for prolonging product life, seems less prevalent. Even fewer companies appear to leverage industry peers' networks and logistics facilities, which points to untapped potential for collaboration that could further reduce environmental impacts by optimizing shared resources (see figure 4.9).

FIGURE 4.9: CIRCULARITY CAPABILITIES IN LOGISTICS OPERATIONS

Is it possible in your Logistics Operations to... (multiple answers are available)



In the context of the fashion industry, where waste and overproduction are critical issues, these insights suggest that while the groundwork for circular logistics is being laid, there is still room for significant improvement, particularly in repair services and industry-wide collaboration. Brands that address these gaps will be better positioned to meet sustainability goals and reduce their overall environmental footprint.

WHILE THE GROUNDWORK FOR CIRCULAR LOGISTICS IS BEING LAID, THERE IS STILL ROOM FOR SIGNIFICANT IMPROVEMENT, PARTICULARLY IN REPAIR SERVICES AND INDUSTRY-WIDE COLLABORATION. BRANDS THAT ADDRESS THESE GAPS WILL BE BETTER POSITIONED TO MEET SUSTAINABILITY GOALS AND REDUCE THEIR OVERALL ENVIRONMENTAL FOOTPRINT.

25-Reverse logistics: process of returning products from end users back through the supply chain to either the retailer or manufacturer. The application of circular economy principles in reverse logistics involves the recovery, recycling, reuse and remanufacturing of materials returned in such way.

Best Practices in Sustainable Fashion Logistics

In conclusion, the adoption of sustainable and circular logistics models in the fashion industry relies on a consolidated strategy with clear goals across the supply chain. Key best practices include enhancing traceability to ensure responsible sourcing and production, and fostering synergy with partners—for instance, through pallet pooling and shared logistics resources, which optimize transport efficiency. These collaborative efforts complement well-established initiatives like route optimization, energy management, and green last-mile delivery, which collectively reduce environmental impact. As these practices become more prevalent, they pave the way for a more resilient, transparent, and eco-friendly fashion industry, demonstrating that sustainable logistics is not just an operational adjustment, but a strategic imperative for the future.

KEY BEST PRACTICES INCLUDE ENHANCING TRACEABILITY TO ENSURE RESPONSIBLE SOURCING AND PRODUCTION, AND FOSTERING SYNERGY WITH PARTNERS—FOR INSTANCE, THROUGH PALLET POOLING AND SHARED LOGISTICS RESOURCES, WHICH OPTIMIZE TRANSPORT EFFICIENCY.

4.4 Social impact key results: getting ready for CSDDD

4.4.1. Introduction

On July 25, 2024, the Corporate Sustainability Due Diligence Directive (CSDDD) came into force, marking a significant step toward increasing corporate accountability within the European Union. As described in Chapter 2, this directive requires companies operating in the EU to identify, prevent, mitigate, and address the adverse impacts of their activities on human rights and the environment, extending these obligations across their operations, subsidiaries, and entire value chains[26].

The fashion industry will be heavily affected by the CSDDD, as it is largely characterized by complex global supply chains, reliance on a large workforce of low-skilled labor, production processes that span multiple countries, and relationships with suppliers that often involve short lead times and short-term contracts[27].
Consequently, the directive is expected to bring about substantial changes in how the fashion industry manages its supply chains and addresses sustainability challenges.

As part of the M4CF 2024 annual survey, a dedicated section focused on social sustainability and the extent to which companies are preparing for the CSDDD. The survey included questions on social impact, which were directed to the 18 partner companies encompassing ingredient brands, brands, vendors, and retailers. The aim was to gain a deeper understanding of how companies are currently identifying social risks, the methods they employ to collect supplier information, the most critical areas of social risk, and the key performance indicators (KPIs) that could be used to monitor these risks.

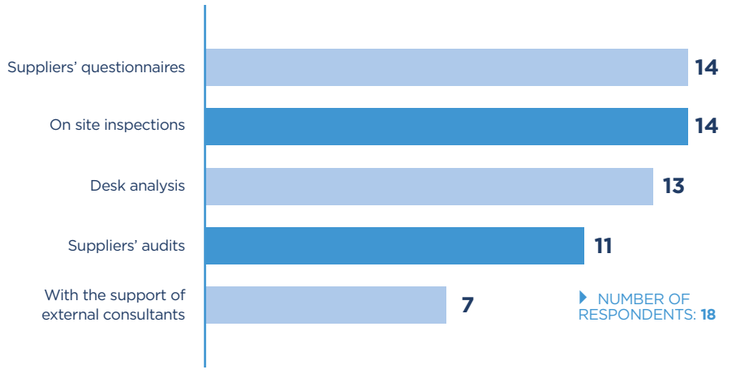
26-European Commission (2024). "Corporate Sustainability Due Diligence Directive": https://commission.europa.eu/business-economy-euro/doing-business-eu/sustainability-due-diligence-responsible-business/corporate-sustainability-due-diligence_en. For more information on the Directive, refer to the "Directive on Corporate Sustainability Due Diligence - Frequently Asked Questions," available at the same link.
27-OECD (2018), OECD Due Diligence Guidance for Responsible Supply Chains in the Garment and Footwear Sector, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264290587-en

4.4.2. Results from the survey with focus on social aspects

Risk Identification

The survey explored the practices employed by ingredient brands, brands, vendors, and retailers to identify risks within their supply chains. The findings indicated that the most utilized methods for risk identification include supplier questionnaires, on-site inspections, and desk-based analyses. These practices provide companies with the necessary data to assess potential social risks and ensure compliance with sustainability requirements (figure 4.10).

FIGURE 4.10: RISK IDENTIFICATION METHODS
How are risks in the supply chains currently identified? (multiple answers are available)

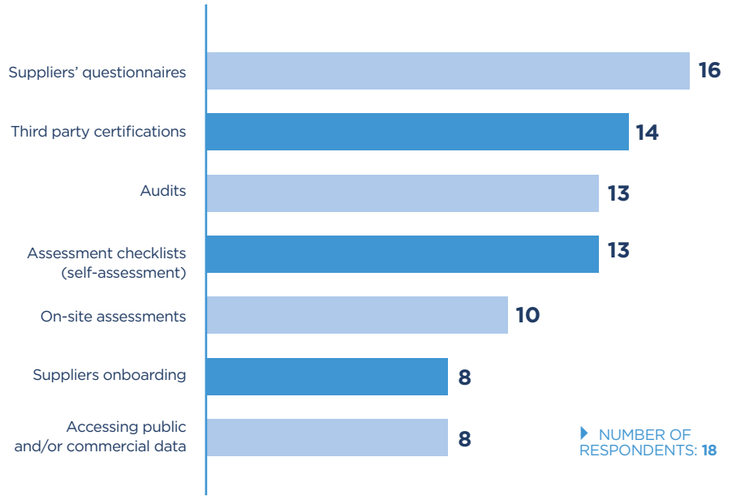


Supplier data collection

Respondents were also asked to specify how they gather information from suppliers to assess their impact and monitor the social sustainability along the value chain. On average, partners reported using more than four data collection methods, with the most common being supplier questionnaires, third-party certifications, and audits.

The survey revealed also that a significant majority of partners (78%) do not currently use the support of digital platforms providers to collect and analyse data on social aspects from their suppliers, despite half of them considering this option. With the upcoming CSDDD, the collection and analysis of social data across the value chain will become increasingly critical.
The support of external partners and digital tools may become essential, allowing companies sufficient time to interpret the data effectively, as well as to monitor and manage related risks (figure 4.11).

FIGURE 4.11: SUPPLIER DATA COLLECTION SYSTEM
How is supplier data currently collected? (multiple answers are available)



Key social risks

The OECD Due Diligence Guidance for Responsible Supply Chains in the Garment and Footwear Sector identifies several prevalent social risks in the industry. The seven primary social risks include: child labor, sexual harassment and sexual and gender-based violence (SGBV) in the workplace, forced labor, excessive working hours, work-related health issues, violations of the right to form or join trade unions and engage in collective bargaining, non-compliance with minimum wage laws, and wage levels insufficient to meet workers' basic needs[28].The M4CF partners were asked to identify the most relevant risks based on their operations. The most selected ones were occupational health and safety, working hours, and wages (figure 4.12).

FIGURE 4.12: SOCIAL RISKS RELEVANCE
Which are the most relevant areas of social risks identified? (multiple answers are available)

Social impact KPIs

In 2024, the Cornell ILR Global Labor Institute published *Measuring Supply Chain Due Diligence: Labor Outcomes Metrics*[29], a comprehensive guide introducing a collection of social KPIs designed to measure labour outcomes and real impacts on workers. These KPIs are inteded to support regulators in evaluating corporate compliance with due diligence obligations and equip firms with rigorous tools for risk assessment, outcome monitoring, and transparency for stakeholders.

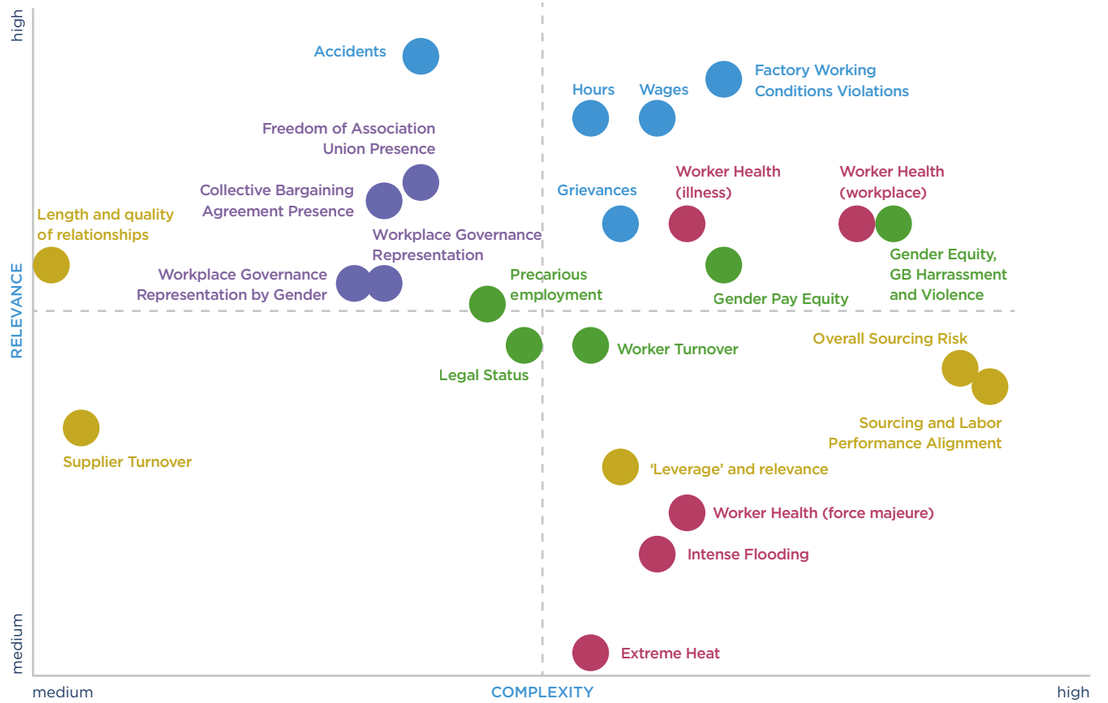
The 24 identified social related KPIs are organized into five key categories of risks: sourcing, workforce, working conditions, rights (representation), and work climate impact.

The M4CF survey analysed these KPIs to enhance understanding of their complexity, relevance, and adoption levels according to respondents. The eighteen respondents were asked to rate each KPI on a scale from 1 to 5 for complexity and relevance (with 1 as the lowest and 5 as the highest) and the findings were organized into a matrix. It is essential to emphasize that the levels of relevance and complexity are shaped by the specific value chains of each respondent, reflecting the diverse operational contexts in which they operate.

Organizing the KPIs into a relevance-complexity matrix provides a strategic framework for guiding companies in prioritizing their efforts. Specifically KPIs with high to medium relevance and low to medium complexity should serve as the primary focus for monitoring, providing a strong foundation for effective oversight. Prioritizing these KPIs will ensure that critical metrics receive the necessary attention and resources. Simultaneously, it is essential to allocate resources toward KPIs with high to medium relevance and complexity levels, as these metrics offer strategic value. KPIs with medium to low relevance and low complexity may be monitored as a secondary priority, balancing resource demands with comprehensive tracking. Finally, KPIs with medium to low relevance and high to medium complexity can be addressed in subsequent phases, allowing organizations to allocate resources with efficiency and precision. This structured approach ensures that efforts are concentrated on the most impactful areas, enhancing overall organizational performance (figure 4.13).

> ORGANIZING THE KPIS INTO A RELEVANCE-COMPLEXITY MATRIX PROVIDES A STRATEGIC FRAMEWORK FOR GUIDING COMPANIES IN PRIORITIZING THEIR EFFORTS.

FIGURE 4.13: RELEVANCE – COMPLEXITY MATRIX



Considering the scores assigned to the KPIs within each category, the Working Conditions Risks category was overall rated as the most relevant, followed by the Rights (Representation) Risks category. Additionally, the Rights (Representation) Risks category was identified as the least complex to calculate on average.

28-https://mneguidelines.oecd.org/responsible-supply-chains-textile-garment-sector.htm
29-Kuruvilla, S., & Judd, J. (2024). Measuring Supply Chain Due Diligence: Labor Outcomes Metrics . Cornell ILR Global Labor Institute.

4.4.3. Focus on auditing system: results from the M4CF workshop on social impact

In 2024, a series of workshops were held in collaboration with industry experts, focusing on relevant topics for sustainable and circular fashion. One workshop, organized in partnership with the OECD and Social Labor Convergence Program (i.e. SLCP), concentrated on social sustainability and due diligence.

The session featured guest presentations, after which discussions centred on key issues such as risk identification, data collection practices, and the structure of the current auditing system. A follow-up survey provided further insights into these topics.

Analysis of responses from 16 participating partners highlighted the main benefits and challenges associated with the current auditing systems, summarized below (Table 4.6 and 4.7).

TABLE 4.6: BENEFITS OF THE CURRENT AUDITING SYSTEM

KEY BENEFITS	
TRANSPARENCY	Provides transparency and helps understand the scale of the entire supply chain.
RISK IDENTIFICATION AND MITIGATION	Helps in identifying and addressing risks in the supply chain.
CONTINUOUS IMPROVEMENT	Allows gap identification in social, environmental, and operational performance and offers feedback and support for continuous improvement processes.
COMPLIANCE	Ensures compliance with international standards, regulations, and codes of conduct.
REPUTATION	Prevents reputational damage and improve reputation among investors
SUPPLIER MAPPING	Supports in the mapping of suppliers' network.
OVERVIEW OF SUPPLIER'S SITUATION	Provides a snapshot or general overview of supplier conditions.
MONITORING	Helps to understand or monitor the entire supply chain, its scale, and operations.
OPERATIONAL EFFICIENCY	Enhances operational efficiency by streamlining processes.

TABLE 4.7: CHALLENGES OF THE CURRENT AUDITING SYSTEM

KEY CHALLENGES	
LIMITED SCOPE OF THE AUDITS	For two main reasons: data gathering challenges over tier 1, and excessive focus of many brands on the most strategic suppliers
COSTS TIME AND RESOURCES	Audits require higher investmets of time, cost and human resources both from brand perspective and for suppliers
PROLIFERATION/ REDUNDANCY OF AUDITS	Multiple audits by different brands create redundancy, increasing time, costs, and demotivating suppliers.
LACK OF ALIGNMENT / COMMON FRAMEWORK	There's no unified or common framework, and demands between audits are unaligned.
VOLUNTARY NATURE OF AUDITS	Many audits remain voluntary, limiting their effectiveness or uniformity.
STANDARDIZED CHECKLISTS / INFLEXIBILITY	Checklists are often too "standard" and do not account for specific supplier locations or supply chain dimensions.

The most commonly recognized benefits of the current auditing system include transparency, risk identification and mitigation, and continuous improvement. These elements appear closely interconnected: audits provide companies with enhanced visibility across the value chain, enabling the identification of social and environmental risks as well as opportunities for improvement, even at the operational level.

> THE MOST COMMONLY RECOGNIZED BENEFITS OF THE CURRENT AUDITING SYSTEM INCLUDE TRANSPARENCY, RISK IDENTIFICATION AND MITIGATION, AND CONTINUOUS IMPROVEMENT

The primary challenges identified within the current auditing system include its limited scope, the high cost and the proliferation and redundancy of audits.
The limited scope is largely due to two factors: the difficulty in accessing information and controlling data beyond tier 1 suppliers, and the tendency of many companies to concentrate audits on their most strategic partners. The second challenge is associated with the substantial costs in terms of economic investment, time, and human resources required from both brands and suppliers.
The third challenge, primarily affecting suppliers, is the redundancy of audits. Many suppliers undergo multiple audits from different brands, and in some cases, identical audits are not shared across brands, resulting in suppliers completing the same process multiple times. This duplication contributes to "audit fatigue" among suppliers, making it increasingly difficult for them to provide the necessary information accurately and consistently.

