Monitor for Circular Fashion

REPORT 2025/2026

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. (2026), "Monitor for Circular Fashion Report 2025/2026 - Transform to perform: leverage circularity for fashion's future"

SDA Bocconi School of Management www.sdabocconi.it/circularfashion

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 19 December, 2025.

1 Monitor for Circular Fashion: year 5

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

Candiani Denim
Eurojersey
Gi.Tessil
Manteco
RadiciGroup
Vibram
Vitale Barberis Canonico
YKK

Vendors, brands & retailers

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

Service providers

Avery Dennison
Certilogo
Deda Stealth
Lectra
Retraced
Temera
UL Solutions
Ympact

KPIs committee

Bip
ICEC
UNIC

Research technical partners

EEN
ETP
EURATEX

Visual design partner

Visualmade

FIGURE: ACTIVITIES OF THE MONITOR FOR CIRCULAR FASHION 2025/2026

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 survey SDA Bocconi co-creation and strategic 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* (Third edition)**	**#REFASHIONNOW INITIATIVE AND CIRCULAR FASHION TALK**
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 13 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 raising public awareness and educating SMEs and students on the positive impacts of sustainable and circular production and consumption: • Ideathon 2025 part of MUSA Spoke 5; • "Circular Fashion Talks" Podcast (Second edition) by Monitor for Circular Fashion and Solo Moda Sostenibile.

FIGURE: MONITOR FOR CIRCULAR FASHION GOALS

2 Methodology
FIELD ANALYSIS AND KPIs TESTING

Complete methodology of SDA Bocconi research – M4CF 2025/2026

The Monitor for Circular Fashion (M4CF) has been implementing an ESG approach to circularity.

Leveraging on an extensive literature review the 2025 research results come from a field analysis based on two surveys, co-creation workshops and working group activites with special focus on the following areas:

- ecodesign and waste management;
- social impact;
- role of technologies.

FIGURE: COMPLETE METHODOLOGY OF SDA BOCCONI RESEARCH – MONITOR FOR CIRCULAR FASHION 2025/2026

MARCH 2025 ↓ DECEMBER 2025

HOW	WHO	WHAT
DESK RESEARCH	**SDA Bocconi team**	Analysis of 30+ updated sources focusing on circular fashion.
FIELD ANALYSIS	**SDA Bocconi team & Partners**	Testing the industry-specific KPIs through circularity projects and building the sustainability claims.
	SDA Bocconi team & Partners	Survey. Co-creation workshops with 3 working groups: ecodesign & waste management, social impact, role of technologies for the twin transition.
	SDA Bocconi and BIP team	Strategic workshop for C-Level executives.
SURVEY ANALYSIS AND VALIDATION	**SDA Bocconi team & Partners**	Plenary meetings with Partners for collective discussion on research results.

3 Circular fashion legislative roadmap for strategic advantage

STAKEHOLDERS' VOICES

The European textile sector is entering a new legal era. Circularity is no longer a voluntary business choice: it is a regulatory framework reshaping design, production, and market access.

The European Union has introduced a coherent package of laws from the revision of the Waste Framework Directive, to the Ecodesign for Sustainable Products Regulation, the Corporate Sustainability Reporting Directive and Due Diligence Directive, the Empowering Consumers for the Green Transition Directive.

For fashion companies already investing in circularity, this package of laws represents both a compliance challenge and a competitive opportunity.

It defines the legal architecture of circular transition setting common rules for durability, recyclability, producer responsibility, transparency, traceability and truthful communication.