> THE PRIMARY CHALLENGES IDENTIFIED WITHIN THE CURRENT AUDITING SYSTEM INCLUDE ITS LIMITED SCOPE, THE HIGH COST AND THE PROLIFERATION AND REDUNDANCY OF AUDITS

"Fashion greatest success will come when it enhances the wellbeing of communities, defending fair labour and weaving social justice into every thread of every garment".

SAVE THE DUCK

"We believe in fostering social aggregation by encouraging collaboration and dialogue. Inclusion is one of our core values, and we aim to create an environment where everyone feels part of a shared vision and empowered to contribute to the organization's success".

HMODA

"True luxury embraces social responsibility. As a historic Italian textile company, we champion fair labor practices and community well-being, ensuring our designs uplift and support global communities."

ALBINI GROUP

"After 87 years of history, the territory and the community are woven into the company's identity as Candiani contributes to the local welfare through various activities".

ALBERTO CANDIANI
President Candiani SpA

"We are committed to develop a culture-based corporate approach first internally, and then externally, trying to influence our supply chain by example. Knowledge facilitates the compliance with rules, thanks to a shared ethics of constant improvement".

VIVIENNE WESTWOOD

4.5 Sustainability and circularity governance survey results

4.5.1 Introduction

M4CF Report 2023[30] focused on the influence of governance factors on sustainability and circularity performance. The results showed the general need to elevate sustainability and circularity decisions to the board and top management. As mentioned in Chapter 2, the incoming Corporate Sustainability Reporting Directive (CSRD)[31] with the new European Sustainability Reporting Standards (ESRS)[32] will require disclosing comprehensive and comparable data on sustainability issues, and, therefore, also about governance aspects. Following the ESRS, companies will report on how their Board of Directors (BoD) integrates sustainability into their corporate governance frameworks.

4.5.2 Focus on CSRD and ESRS G1

Under the CSRD, the ESRS section "General Disclosures" (ESRS 2)[33] emphasizes that companies must ensure that their governance structures actively support and oversee their sustainability efforts. This is critical for companies to demonstrate that sustainability is not only an operational concern but is also integrated into the strategic oversight of the business. Governance under the CSRD revolves around company management, board responsibility, stakeholder engagement, and regulatory oversight.

Considering what is mentioned above, it emerges the pivotal role of BoD in embedding sustainability into corporate governance by promoting diversity, overseeing risk management, and aligning executive remuneration with ESG goals. Directors ensure that sustainability is a core part of the business strategy, with clear, forward-looking targets integrated into long-term value creation. Top management, under the board's guidance, is responsible for implementing these initiatives, reporting progress, and ensuring alignment with corporate objectives. Transparency in governance is maintained through public disclosure of sustainability practices, reinforcing the board's commitment to accountability and sustainable growth.

4.5.3 Results from the survey with focus on governance aspects

In light of the significant measures reported by the CSRD about the governance aspects, the M4CF2024 survey investigated how sustainability and circularity are integrated into partners' organizations focusing on the presence of some key sustainability and circularity roles and bodies in the organizations, and the relationship between them and the BoD.
After carrying out a content analysis on the open questions related to governance and circularity the following insights can be highlighted.

Governance Structure for Sustainability and Circularity

? *"Which is the sustainability & circularity governance structure within your organization?"*

Most companies are implementing comprehensive governance struc-

30-https://www.sdabocconi.it/upl/entities/attachment/Monitor-for-Circular-Fashion-Report-2023.pdf
31-https://finance.ec.europa.eu/document/download/c4e40e92-8633-4bda-97cf-0af13e70bc3f_en?filename=240807-faqs-corporate-sustainability-reporting_en.pdf
32-https://www.efrag.org/en/sustainability-reporting; https://xbrl.efrag.org/e-esrs/esrs-set1-2023.html#d1e5302-3-1
33-https://www.efrag.org/sites/default/files/media/document/2024-08/ESRS%202%20Delegated-act-2023-5303-annex-1_en.pdf

tures like Sustainability Committees, dedicated Sustainability teams, and cross-functional teams to ensure sustainability and circularity are integrated into their organizations. **In some companies, top leadership roles like Chief Sustainability Officers (CSO), play a central role in driving sustainability and circularity.** Others employ a decentralized approach, distributing sustainability responsibilities across departments such as R&D, product development, and compliance.

Moreover, **family-owned companies**, which embed sustainability deeply into their values, **involve family members as Directors and top executives, ensuring sustainability and circularity being elevated at the top level**. In multi-brand companies, each brand has compliance officers and sustainability teams, with a central board or committee ensuring cohesive strategy alignment across the organization.

Relationship Between Sustainability & Circularity Governance and Top Management

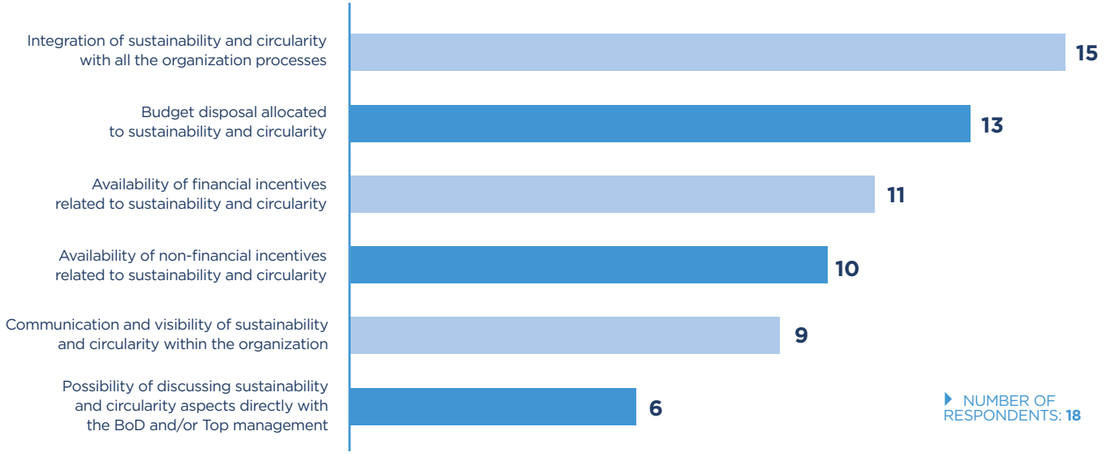
"How is the relationship between the sustainability & circularity governance and the BoD and/or Top management?"

There is a trend of regular and structured reporting to the Board of Directors. **Direct communication with top management ensures that sustainability initiatives are aligned with corporate strategy.** This is the case of the CSO who report directly to the CFO and the President in some companies. Regular meetings, sometimes monthly or quarterly, facilitate discussions on sustainability with the BoD. **Some companies hold ad-hoc meetings with the board for critical sustainability events, ensuring timely senior management attention.** There is also a strong alignment of sustainability with corporate strategy, with departments like R&D and product teams reporting to top management on sustainability matters. **Third-party assurance of data is also becoming widespread, enhancing transparency and credibility in sustainability reporting.**

Among the **key challenges** (figure 4.14) concerning the full integration of sustainability and circularity in the organizations, the Partners believe that the most relevant are:

1. the integration of sustainability and circularity in the organization processes since in several cases the sustainability and circularity decisions are still coming from the dedicated offices or functions, without a holistic approach to sustainability and circularity;
2. the budget disposal allocated to sustainability and circularity;
3. the availability of financial incentives (and related KPIs) related to sustainability and circularity.

FIGURE 4.14: KEY CHALLENGES OF FULL INTEGRATION OF SUSTAINABILITY AND CIRCULARITY IN THE ORGANIZATIONS (MULTIPLE OPTIONS AVAILABLE)



"Commitment on ESG issues by the board and front lines is strategic, and the new guidelines in terms of CSRD should be seen as a valuable ally in terms of risk assessment, goal sharing, prioritization and planning of short- and long-term actions and strategies."

LUCIA BIANCHI MAIOCCHI
Head of Sustainability and Board member, Vitale Barberis Canonico

"Governance is a key enabler of effective Sustainability & Circularity integration into company's operations, which requires a shared commitment and clear path of incentives for all the parties involved. The first obstacle to remove is considering circularity as a goal only related to sustainability (meaning, a goal that only the Sustainability function should pursue), while it's a meaningful goal for the entire company."

MICHELA GIOACCHINI
Head of Sustainability & Corporate Social Responsibility, TOD'S Group

"Sustainability goals can be fully achieved when each person within the Group commits and believes that their effort contributes to reaching them. Having the involvement of the governance body means being able to set priorities and timelines toward growing ambitious targets."

MARCO GUAZZONI
Sustainability Director, Vibram

"Sustainability is not just a commitment at Kering—it is the foundation of our vision for modern Luxury. It is both an ethical imperative and a catalyst for innovation and value creation for the Group, its Houses and stakeholders. Our three pillars "care, collaborate and create" dictate our sustainability strategy. Through "care", we protect the planet; through "collaborate", we champion diversity and excellence; and through "create", we pioneer innovative solutions with an open-source approach."

KERING

Navigating change

ESG ROADMAPS TO CIRCULAR FASHION

5

5.1 The role of technology: survey results

Technology plays a crucial role in accelerating the shift towards circular fashion by enabling more sustainable practices across the value chain. Service provider partners of the M4CF were asked to share insights regarding the technologies that could drive the transition of fashion processes towards circularity. They also provided feedback on key priorities in terms of circularity and identified the value chain activities with the highest potential for circular innovation. In the following pages, the figures represent the results of this survey, highlighting the perspectives of these industry experts.

TABLE 5.1: EVALUATION OF TECHNOLOGIES ENABLING THE TRANSITION OF FASHION PROCESSES TOWARD CIRCULARITY

	PAST 3 YEARS	NEXT 3 YEARS	▲▼
ARTIFICIAL INTELLIGENCE	2,45	3,20	▲ 30,61%
CIRCULARITY ONLINE PLATFORMS (INCLUDING IT PLATFORMS FOR WASTE MANAGEMENT)	3,27	3,90	▲ 19,27%
TRACEABILITY ONLINE PLATFORMS	3,73	4,20	▲ 12,60%
DIGITAL PRODUCT PASSPORTS	3,73	4,10	▲ 9,92%
DATA COLLECTION AND ANALYSIS TOOLS	4,36	4,00	▼ -8,26%
ADMINISTRATIVE SOFTWARES	2,55	2,40	▼ -5,88%
CHEMICALS EXTRACTION TECHNOLOGIES	3,55	3,70	▲ 4,23%
RFID TECHNOLOGIES	3,36	3,50	▲ 4,17%
LCA SOFTWARES	3,91	3,80	▼ -2,81%
RECYCLING TECHNOLOGIES	4,18	4,30	▲ 2,87%
COMPLIANCE ONLINE PLATFORMS	3,73	3,80	▲ 1,88%

Source: M4CF 2024 survey N. of respondents: 10 N. of fashion clients represented by respondents: 24.180

Table 5.1 presents the average relevance rating of technologies enabling the transition of fashion processes towards circularity, as assessed by the service provider respondents. Technologies were rated on a scale from 0 to 5, and the columns compare their perceived importance over the past three years with their projected importance for the next three years.

The figure also displays the percentage change ("delta") for each technology, ranked by the highest absolute delta values. As illustrated in table 5.1, artificial intelligence shows the most significant growth, with a nearly 31% increase, followed by circularity online platforms, traceability online platforms, and the digital product passport. This growth may reflect the impact of increasing European Union regulations, particularly regarding textile traceability, as outlined in the EU Strategy for Sustainable and Circular Textiles. In contrast, data collection and analysis tools show a decline of more than 8%, possibly indicating that companies are advancing beyond the initial data collection phase and moving into more advanced stages of their sustainability strategies over the next three years.
In summary, technologies like AI, circularity platforms, and traceability tools are expected to gain significant importance in driving circularity in the fashion industry over the next three years, while traditional data collection tools and administrative softwares may see reduced emphasis.

> TECHNOLOGIES LIKE AI, CIRCULARITY PLATFORMS, AND TRACEABILITY TOOLS ARE EXPECTED TO GAIN SIGNIFICANT IMPORTANCE IN DRIVING CIRCULARITY IN THE FASHION INDUSTRY OVER THE NEXT THREE YEARS, WHILE TRADITIONAL DATA COLLECTION TOOLS AND ADMINISTRATIVE SOFTWARES MAY SEE REDUCED EMPHASIS.

These key findings align with WEF – Future of Jobs Report 2024, which identified AI and Machine Learning Specialist and Sustainability Specialist among the top 10 fastest-growing jobs at global level (Table 5.2).

TABLE 5.2: 10 FASTEST-GROWING JOBS ACCORDING TO WEF

N.	10 FASTEST-GROWING JOBS 2023-2027
1	AI and Machine Learning Specialists
2	Sustainability Specialists
3	Business Intelligence Analysts
4	Information Security Analysts
5	FinTech Engineers
6	Data Analysts and Scientists
7	Robotics Engineers
8	Big Data Specialists
9	Agricultural Equipment Operators
10	Digital Transformation Specialists

Source: WEF – Future of Jobs Report 2024

Service providers' point of view

"In the context of circularity, advanced technologies in the Italian fashion industry offer significant opportunities for improvement across various stages of the value chain. Embracing digital design tools allows for the creation of products that are not only durable but also designed for easy recycling or repair. Technologies for tracking and verifying the sustainability of raw materials ensure that they are sourced responsibly and managed transparently. Furthermore, innovations in end-of-life management, such as sophisticated recycling systems and smart take-back programs, facilitate the efficient recovery and reuse of materials. By integrating these technologies, the fashion industry can enhance its circularity efforts, achieving greater sustainability and transparency throughout the entire value chain."

FERNANDA MARIA HERNADEZ FRANCO
Sustainability Director, Temera

*"Developing technological solutions is crucial to contributing to the circular economy better.
The fashion industry needs more sustainable materials options, improved recycling processes with better yields, and the development of profitable new end-of-life models. Without innovative technologies that can boost the action radio, the contribution to the circular economy will be small-scale."*

UL SOLUTIONS

"Technology, combined with data-centric approaches, is key to advancing the circularity model in the fashion industry. Data empowers decision-makers to optimize material use, track products through their lifecycle, and implement sustainable strategies that reduce waste and enhance garment longevity".

DEDA STEALTH

"The technologies enabling the transition of fashion processes towards circularity should start from Traceability and related software platforms such as LCA, Compliance... all other technologies should complement the data collected at the origin in the traceability platform."

PHILIPPE RIBERA
Vice President Innovation LECTRA

"RFID enables product tracking and optimized inventory, while AI supports demand forecasting and circular design, together promoting transparency and efficiency for a more sustainable fashion industry."

AVERY DENNISON

"In terms of technological development, the focal point for encouraging the advancement of a transition towards a more conscious circularity is certainly the Digital Product Passport, which from the point of view of usability is configured as the most effective tool for reaching the final consumer with capillarity throughout the territory, guaranteeing immediate and exhaustive access to product information."

PLM IMPIANTI

BOX 5.1
CONSUMER FAMILIARITY AND EXPECTATIONS FOR DIGITAL PRODUCT PASSPORTS: A GAME-CHANGING TECHNOLOGY[34]

"As the Fashion and Luxury industry embraces a new era of digital transformation through the adoption of Digital Product Passports, brands are keen to understand consumer expectations and familiarity with this innovative technology. Our collaboration with Monitor For Circular Fashion aims to provide essential insights that facilitate a positive shift towards a more circular and sustainable industry for both brands and consumers."

CERTILOGO

From August 9th, 2024 to October 27th, 2024, Certilogo conducted a survey of 1741 respondents to provide valuable insights into the familiarity and perceived value and impact of Digital Product Passports (DPPs) across different generations and geographies. The optional survey was comprised of six questions and was launched after the end of the authentication journey.

The survey was conducted in collaboration with SDA Bocconi Monitor for Circular Fashion.

The majority of respondents belong to Generations Y and Z (65%) and hail from Europe (59%). Overall, familiarity with DPPs was almost evenly split: unexpectedly, 49% of respondents stated that they are familiar or very familiar with the DPP, despite the fact that it is not widely available yet.

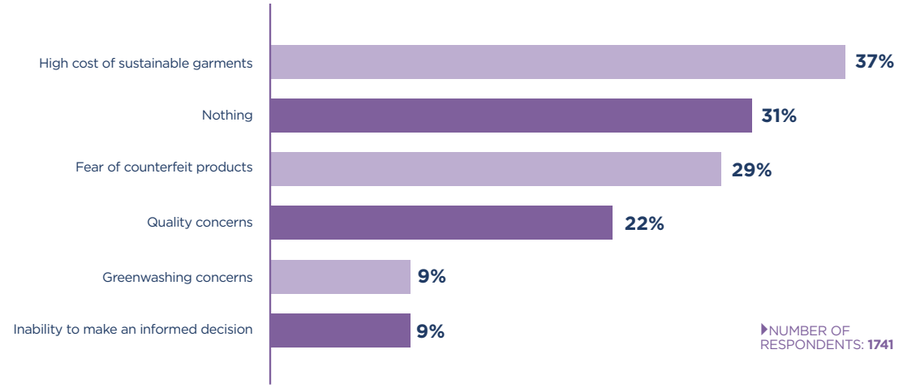
Europeans and Gen Z respondents demonstrated the highest familiarity with the concept of Digital Product Passports.

- 53% of Europeans reported familiarity with DPPs, compared to 42% from the rest of the world.
- Gen Z shows the highest familiarity with DPPs at 54%, whereas a slight majority of Gen X (55%) and Y (52%) respondents are not familiar.

What factors prevent consumers from purchasing sustainable clothing? (See figure 5.1)

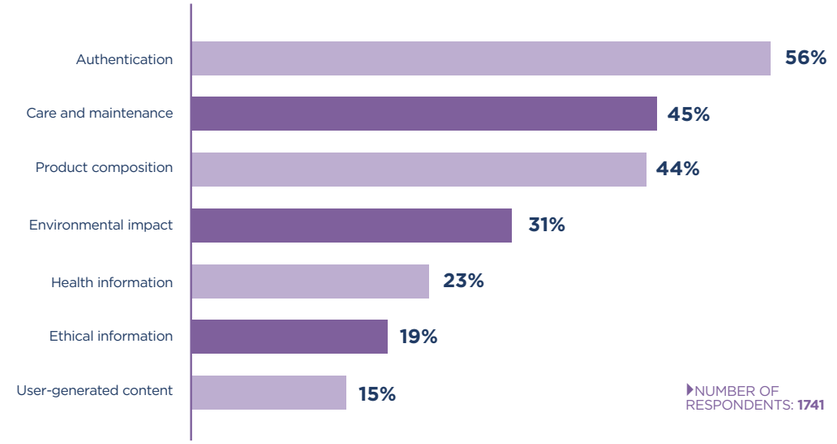
- Cost seems to be the largest barrier, with 37%, followed by fear of counterfeit products (29%) and greenwashing concerns (22%).
- 31% of respondents also stated that they did not consider any major factors preventing them from purchases.

FIGURE 5.1: WHAT FACTORS PREVENT YOU FROM PURCHASING SUSTAINABLE CLOTHING?
(multiple answers are available)



Consumers prioritize authentication and identify increased trust and brand loyalty as key outcomes of Digital Product Passports (DPPs).
When asked what they expect to see in a product's DPP, 56% of respondents prioritized authentication, followed by care and maintenance at 45% and product composition at 44% (see figure 5.2).

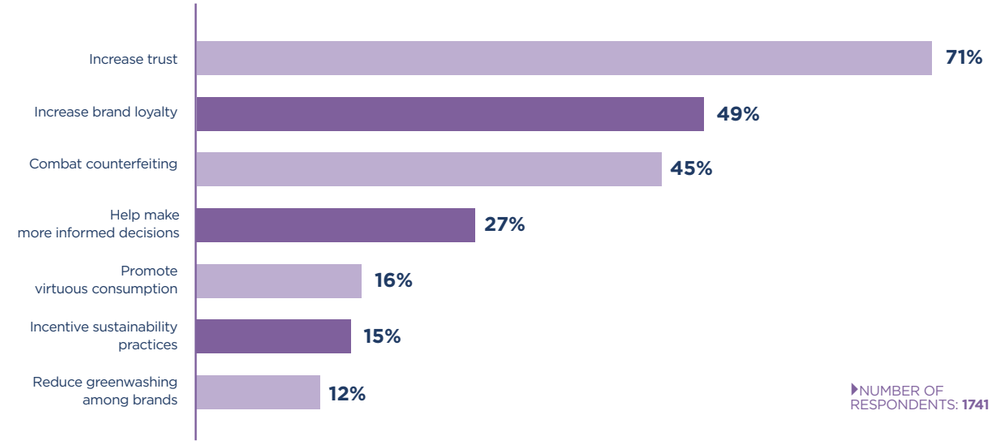
FIGURE 5.2: WHAT KIND OF INFORMATION ARE YOU INTERESTED IN SEEING IN YOUR PRODUCT'S DPP?
(multiple answers are available)



34-Survey conducted by Certilogo from August 9th, 2024 to October 27th, 2024, Certilogo conducted a survey of 1741 respondents.

In terms of assessing the impact of DPPs, 71% of respondents believe that the widespread adoption of Digital Product Passports (DPPs) will increase trust, while 49% also indicated that DPPs would enhance brand loyalty (see Figure 5.3).

FIGURE 5.3: WHAT IMPACT DO YOU THINK THE DPP WILL HAVE ONCE EACH PRODUCT AND ACCESSORY HAS ONE? *(multiple answers are available)*



Among different generations, increased trust was most significant among Generation Y respondents, with 76% selecting this impact as the most important, followed by Generation X at 73%. This data highlights the potential of DPPs to foster trust and loyalty among consumers, particularly within these generational groups.

The results underscore the important role authentication will play during the implementation of DPPs and how product security is a fundamental component of building trust between brands and customers.

TABLE 5.3: KEY PRIORITIES WITH RESPECT TO CIRCULARITY

KEY PRIORITIES WITH RESPECT TO CIRCULARITY	
1.	Increase the level of traceability
2.	Collection of waste
3.	Consumers engagement in circularity initiatives
4.	Measuring and assessing circularity
5.	Partnership with other companies from different sectors
6.	End-of-waste
7.	Industrial symbiosis
8.	Solving sustainability trade-offs
9.	Scaling up circularity pilot projects

Source: M4CF 2024 survey

Table 5.3 outlines key priorities for circularity in the fashion industry according to the respondents. Each priority was ranked by importance from 0 to 5, and table 5.3 provides the ranking. The most highly ranked priority according to the Respondents concerns the **Increase the level of traceability** (Rated 4.90/5), emphasizing the need to track materials and products throughout the supply chain for better circularity. At second place, **Collection of waste** (rated 3.80/5), which is crucial for ensuring that materials are not discarded and can be reintegrated into the production cycle. In third place, **Consumers' engagement in circularity initiatives** (rated 3,70/5) highlights the need for education and participation.

In addition to what has been highlighted in the survey, the respondents highlighted several other priorities focusing on seven strategic areas:

CERTAINTY OF DATA

Ensuring certainty in data is essential for tracking circularity efforts within the company. Accurate, reliable data enables better decision-making and supports the successful implementation of circular strategies.

CIRCULARITY STRATEGY IN THE LUXURY MARKET

Understanding how circularity fits within the luxury market is key. Fashion companies in this sector must navigate the balance between maintaining exclusivity and incorporating sustainable practices, all while adapting their business models to prioritize circularity.

CONSUMER SUSTAINABILITY EDUCATION

Educating consumers on sustainability is a critical factor in promoting circular practices. By raising awareness, companies can encourage more responsible consumer behaviors aligned with circularity goals.

CONTROLS SIMPLIFICATION

Simplifying controls within the organization is essential to efficiently manage circularity efforts. Streamlining processes can enhance the adoption of sustainable practices across the business.

DATA GOVERNANCE AND TRANSFORMATIVE GOVERNANCE

Historically, these have not been priorities for the fashion industry. However, developing strong data governance is now crucial for ensuring accuracy and transparency in circular practices. Transformative governance, which focuses on rethinking organizational frameworks, can drive circularity from within, helping companies stay competitive and aligned with sustainability goals.

PRODUCT PACKAGING

The type of packaging used for products plays a crucial role in sustainability. Prioritizing sustainable packaging solutions supports the broader goal of reducing waste and environmental impact.

SECOND-HAND AND RENTING MODELS

Exploring second-hand markets and rental models is vital for advancing circularity. Collaborating with circularity-driven start-ups can help integrate these business models, offering new opportunities to extend product lifecycles and reduce waste.

Table 5.4 lists the value chain activities with the highest potential for circularity for fashion companies aiming to enhance circularity in their operations.

TABLE 5.4: VALUE CHAIN ACTIVITIES WITH THE HIGHEST POTENTIAL FOR CIRCULARITY

VALUE CHAIN ACTIVITIES WITH THE HIGHEST POTENTIAL FOR CIRCULARITY	
1.	R&D and Design
2.	Raw materials and components production
3.	End-of-life services
4.	Logistics, warehousing and transportation
5.	Production of finished and semi-finished products
6.	Retail
7.	Wholesale
8.	E-tail

Source: M4CF 2024 survey

According to the respondents, key value chain activities that drive circularity in the fashion industry focus heavily on both the early and end stages of product life. The respondents have highlighted the following reflections related to the upstream and downstream value chain activities:

R&D and Design

This is one of the most critical phases for circularity, as decisions made at the R&D and design stages[1] have a profound impact on the entire product lifecycle. In fact, over half of a product's environmental impact is influenced by decisions made at the design stage1. Design and research efforts should consider circularity, ensuring that products are created with longevity and end-of-life recyclability in mind.

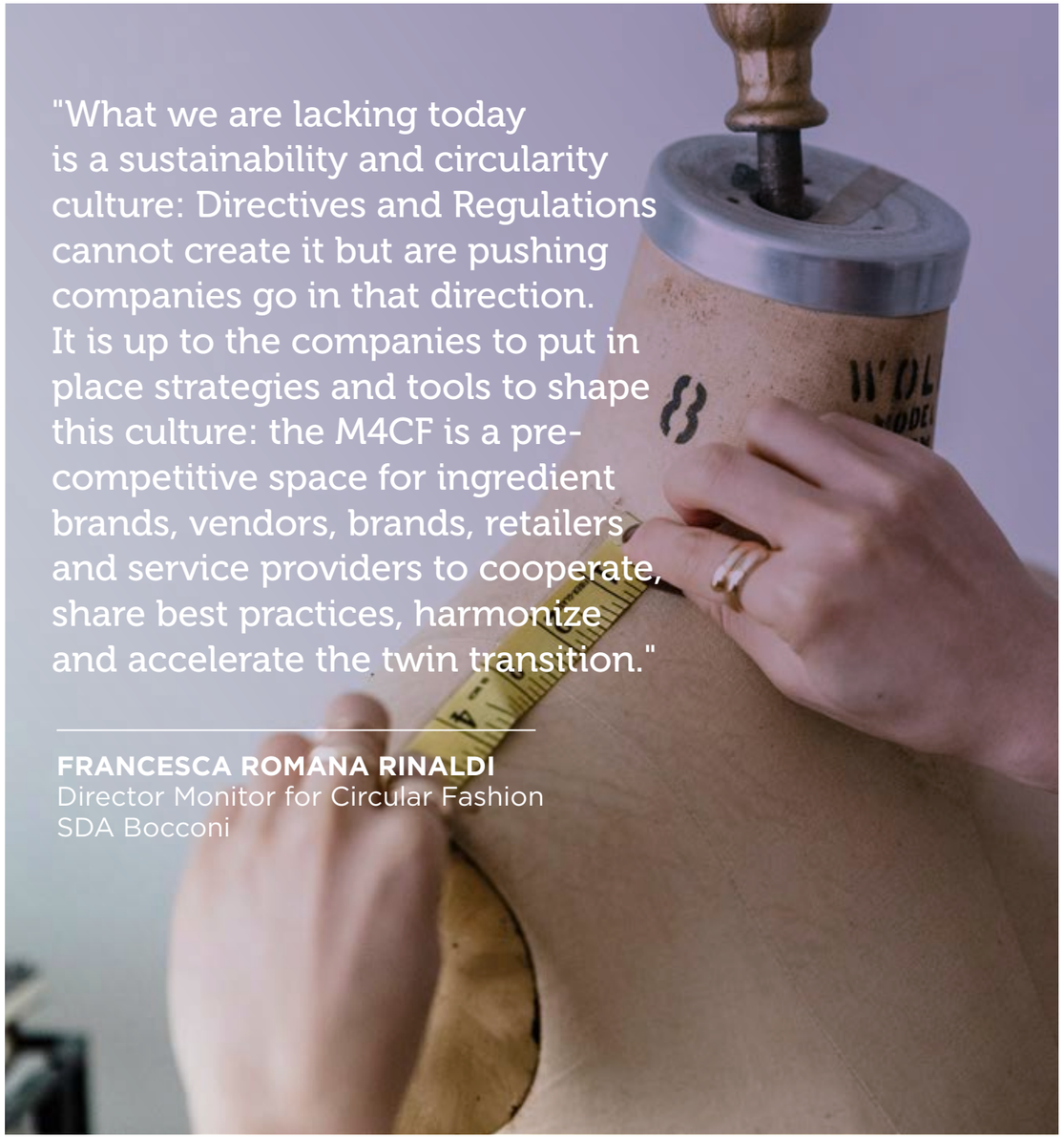
Raw materials and components production

The production of raw materials is considered to heavily influence the circular potential of a product. Using verified sustainable materials and their manufacturing processes can help fashion companies reduce their reliance on virgin resources and simplifies the end-of-life stage.

End-of-Life Services

Closing the loop requires a strong focus on managing products at the end of their life. Reverse logistics, take-back programs, and recycling initiatives are essential for ensuring that products are recirculated into the production cycle rather than being incinerated or disposed of in landfills.

1- Adapted from Ellen MacArthur Foundation, An introduction to circular design 2022.



5.2 Circular Fashion Roadmap

Several industry analysts and reports predict that in 2025 sustainability and circularity will be downgraded in the CEO' agendas (Bain & Company & Osservatorio Altagamma, 2024; BoF & McKinsey & Company, 2024) because of the increasing volatility, uncertainty, complexity and ambiguity brought by the macroeconomic context. There are several reasons why fashion companies CEOs should continue investing on sustainability and circularity, among them:

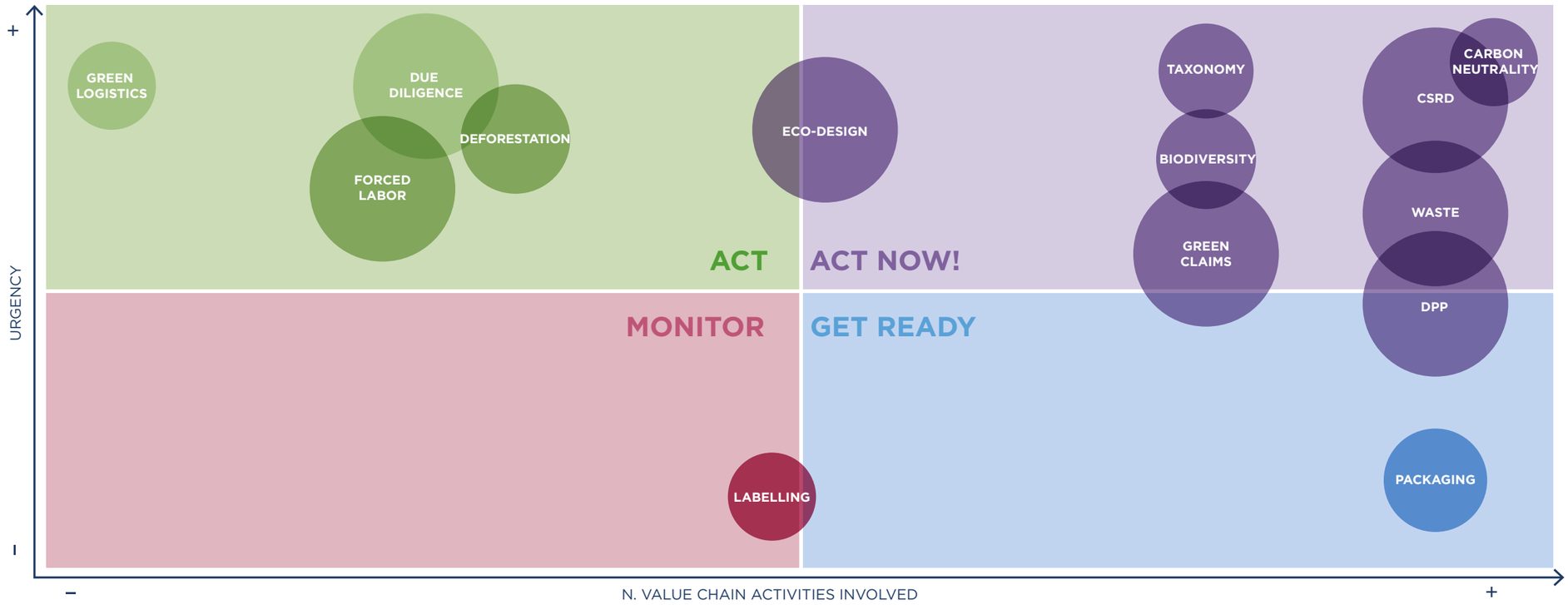
1. Increasing legislative pressure;

2. Companies' strategic coherence with existing commitments;

3. Efficiencies in the use of resources which can be achieved through circularity.

In the M4CF report 2023 we presented a methodology to identify investment priorities considering both the requirements coming from upcoming textiles regulations on sustainability and circularity (i.e. urgency) and the complexity generated implementing a circularity approach along the value chain activities involved (i.e. number of value chain activities involved). The level of complexity can also be identified by looking at the stakeholders involved considering internal stakeholders (generally less complex and time consuming) vs external stakeholders (generally more complex and time consuming). In 2024 new Directives and Regulations have been considered and an updated level of urgency brings to a new legislative scenario. Figure 5.4 is the visual chart representing the level of urgency and complexity for the different priority areas in circular fashion for 2025: this visual representation may provide indications to the overall fashion industry to prioritize the circularity investments.

FIGURE 5.4: CIRCULAR FASHION ROADMAP 2024/2025



LEGENDA:

COMPLEXITY LEVEL
(STAKEHOLDERS INVOLVED) IS REPRESENTED BY BUBBLE SIZE:
LARGE - HIGH COMPLEXITY
SMALL - LOW COMPLEXITY

URGENCY LEVEL
IS REPRESENTED IN THE VERTICAL AXIS;

NUMBER OF VALUE CHAIN ACTIVITIES INVOLVED
IS REPRESENTED IN THE HORIZONTAL AXIS

Source: Monitor for Circular Fashion 2024/2025

5.3 Toward a holistic approach to circular fashion

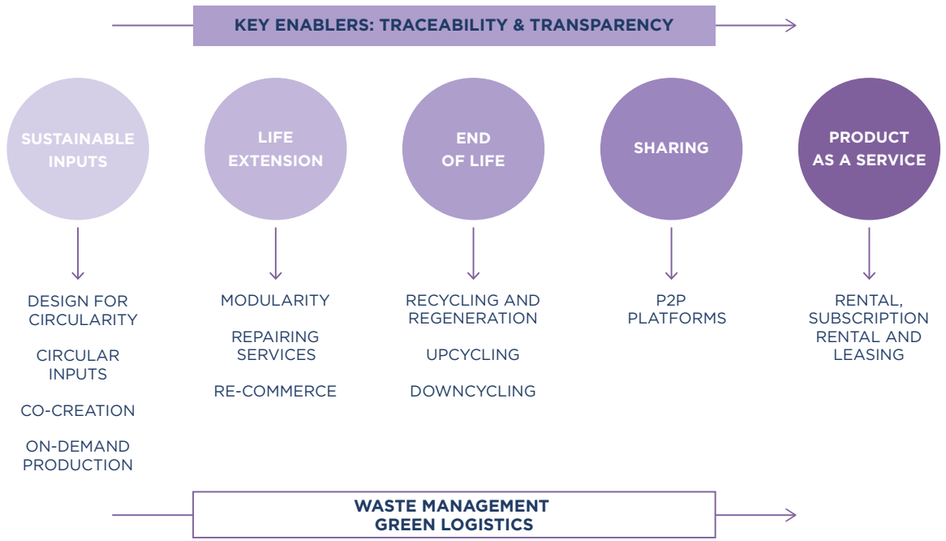
Implementing a circular fashion roadmap means setting priorities and leveraging on resources and capabilities to implement the circularity actions. Given the complexity of the circularity actions, upskilling and reskilling in fashion companies may be needed, leveraging on resources and capabilities development though "make", "buy" or "connect" strategies. The M4CF community represents a way to develop resources and capabilities through "connect" strategies, creating a pre-competitive environment where sharing challenges and opportunities allows the companies to go faster.

The 5 circular fashion business models (figure 5.5) presented in 2021 are not alternative to each other but are rather complementary for a holistic approach: for instance, the use of sustainable and circular inputs, life extension and end of life strategies can be leveraged at the same time.

Traceability and transparency are the key enablers for the implementation and waste management and green logistics are also needed in the implementation of the circular fashion business models, across all activities of the circular fashion value chains.

The M4CF Partners worked together and committed on several actions, presented in the Circular Fashion Manifesto commitments (table 5.5).

FIGURE 5.5: CIRCULAR FASHION BUSINESS MODELS



Source: SDA Bocconi Monitor for Circular Fashion 2021

TABLE 5.5: CIRCULAR FASHION MANIFESTO COMMITMENTS

	COMMITMENTS[2]			
	M4CF companies are committed to develop reliable sustainability claims in accordance with the EU Directive for Empowering Consumers for the Green Transition entered into force on 27 March 2024, the Regulation on Ecodesign Requirements entered into force on 18 July 2024 and the EU proposal of a Directive on Green Claims (March 2023). Circularity projects are a concrete implementation of this overarching commitment.			
CIRCULAR VALUE CHAIN ACTIVITY	**COMMITMENTS**	**ACTIONS**	**SAMPLE TOOLS**	**MAIN STAKEHOLDERS INVOLVED**
ECO-DESIGN	IMPLEMENTING ECO-DESIGN PRINCIPLES	Liaising with multi-stakeholder initiatives focused on eco-design.	Mapping of multi-stakeholder initiatives focused on eco-design. Incentives. Dedicated hubs/forums to promote diffusion of knowledge and best practices.	- Companies - Policy Makers - Associations, Foundations and NGOs
		Indicating which ecodesign principles are implemented at product/process level, substantiating claims with scientific data.	Pilot projects, in accordance with the EU proposal of a Regulation on Ecodesign Requirements (March 2022) and EU proposal of a Directive on Green Claims (March 2023).	- Companies - Policy Makers

2-Each company will decide the timeframe for implementing the KPIs. Each company is committing to select as many KPIs as possible, according to their own business models and the activities of the value chain they are managing..pdf

CIRCULAR VALUE CHAIN ACTIVITY	COMMITMENTS	ACTIONS	SAMPLE TOOLS	MAIN STAKEHOLDERS INVOLVED
RAW MATERIAL SOURCING	MEASURING TRACEABILITY	Measuring traceability by identifying clear and relevant KPIs.	KPIs to measure sustainability and circularity, including compilation guidelines.	- Companies - Technology and service providers - Policy makers
	INVESTING IN R&D	Increasing research on sustainable and circular materials.	R&D investments. ESG principles. Platforms that connect all research centers and academia with innovative solutions and technologies for sustainable and circular fashion. Platforms that connect SMEs and large companies to share knowledge on sustainable and circular fashion. Platforms that connect service providers with companies for Open Innovation. Incentives.	- Companies - Policy Makers - Academia - Technology and service providers - Investors
	REDUCING WASTE	Reducing textile and leather waste on total raw material.	Zero waste policies. Platforms that connect demand and supply of pre-consumer and postconsumer waste. Incentives.	- Companies - Policy Makers - Technology and service providers
MANUFACTURING OF (SEMI-)FINISHED PRODUCTS	PERFORMING RESPONSIBLE MANUFACTURING	Enhancing joint commitments on traceability. Performing and providing training on responsible manufacturing.	Call to Actions on traceability and transparency such as The Sustainability Pledge. Legislation on traceability. Training on responsible manufacturing. Dedicated hubs/forums to promote diffusion of knowledge and best practices.	- Companies - IGOs and INGOs - Academia - Associations, Foundations and NGOs[3] - Technology and service providers
	SUPPORTING SHARED AUDITS AND INTEROPERABILITY AMONG PLATFORMS	Supporting shared audits (i.e. multual recognition of standards) to grant higher efficiency for suppliers and supporting interoperability among auditing platforms.	Shared audits.	- Companies - IGOs and INGOs - Associations, Foundations and NGOs - Technology and service providers

3-International governmental organizations (IGOs) and international non-governmental organizations (INGOs).

CIRCULAR VALUE CHAIN ACTIVITY	COMMITMENTS	ACTIONS	SAMPLE TOOLS	MAIN STAKEHOLDERS INVOLVED
TRANSPORT AND LOGISTICS	ACHIEVING DECARBONIZATION	Adopting recommended methodologies to measure data related to transportation in order to achieve decarbonization, starting from Scope 1, adding KPIs on CO_2 emissions generated during all production phases, not just transport and logistics.	Scope 1 calculated according to GHG Protocol and ISO 14064-1. Fleet Electrification analysis aimed at decarbonized mobility and logistic. Incentives.	- Companies - Policy Makers - Final users - Technology and service providers
DISTRIBUTION AND RETAIL	EDUCATING FINAL USERS ON RESPONSIBLE CONSUMPTION	Engaging and educating final users on responsible consumption.	Behavioral campaigns. Mandatory public education on sustainability principles. Micro-influencers campaigns.	- Companies - Policy Makers - Communication agencies specializing in sustainability - Final users
END-OF-LIFE SERVICES	ENGAGING FINAL USERS TO EXTEND THE LIFE OF PRODUCTS	Engaging and educating final users to extend the life of products.	Behavioral campaigns. Mandatory public education on sustainability principles. Micro-influencers campaigns.	- Companies - Policy Makers - Communication agencies specialized on sustainability - Final users

5.4 Guidelines to drive managerial actions

As a result of the work carried out by the M4CF community, the guidelines below can be highlighted to drive managers' actions.

1) Measure and assess circularity

Finding common KPIs is important to set priorities and targets, and to be able to compare results within the companies alongside other industry players. KPIs shall be selected on clear and long-term strategic objectives, in coherence with the brand identity.
Starting from the **implementation of eco-design principles such as durability, recyclability and recycled contents** will be key (table 5.6).

2) Engage final users in circularity initiatives

In order to accelerate the transformation of the industry towards circularity it is important to involve the final users along the Circular Fashion Value Chain, starting **from educating the final users on repairing their products, and bringing back the products in stores or other collection points to start a new cycle.** A more effective communication with users through **awareness and behavioral campaigns** is needed in order to educate them to consume responsibly and extend the life of products. Technologies, such as DPP, may be considered as accelerators of these changes.
Companies of the fashion industry are increasingly exploring circular business models, but investment and innovation are still needed to improve the circularity performance of the fashion industry. Many barriers are still limiting the transformational change towards circularity. Managers' actions are not sufficient to go from a linear to a circular fashion industry: some Collaborative industry and Policy Makers Actions are fundamental to a full-scale circular system.

TABLE 5.6: KEY 2025 MANAGERS', COLLABORATIVE INDUSTRY AND POLICY MAKERS ACTIONS TO INCREASE CIRCULARITY PERFORMANCE

MANAGERS' ACTIONS	COLLABORATIVE INDUSTRY ACTIONS TO INCREASE CIRCULARITY PERFORMANCE	POLICY MAKERS ACTIONS TO INCREASE CIRCULARITY PERFORMANCE
Measure and assess circularity	Invest in R&D for technological innovations	Support the development of waste infrastructure
	Work on collaborative projects among companies and other stakeholders	Support collaborative and multi-stakeholder projects
Engage final users in circularity initiatives	Focus on supplier engagement strategies	Enhance transparency and traceability
	Increase the dialogue with policy makers to harmonize data collection and measurement	Provide incentives for lower impact
		Support the competitiveness of the industry

Source: Monitor for Circular Fashion 2024/2025.

5.5 M4CF next steps

During the fourth year of activities, the M4CF continued testing selected KPIs through 4 additional pilot projects, strengthened the community for Circular Fashion and the cooperation activities with key stakeholders including Euratex, ETP and EEN as Research Technical Partners, published the "Circular Fashion Manifesto 2024 Best Practices Update" and the annual Report to be presented to companies and industry associations, institutions and other key stakeholders. During the next months and years new value chains will be explored to cover step by step all value chains of the Textile, Clothing, Leather and Footwear (TCLF) sector.

The Monitor is also willing to extend the geographical reach, focusing on Europe. Companies will be invited to participate in the M4CF, if they meet the following criteria:

- reporting system of sustainability aligned to a national or international standard;
- availability of governance for sustainability management;
- alignment to Agenda 2030 goals with periodical measuring.

As Partners, the companies of the M4CF will:

- keep on monitoring their circularity performance by testing the industry-specific KPIs;
- keep on implementing the industry-specific KPIs in pilot and industrialized projects;
- contribute to define the fashion industry Best Available Techniques (BAT on circularity).

During the next months and years the M4CF concretely aims at:

- acting as a community of frontrunners to implement ecodesign principles, measure the environmental impacts of a product or service through LCA, substantiate the sustainability claims, enhance traceability and transparency in fashion;
- increasing the level of cooperation with relevant consortia and alliances on the topic of waste management and existing NGOs;
- encouraging Policy Makers to adopt a harmonized policy framework to support circular fashion initiatives;
- collaborating with existing organizations focused on social dimension of sustainability and circularity, with a particular focus on due diligence initiatives;
- increasing the level of cooperation with micro and small players willing to invest on circularity.

The M4CF is willing to continue supporting born circular SMEs, especially small companies and startups, since they are the ones that can bring innovative solutions to challenges like the climate crisis, and help spread these solutions throughout Italy, Europe and the World through its C-Factor initiative (see Annex I).

Annex I
INTRODUCING THE MONITOR FOR CIRCULAR FASHION C-FACTOR 2024

Annex I C-Factor

C-Factor is an initiative part of the Monitor for Circular Fashion SDA Bocconi. Its goal is to promote circular fashion startups, create a network among sustainability innovators and provide opportunities to multiple stakeholders of the fashion industry. During the 2024, 15 organizations pitched to the partners of the Monitor for Circular Fashion SDA Bocconi.

The startups were evaluated by the Monitor's partners according to the following criteria:

- ENVIRONMENTAL IMPACT
- TRACEABILITY AND TRANSPARENCY
- ORIGINALITY AND INNOVATION OF THE PRODUCT/SERVICE
- SOCIAL IMPACT
- DATA-DRIVEN SHARED VALUE CREATION
- ECONOMIC SCALABILITY

The startups that participated belonged to all value chain phases, ranging from raw material sourcing to retail.
In the following paragraphs the startups that participated will be shown in alphabetical order.

Startups

AION
www.aioncover.com

AION is an insurtech startup that democratizes luxury product coverage by offering insurance for theft and accidental damage, similar to AppleCare+. It enables brands to provide protection for customer purchases, while collecting valuable customer data, enhancing loyalty, and increasing revenue through up-sell and cross-sell opportunities. AION also emphasizes product repairs when feasible, helping to extend the lifespan of luxury items and support sustainability efforts.

Befreest
www.befreest.com

Befreest is an innovative startup founded in Taranto in 2018, dedicated to combating air pollution and protecting public health through smart, accessible technologies. Among their pioneering products is a high-tech backpack that measures air quality, making environmental monitoring portable and user-friendly. Their flagship IoT ecosystem, Nose4.0, is designed for real-time monitoring and management of indoor air quality and is installed in over 35 schools, as well as various offices and industries.

Colorfix
www.colorifix.com

Colorifix is a biotechnology company that has developed the first entirely biological process to produce, deposit and fix pigments onto textiles. Inspired by the way colours are produced in nature and engineered through synthetic biology, their process entirely cuts out the use of toxic chemicals and leads to huge reductions in water and energy consumption.

Epoch Biodesign
www.epochbiodesign.com

Epoch Biodesign is a biotech startup harnessing enzyme technology to pioneer sustainable recycling processes for complex materials, a focus on Nylon of any blend. By breaking down hard-to-recycle textiles and plastics, they aim to create a circular economy where materials can be infinitely reused. This innovation addresses the growing waste problem in the fashion and packaging industries, offering a groundbreaking solution to reduce environmental impact and drive sustainability in manufacturing processes.

Fashion for Biodiversity
www.fashionforbiodiversity.com

Fashion for Biodiversity Solutions is the first ever RegTech for fashion industry which uses, SpaceTech, IoT, AI and blockchain to make sure all the environmental regulations are implemented and taken good care. Fashion for Biodiversity redefines the relationship between the fashion and earth's biodiversity. Stay tuned for more information.

Human Material Loop
www.humanmaterialloop.com

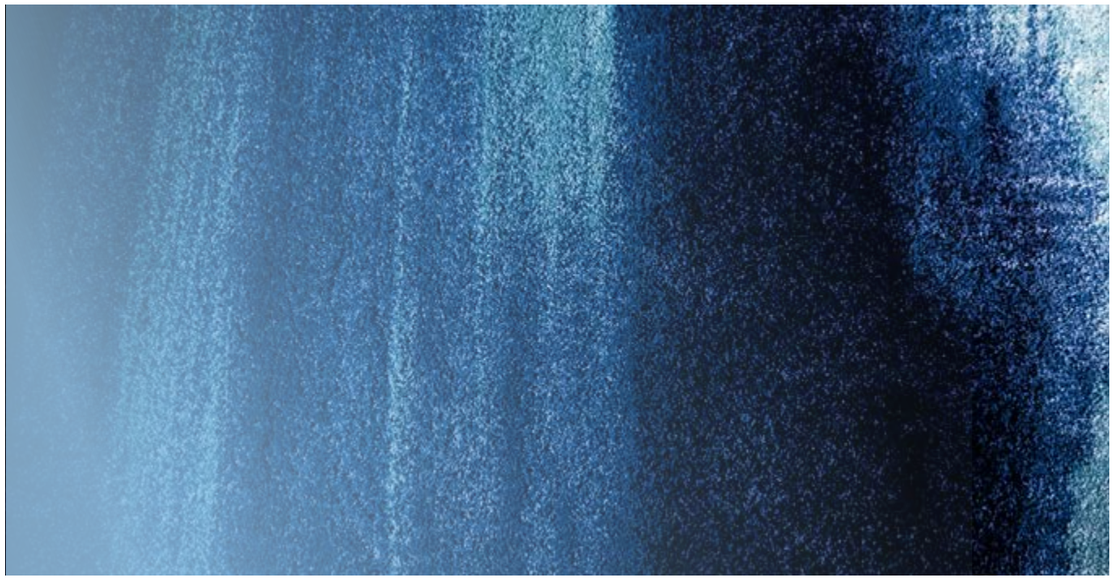
Human Material Loop transforms human hair into a biodegradable textile alternative, offering a sustainable solution to waste generated by the beauty industry. By recycling discarded hair into a resource for fashion production, the company contributes to a circular economy and promotes environmentally conscious design. The innovative material is both durable and lightweight, presenting a unique and eco-friendly option for the fashion industry.

Ictyos
www.ictyos.com

Ictyos is a sustainable startup that repurposes fish skins from the food industry into eco-friendly leather. By transforming a waste product into a high-quality material, Ictyos reduces waste and limits the environmental impact of traditional leather production. Their process uses less water and chemicals, creating a luxurious alternative that appeals to brands seeking sustainability without compromising on quality or aesthetics.

Noosa
www.noosafiber.com

Noosa produces a bio-based textile fiber that is 100% recyclable, designed to reduce and revalorize textile waste. Using their NOOCYCLE™ technology, Noosa creates endlessly recyclable fibers, spun yarns, and multifilament products for use in various industries. Their mission supports circularity by ensuring that these fibers can be recy-



cled at every stage, from pre-consumer to post-consumer levels, offering a sustainable alternative to traditional textile practices.

Onus
www.onusmaison.com

Onus Maison merges tradition with innovation, blending high fashion craftsmanship with modern sustainable practices. Founded in 1927 by Jonuz Pernaska, the maison has a legacy of creating bespoke, high-quality garments for royalty and elite clients. Today, it pioneers 3D printing technology, integrating it with handcrafting to produce personalized, eco-friendly fabrics and accessories. Onus continues to innovate, preserving its heritage while embracing sustainability and cutting-edge fashion techniques.

Pili.bio
vwww.pili.bio

Pili's mission is to decarbonize the color industry while delivering vibrant, bio-based dyes and pigments. Using a unique hybrid technology that combines industrial fermentation with sustainable chemistry, Pili produces high-performance, low-carbon colors for textiles, inks, paints, and coatings. Pili offers the first biobased, high-performance indigo, which works as a drop-in solution, matching the performance of conventional indigo without requiring additional investment.

Ponda
www.ponda.bio

Ponda.bio focuses on creating sustainable biopolymers for the fashion industry, aiming to replace traditional plastic-derived materials with eco-friendly alternatives. The company's innovative biopolymers are made from renewable resources, offering a sustainable solution to reduce pollution and resource consumption in textile production. Ponda.bio's materials are versatile, biodegradable, and designed to maintain performance while contributing to a circular and more sustainable fashion industry.

Proke
www.proke.app

Proke offers a precise and remote body measurement service designed for the tailored clothing industry. By utilizing wearable measurement devices and an app, Proke streamlines the process of acquiring accurate body measurements, reducing the need for in-person fittings. Its solution optimizes production workflows by integrating client data directly into management systems and CAD software. Proke caters to bespoke fashion, sportswear, and uniform manufacturers, providing a highly efficient, standardized, and automated method for creating custom-fit garments.

The 8 Impact
www.the8impact.com

The 8 Impact is the first deeptech to produce high performance elastomers from used sneakers to replace new petroleum-based materials. Each year, 750 000 tons of used sneakers in the US and Europe are dumped in the land fields or incinerated. They can save 120 000 tons equiv. CO2 by diverting them from incineration. They have built the world's biggest database knowledge on technical elastomers and formulations, that we leverage from with our AI software to manage our production line. They also build a high performance regeneration chain, PURELY mechanical - NO water, NO chemicals. Patent filed. They are the first to create the first footwear circular loop.

Urban Darzi
www.urbandarzi.in

Urban darzi is an upcycling platform navigating a circular economy through design thinking, repurposing what's considered old and waste through a steady framework of circular design practices, taking responsibility towards culture, community & the environment.

Vestis Labs
www.vestislabs.com

Vestis Labs is a practical, collaborative, and accessible digital solution for fashion brands to digitalize and streamline their design and development phases. They empower fashion brands to increase efficiency, enhance transparency and facilitate a circular business model by leveraging 3D technology and automation.

Results

The participants selected by the Monitor for Circular Fashion partners for the second edition of the C-Factor are Colorfix, Ponda, and Noosa. These three startups obtained the opportunity of pitching during the final multistakeholder event of the Monitor for Circular Fashion, which took place on February 17th, 2025, at SDA Bocconi in Milan.

Annex II

M4CF CIRCULAR PROJECTS 2022-2024

M4CF Circular Projects 2022-2024

- Think Leather
- Eco-designed jeans
- Trace me
- Repairing T-shirt
- Component shoe
- Anima
- M-Pocket
- Re-Gen H
- Ela Sweatshirt
- Traced Leather Varina ballet flat
- One Next Step
- Traceable Fiamma Bag
- Kintsugi
- Digital Product Passport

Think Leather

Leather pencil cases made from leftover

Discover more about this project at this **LINK**

B2B

Leather leftovers originating from GAB's unsold stock have been transformed into pencil cases, which were donated to all HModa employees as a Christmas Gift. The main material used in the pencil cases is leather, to which thread and zips have been added for assembly. As a decorative elements:

- logo printing was done by Seriscreen, a company that is part of the HModa Group,
- biodegradable and plantable tag with information related to the product traceability.

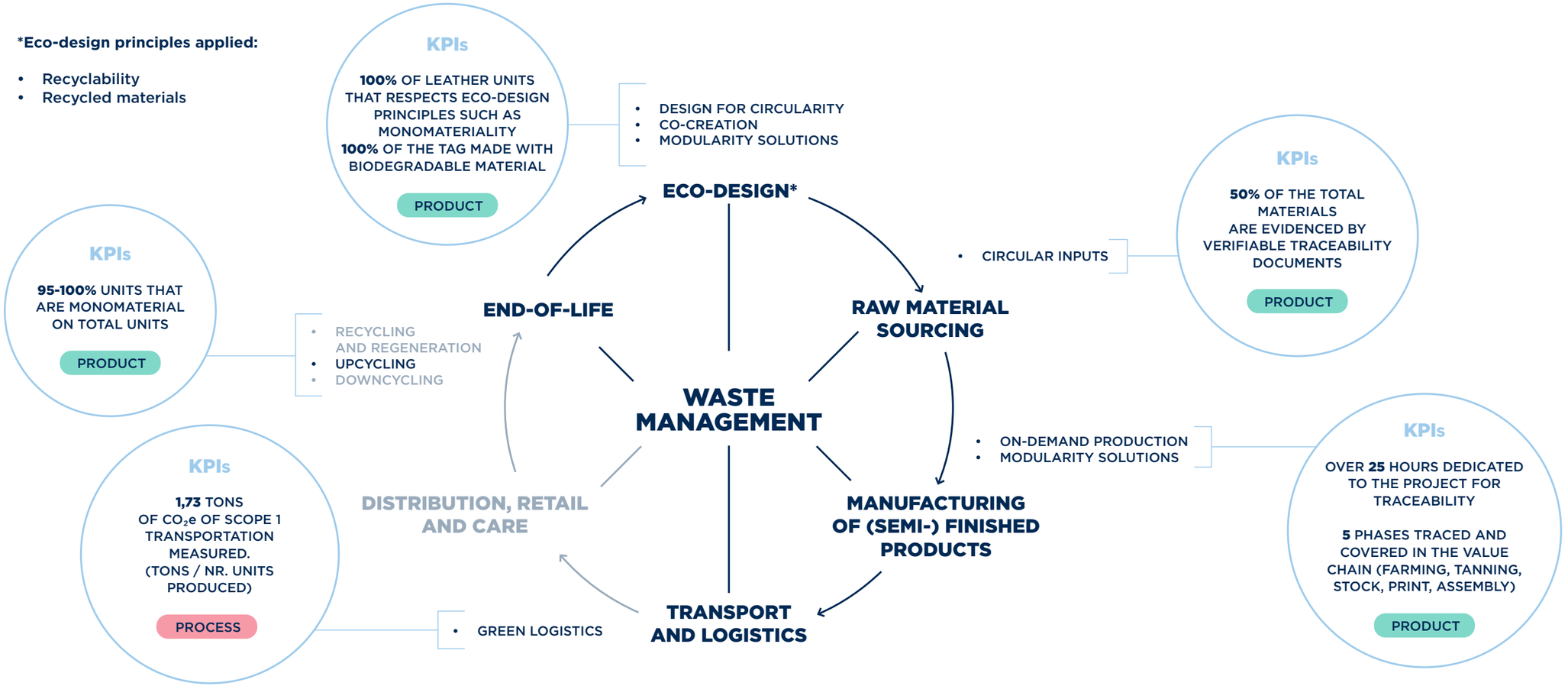
These pencil cases have been produced by a social cooperative, Progetto Quid, which promotes inclusive employment and creates opportunities for vulnerable people, as well as realizing their productions only with recycled materials.

PARTNERS

HMODA GAB Quid SERISCREEN SERIGRAFIA E STAMPA DIGITALE Temera

Think Leather

Circular fashion activities and KPIs



Source: SDA Bocconi Monitor for Circular Fashion Report 2023.

Eco-designed jeans

Discover more about this project at this **LINK**

B2B

Integrated supply chain collaboration for light-washed denim jeans, made with 100% certified organic cotton, conceived using eco-design principles and tested for increased durability. Compared to conventionally designed jeans, this eco-designed pair utilizes -84% chemicals and -53% water while actively addressing hazards to worker health and safety.

PARTNERS

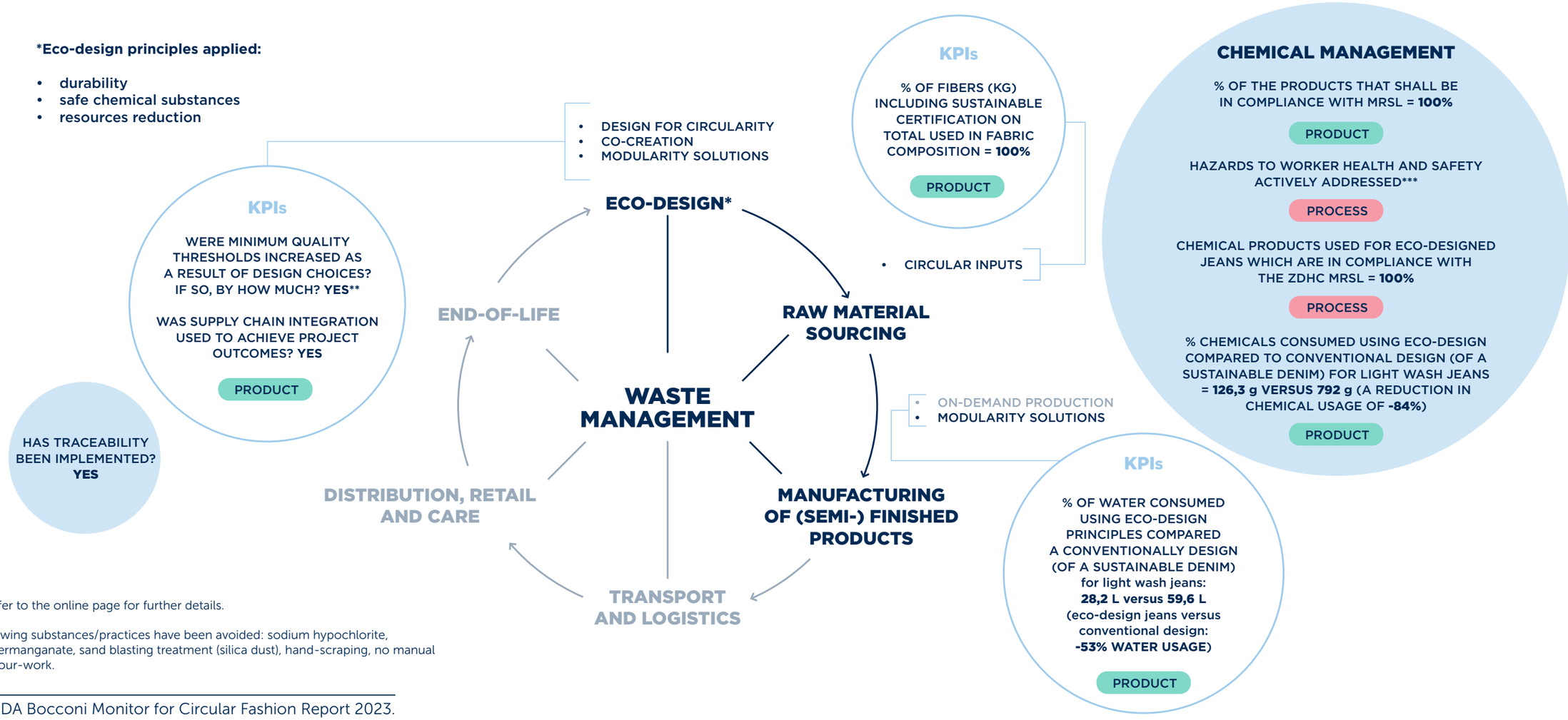
KERING

Candiani DENIM

Temera

Eco-designed jeans

Circular fashion activities and KPIs



** please refer to the online page for further details.

*** the following substances/practices have been avoided: sodium hypochlorite, potassiumpermanganate, sand blasting treatment (silica dust), hand-scraping, no manual physical labour-work.

Source: SDA Bocconi Monitor for Circular Fashion Report 2023.

Trace me

B2B

Shopper made with recovered fabric in traceable wool fibres, designed for recycling, manufactured in Italy through fully traceable production steps and assembled by an Italian social enterprise.

PARTNERS

VITALE 1663 BARBERIS CANONICO

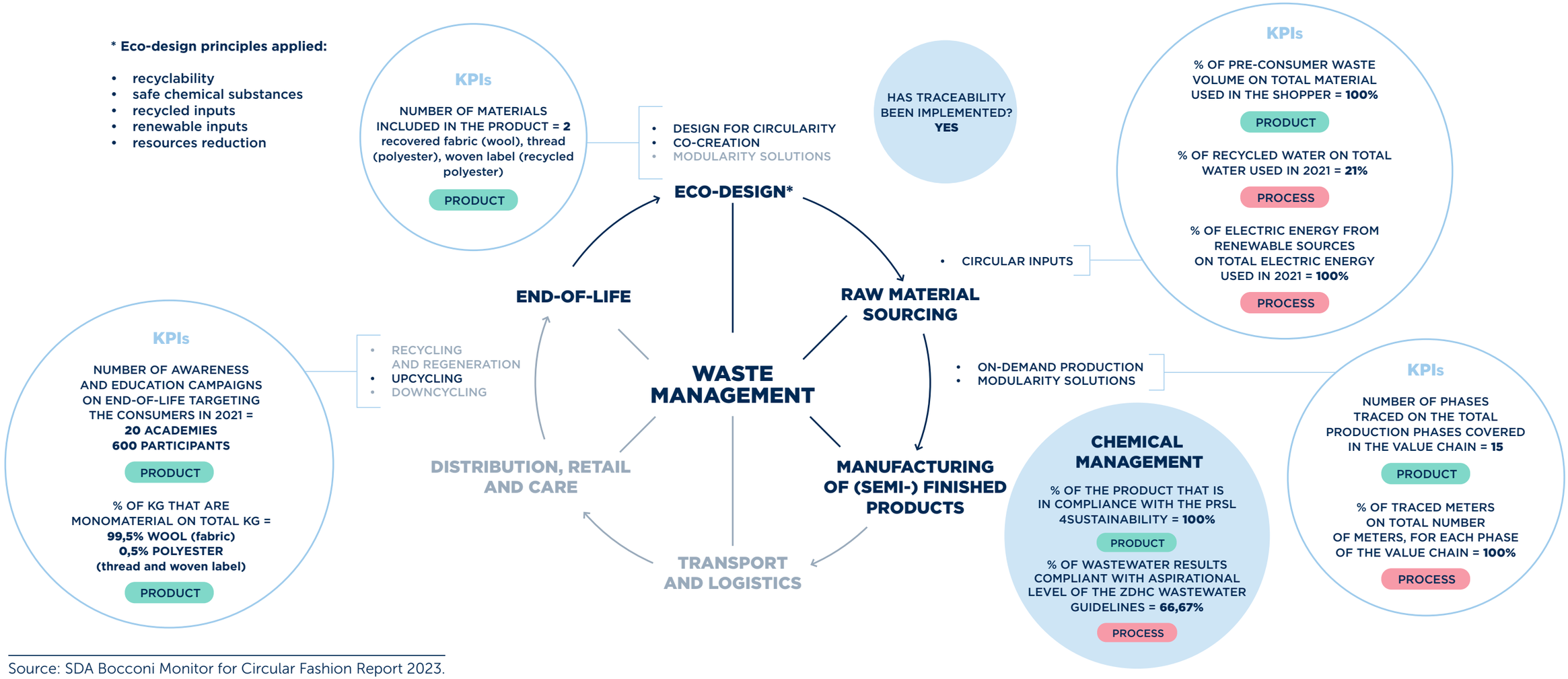
Quid

Temera

Discover more about this project at this **LINK**

Trace me

Circular fashion activities and KPIs



Source: SDA Bocconi Monitor for Circular Fashion Report 2023.

Repairing T-shirt

Discover more about this project at this **LINK**

B2C

T-shirt made of 100% certified organic cotton yarn and upcycled woven patches from waste, fully traceable from farm to shop. Designed to minimize environmental and social impacts and to last for a long time. Repair your t-shirt with the spare patch or return it to the shop for repairing or creative mending services.

PARTNERS

Oscalito 1936

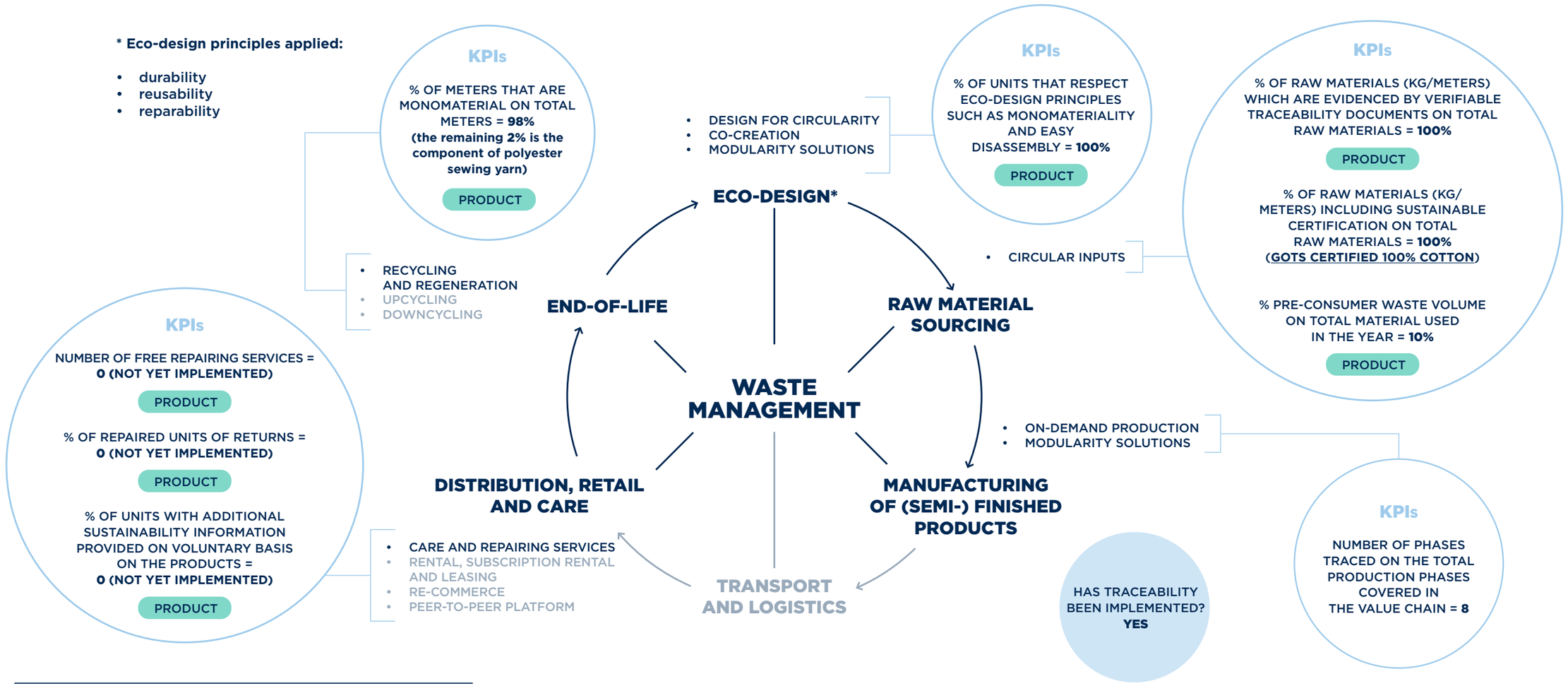
ALBINI GROUP

CRULE

Temera

Repairing T-shirt

Circular fashion activities and KPIs



Source: SDA Bocconi Monitor for Circular Fashion Report 2023.

Component shoe

Discover more about this project at this **LINK**

B2C

This shoe, made using only five components, can be easily assembled at home. The upper is made of 100% upcycled cotton denim and cotton thread. The sole is made of natural FSC certified materials. The upper is secured to the sole by a lace made of a blend of cotton and TENCEL™. Fewer overall components enable easy disassembly, reparability, and recyclability at the end-of-life, helping to create a shoe designed with circularity principles.

PARTNERS

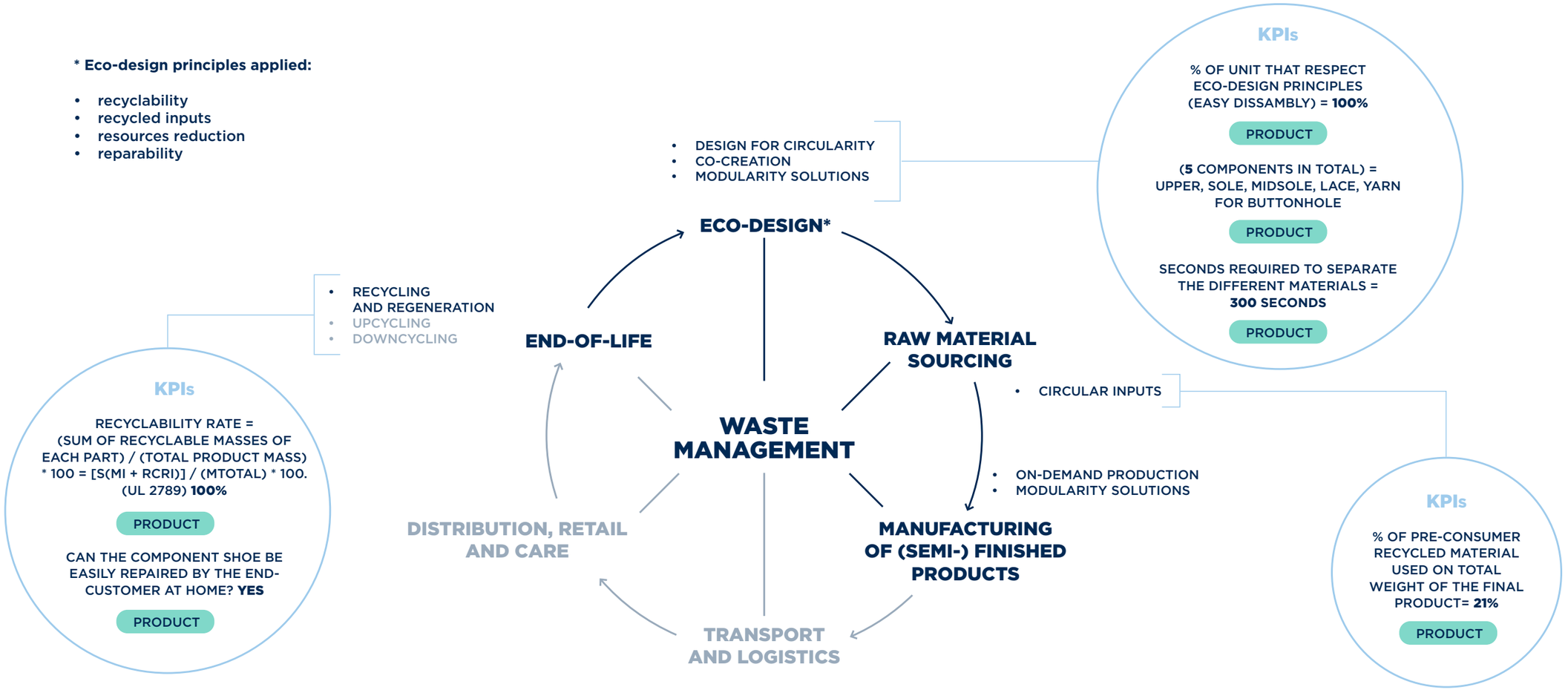
Candiani DENIM

Vibram

Temera

Component shoe

Circular fashion activities and KPIs



Source: SDA Bocconi Monitor for Circular Fashion Report 2023.

Anima

Double skin for waste saving

Discover more about this project at this **LINK**

B2C

Anima is a bi-material backpack composed of 100% recycled polyamide fabric, made of 100% recycled polyamide yarn GRS certified and in compliance with Oeko-tex standard 100 for responsible manufacturing, and 100% recycled rubber coming from ISO-compliant standard plants.

PARTNERS

RADICI GROUP

SAVE THE DUCK

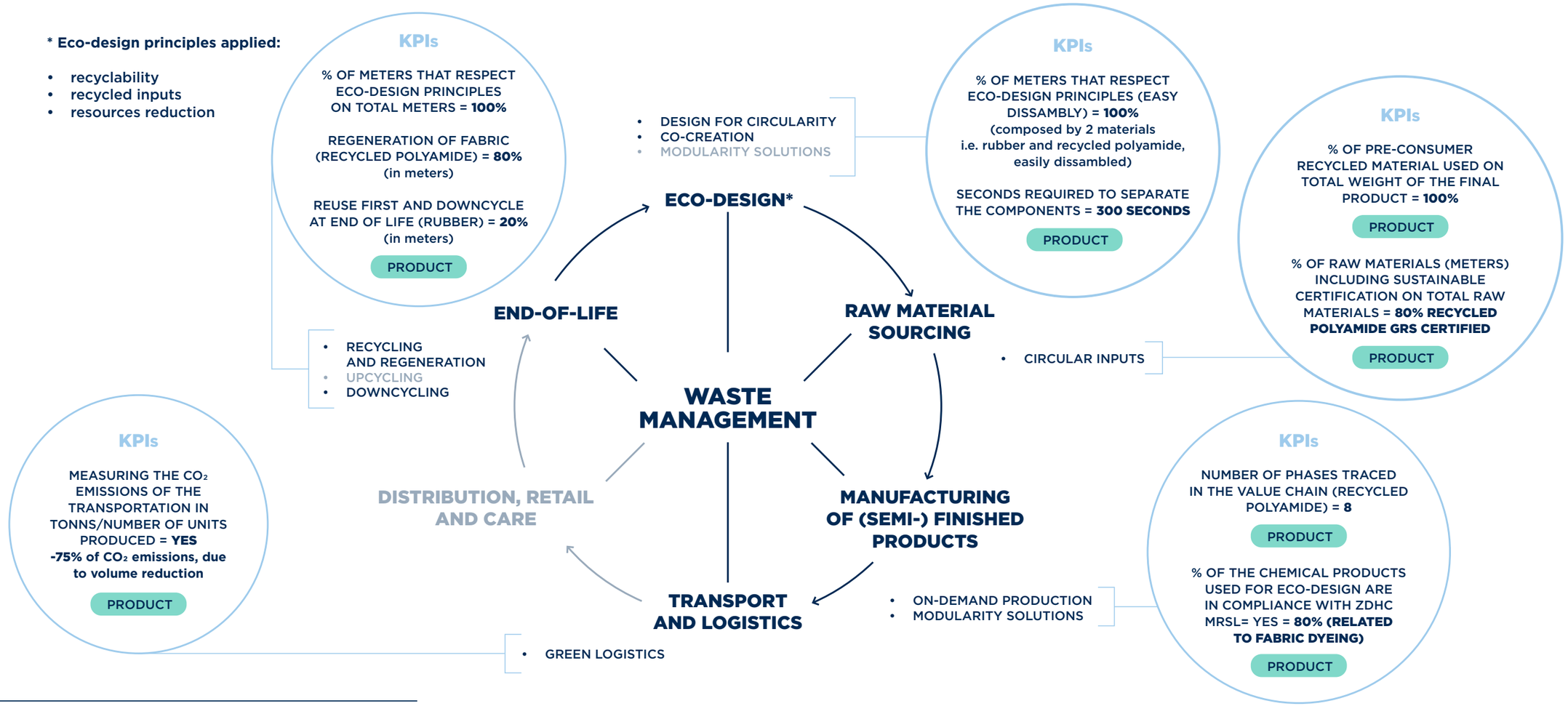
vibram

CERTILOGO

Temera

Anima

Circular fashion activities and KPIs



Source: SDA Bocconi Monitor for Circular Fashion Report 2023.

M-Pocket

Discover more about
this project at this **LINK**

B2B

Completely recyclable tablet pockets, produced with production waste from industrialized processes.
The pocket is produced with MWool® or ReviWool® by Manteco® and Radilon® or Renycle® by RadiciGroup®, depending on the ongoing production.

PARTNERS

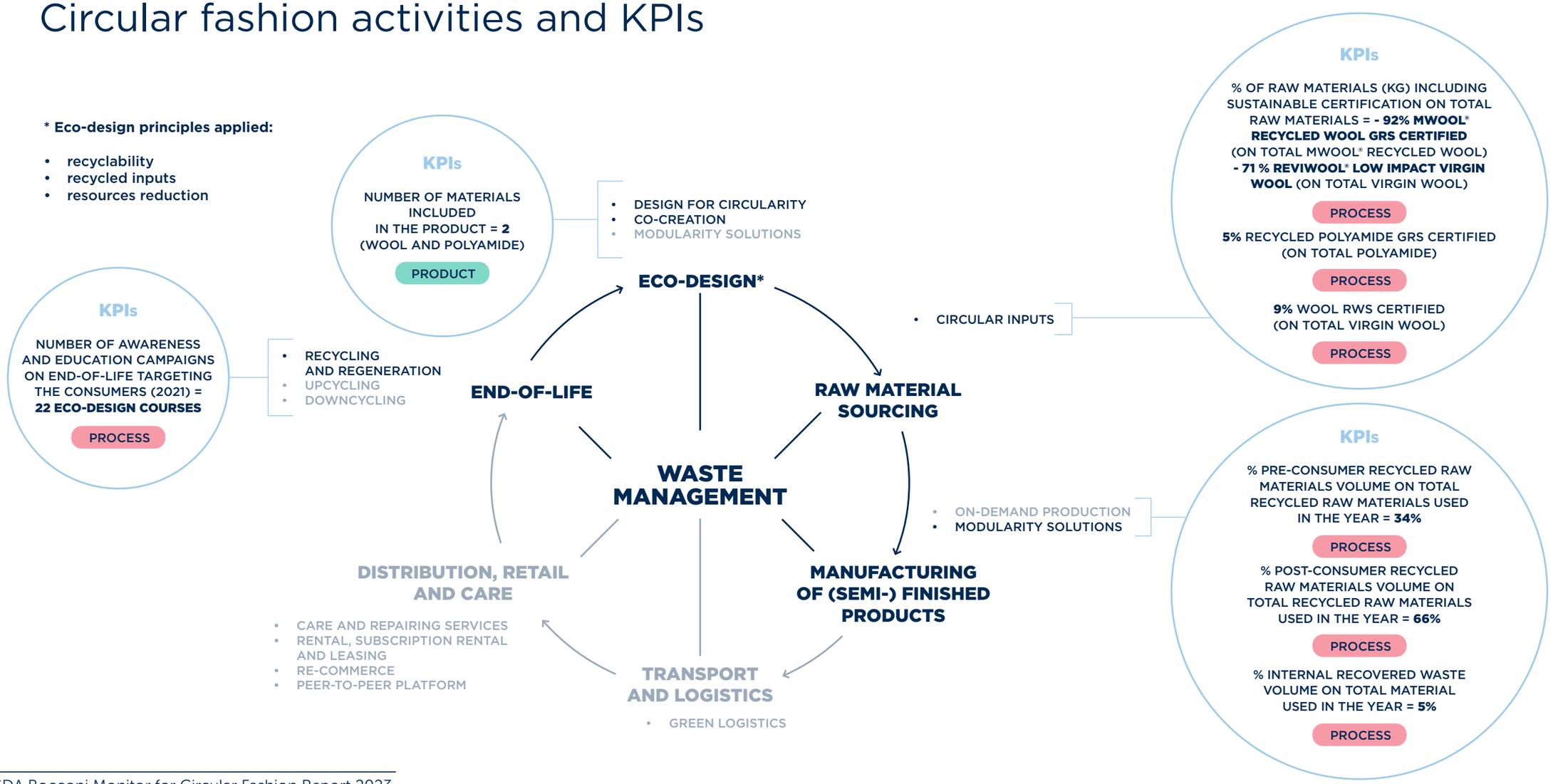
MANTECO®

RADICI GROUP

Temera

M-Pocket

Circular fashion activities and KPIs



Source: SDA Bocconi Monitor for Circular Fashion Report 2023.

Re-Gen H

Discover more about
this project at this **LINK**

B2C

The Re-Gen H project, lead by Hogan, focuses on the development of a shoe that uses, for the upper, Evolo leather from Sciarada tannery, which reuses production waste (9.13%, calculated on the mass of the finished product) otherwise destined to become industrial waste. The new process allows a reduction of 47.7% of CO_2eq and 68.47% of water compared to the production of the traditional "Softy" product. The sole, produced by Finproject, is made up of EVA (Ethylene Vinyl Acetate resin obtained from bionaphtha from food biorefineries through the recovery of processing waste from vegetable oils, used cooking oils and other organic waste. Compared to the traditional bottom produced with non-bionaphtha EVA resin, it allows a reduction of 10.30% of CO_2eq kg and 18.90% of fossil resources use.

PARTNERS

HOGAN SCIARADA UNIC ITALIAN TANNERIES ICEC Temera

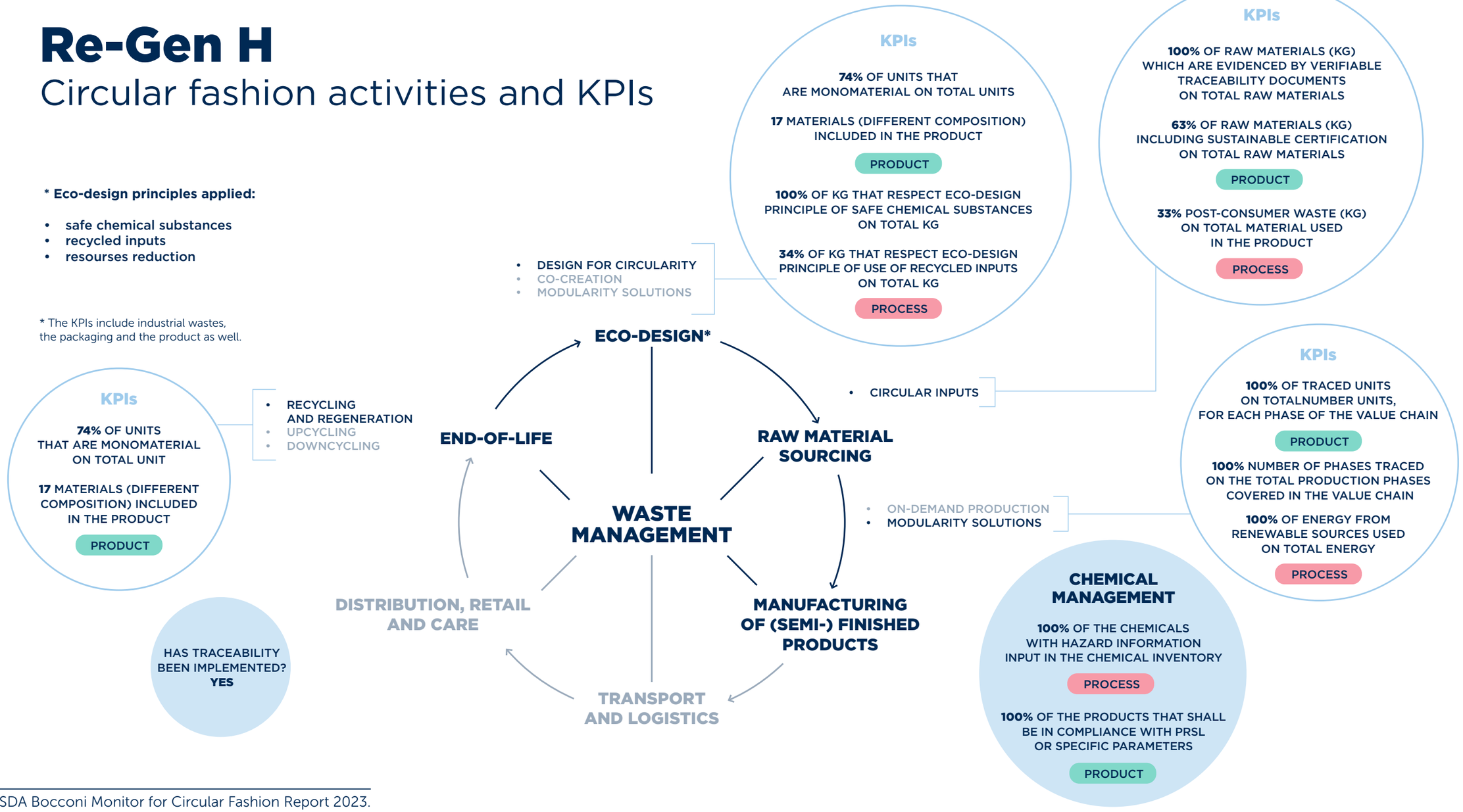
Re-Gen H

Circular fashion activities and KPIs

*** Eco-design principles applied:**

- safe chemical substances
- recycled inputs
- resourses reduction

* The KPIs include industrial wastes, the packaging and the product as well.



Source: SDA Bocconi Monitor for Circular Fashion Report 2023.

Ela Sweatshirt

Discover more about
this project at this **LINK**

B2B B2C

Sweatshirt composed by 50% organic cotton
and 50% mulesing free extra fine merino wool.
The product is fully traceable from farm to shop.

PARTNERS

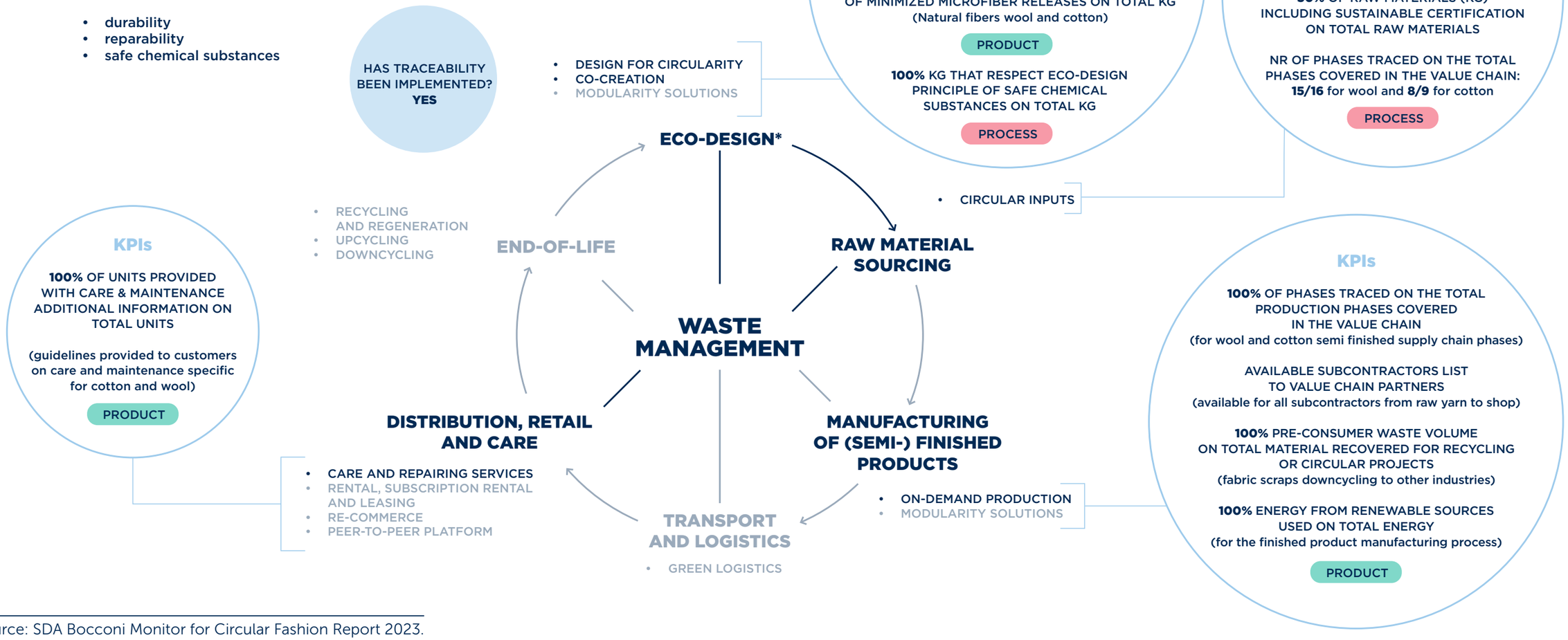
Oscalito 1936 · Vivienne Westwood · ALBINI GROUP · Temera

Ela Sweatshirt

Circular fashion activities and KPIs

***Eco-design principles applied:**

- durability
- reparability
- safe chemical substances



Source: SDA Bocconi Monitor for Circular Fashion Report 2023.

Traced leather Varina ballet flat

Discover more about this project at this **LINK**

B2C

The leather sole of this ballerina is UNI 11427* certified and the viscose used for the Varina bow is FSC certified. 100% of the upper leather has been traced from farming to product assembly. This last phase of the value chain occurred in Ferragamo's Florentine Headquarters, where 100% of energy used comes from renewable sources (solar, ocean and biomass energy), thanks to the purchase of certified energy through guarantees of origin.

PARTNERS

FERRAGAMO · UNIC ITALIAN TANNERIES · ICEC · concerie bcn · Temera

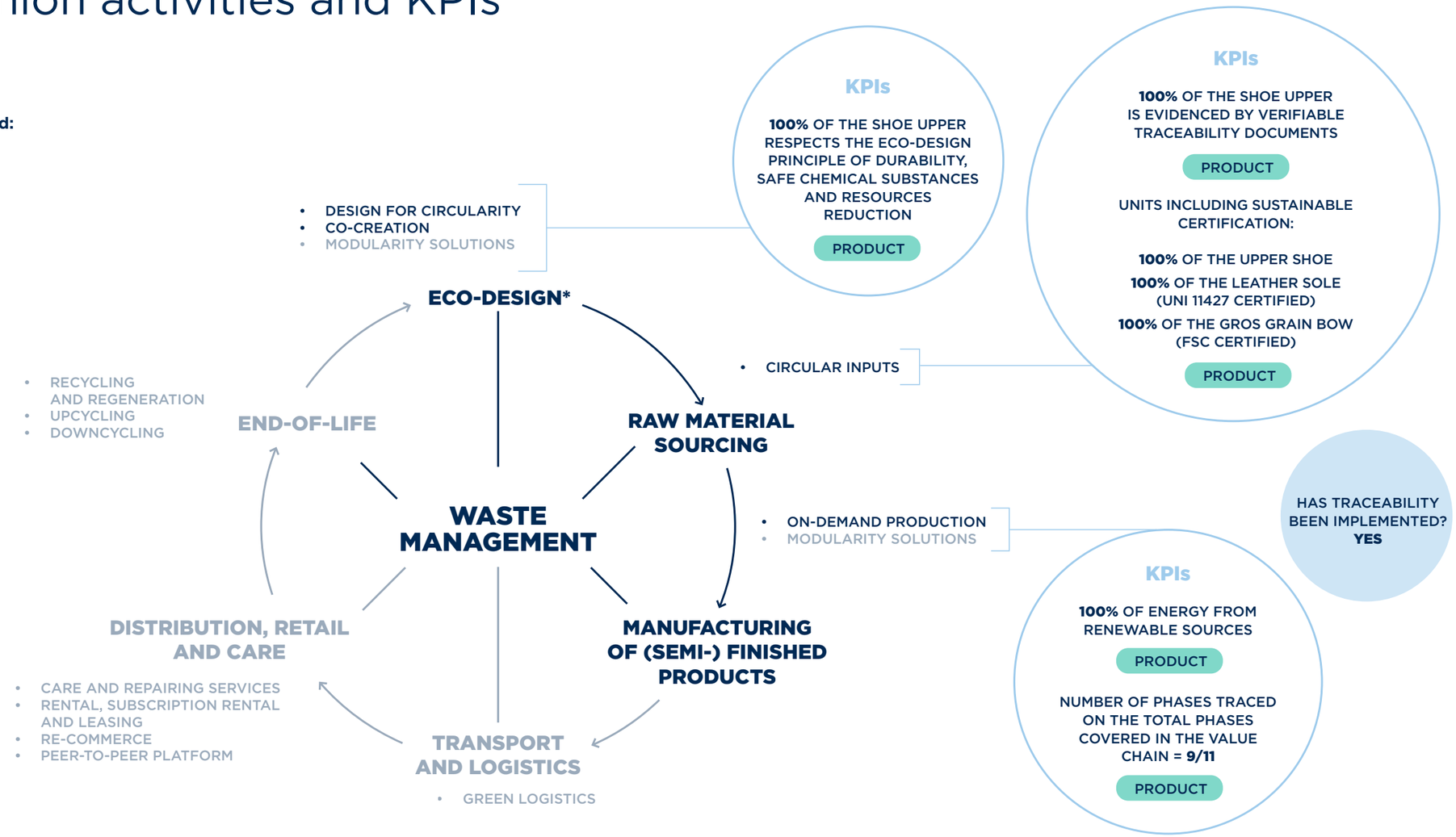
*UNI 11427:2022 Cuoio - Criteri per la definizione delle caratteristiche di prestazione di cuoi a ridotto impatto ambientale.

Traced leather Varina ballet flat

Circular fashion activities and KPIs

*** Eco-design principles applied:**

- durability
- safe chemical substances
- resourses reduction



Source: SDA Bocconi Monitor for Circular Fashion Report 2023.

One Next Step

B2B B2C

Discover more about this project at this **LINK**

A joint pilot project co-created by TOD'S Group and Gruppo Mastrotto, aimed at developing an eco-designed shoe model: 79% of components, by weight, has been revised and replaced with alternative materials, currently not used by the Brand, whose environmental impact has been calculated through LCA studies. Gruppo Mastrotto's LCA shows the potential impact on global warming is 12.56 kg CO_2e/m_2 of finished leather. Completed documented traceability of leather is also guaranteed, as well as leather durability, meeting strict international ISO standards about tear/tensile strength and colour fastness. Both leather by Gruppo Mastrotto and finished shoes' production at TOD'S plants are powered by electricity from 100% certified renewable sources with GOs (Guarantee of Origins). TOD'S also worked on a rubber sole produced by Gommus, with 26,4% recycled content, and on the metal hardware produced by Santoni, comparing steel and brass, and related production technologies; all components have been analysed with LCAs studies.

PARTNERS

TOD'S · GRUPPO MASTROTTO · ICEC · UNIC ITALIAN TANNERIES · Temera

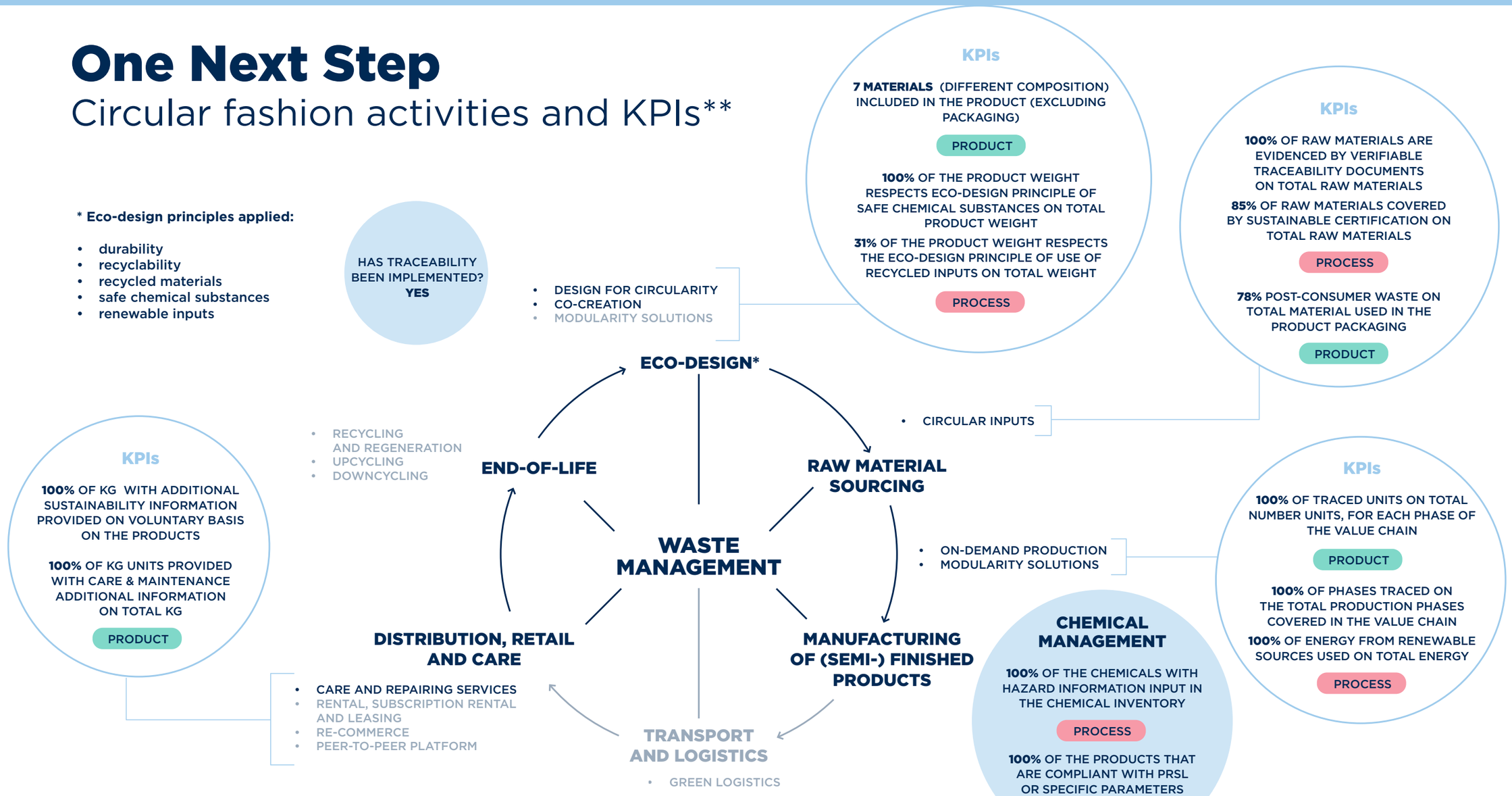
One Next Step

Circular fashion activities and KPIs**

*** Eco-design principles applied:**

- durability
- recyclability
- recycled materials
- safe chemical substances
- renewable inputs

HAS TRACEABILITY BEEN IMPLEMENTED? **YES**



(** The KPIs include industrial wastes, the packaging and the product as well).

Source: SDA Bocconi Monitor for Circular Fashion Report 2023.

Traceable Fiamma Bag

A Deep Dive into Calf Leather Supply Chain Traceability

Discover more about this project at this **LINK**

B2B

The calf leather of the Ferragamo Fiamma bag has been traced from farming to product assembly in accordance to ICEC TS_SC410 standard with the aim to test and validate a Due Diligence management system in compliance with the upcoming Regulation on Deforestation-free products (EUDR Reg. UE 2023/1115). It also respects the eco-designs principles of durability assessed through thoughtful physical and fastness tests in compliance with UNI 10826. In its tanning process, the safe chemical substances used are compliant with the foundational level of the ZDHC framework and the environmental management system of the tannery is ISO 14001 certified.

PARTNERS

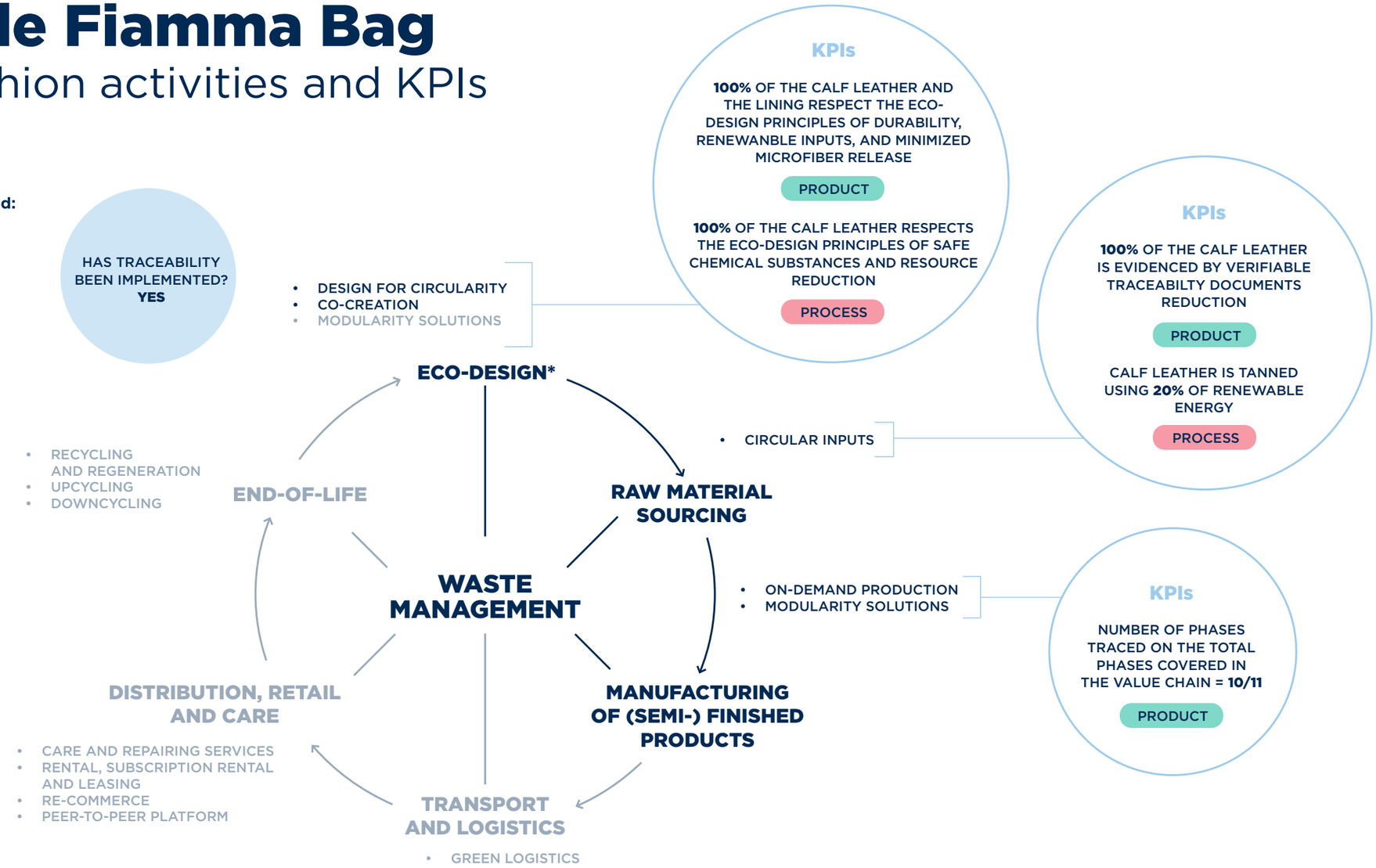
FERRAGAMO · UNIC ITALIAN TANNERIES · ICEC · ANTIBA · Temera

Traceable Fiamma Bag

Circular fashion activities and KPIs

*** Eco-design principles applied:**

- durability
- recyclability
- recycled materials
- safe chemical substances
- renewable inputs



Source: SDA Bocconi Monitor for Circular Fashion Report 2023.

Kintsugi

Repairing broken POM plastic slide fasteners on Zayn jackets

Discover more about this project at this **LINK**

B2B B2C

Kintsugi is an ancient Japanese art of restoration, aiming to enhance rather than hide repairs. This mastery inspired YKK® to develop an innovative technique to repair broken teeth of POM plastic slide fasteners (VISLON® zip), used in Save The Duck's Zayn jackets. In case of damage, jacket's user can apply for Save The Duck's repair service that, instead of replacing the entire zip with a new one, fixes it with a zamak element applied to the broken section. Compared to the production of a new VISLON® zip, this solution implies a reduction of energy consumption by 92% and a saving of 97% in water utilisation*.

*comparison between 60 cm open-end VISLON® zip with standard slider and zamak element 1 piece each; based on LCA analysis internally conducted.

PARTNERS

SAVE THE DUCK

YKK™ Little Parts. Big Difference.

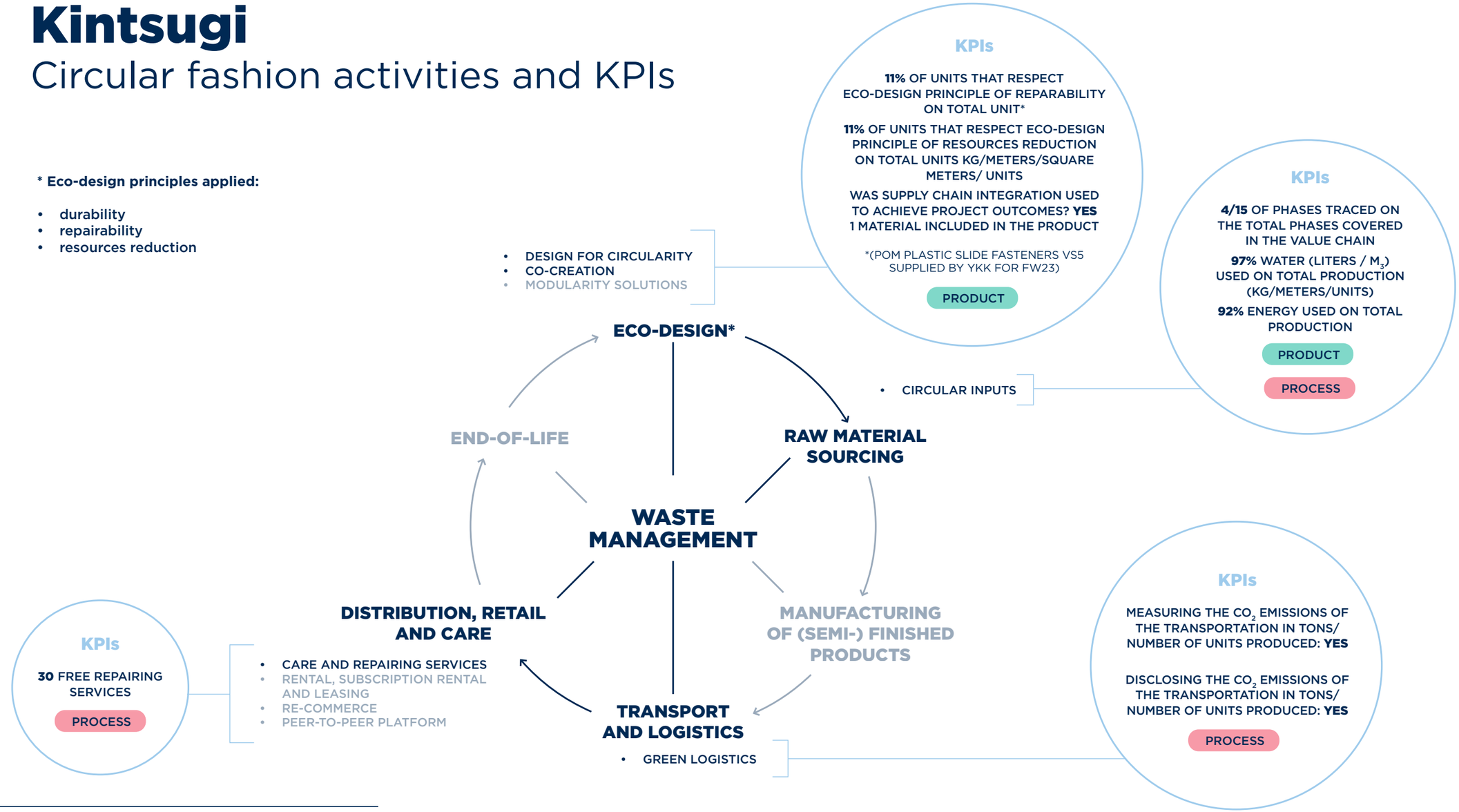
Temera

Kintsugi

Circular fashion activities and KPIs

*** Eco-design principles applied:**

- durability
- repairability
- resources reduction



Source: SDA Bocconi Monitor for Circular Fashion Report 2023.

Digital Product Passport

The commitment to traceability

Discover more about this project at this **LINK**

B2B B2C **P2P**

Service description

Each garment has a story to tell and it's time to discover it. By scanning the QR code already present in 99% of the items, it will be possible to dive deeper into products' features: from their origins to technical characteristics and certifications, as well as how to maintain and preserve the garments.
Looking forward this project empowers clients in circular economy. Thanks to the latest innovation in collaboration with Certilogo, each pre-loved item can be resold on eBay directly.

Try the digital experience at this **LINK**

PARTNERS

SAVE THE DUCK

CERTILOGO

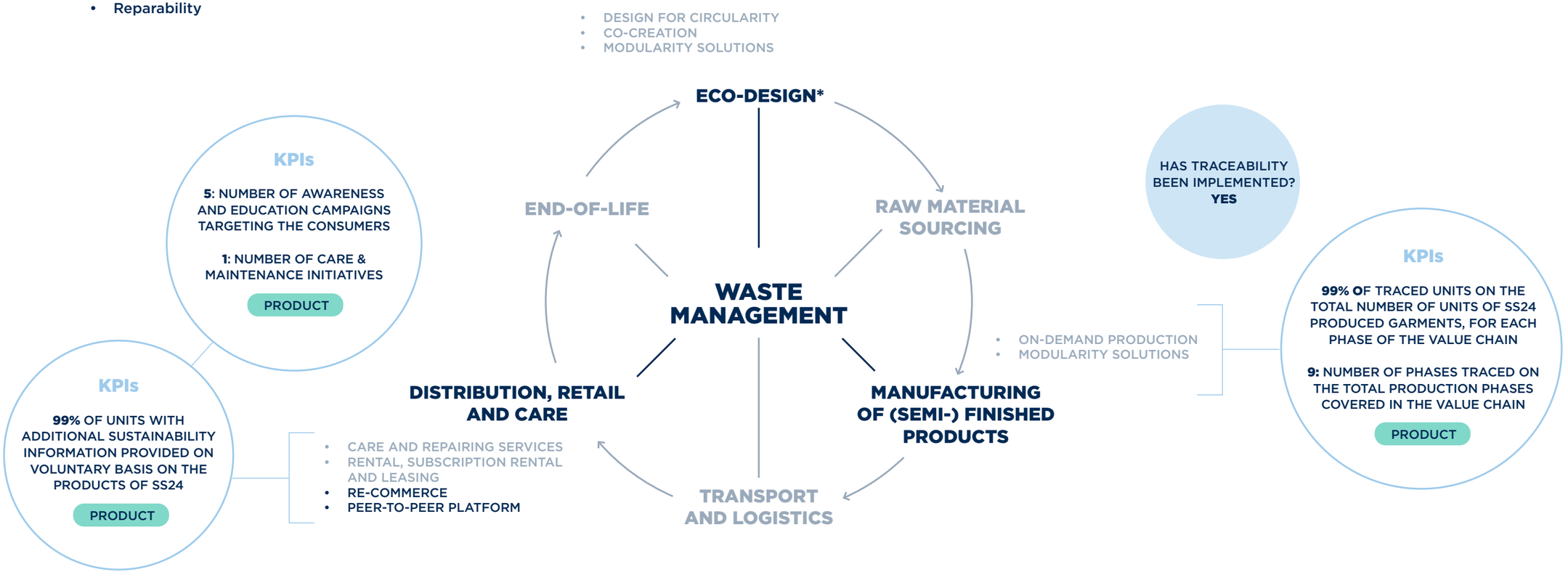
ebay

Digital Product Passport

Circular fashion activities and KPIs

*** Eco-design principles applied:**

- Durability
- Reusability
- Reparability



Source: SDA Bocconi Monitor for Circular Fashion Report 2023.

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For further information on the Research and the Monitor you can get in contact with Francesca Romana Rinaldi, Director Monitor for Circular Fashion

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Report last update on December 31st, 2024

Sustainable Development Goals considered for this report
and in the Monitor for Circular Fashion activities:

SDA Bocconi
SCHOOL OF MANAGEMENT

SUSTAINABILITY LAB
MONITOR FOR CIRCULAR FASHION