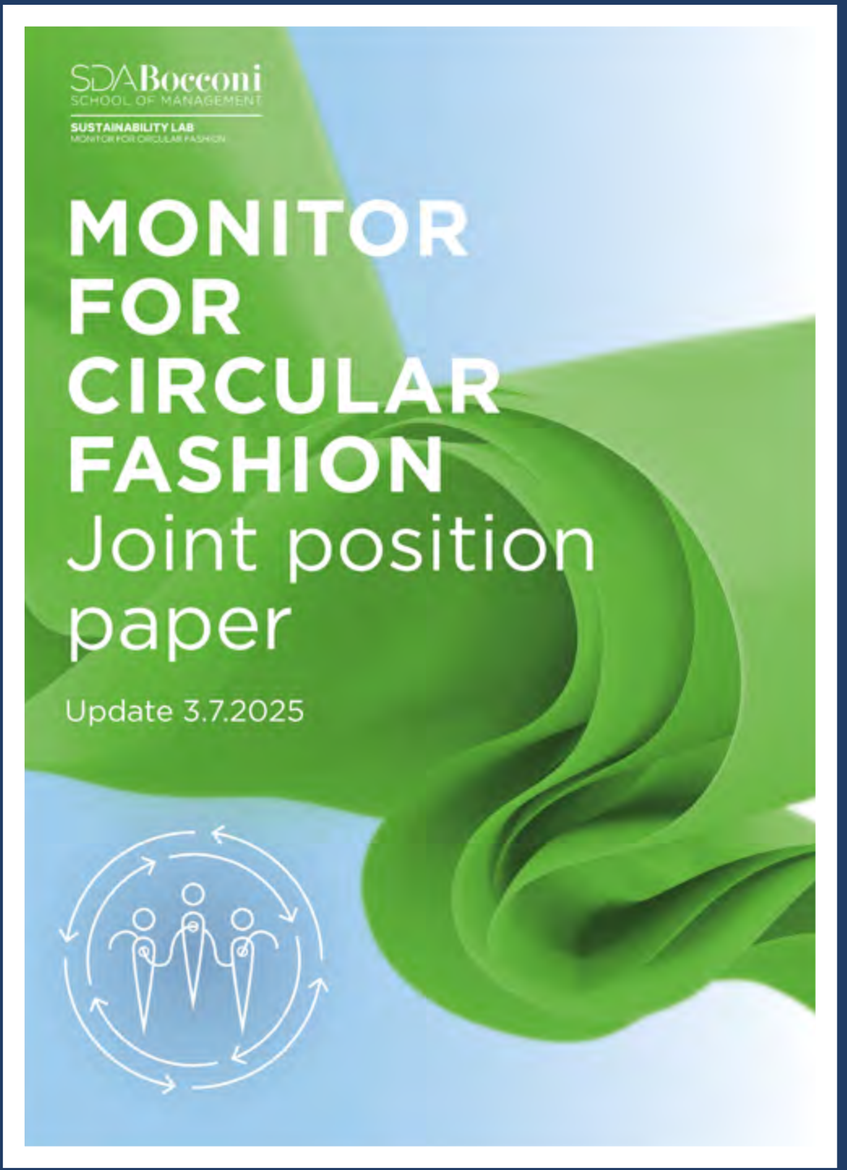
This regulatory evolution is now being complemented by the broader industrial policy shift of the Clean Industrial Deal, positioning competitiveness and decarbonization as central pillars of Europe's industrial strategy.

FIGURE: KEY EU SUSTAINABILITY AND CIRCULARITY LEGISLATION

M4CF Joint position paper 2025

The M4CF partners have worked on a series of recommendations on key issues for the regulation of the fashion sector, establishing at the end of 2024 three working groups on ecodesign & waste management, social impact and the role of technologies to accelerate the sustainable and circular transition.

DISCOVER
THE M4CF JOINT
POSITION PAPER



4 Looking beyond compliance

ECODESIGN, SOCIAL IMPACT AND ROLE OF TECHNOLOGIES FOR A SHIFT TO COMPETITIVENESS

During 2025 the partners of the M4CF have been asked to answer an extensive survey focused on the following topics:

- circularity key business models, ecodesign & competitiveness;
- social impact;
- role of technologies;
- upskilling & reskilling.

The M4CF respondents are 27, both SMEs and large companies and cover both B2B and B2C business models.
Service providers represent on average the responses for their over 24,000 fashion clients and accounts.

Research sample

TABLE: RESPONDENTS BY BUSINESS MODEL

SEMI-FINISHED GOODS PRODUCTION (INGREDIENT BRAND)	7
FINISHED GOODS PRODUCTION (VENDOR & BRAND)	9
SERVICE PROVISION (SERVICE PROVIDER, ASSOCIATION, CONSULTING FIRM, CERTIFICATION BODY, ETC.)	11

TABLE: RESPONDENTS BY SIZE

SME	12
LARGE	15

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

FIBERS	YARNS	FABRICS	LEATHERS	ACCESSORIES
Mainly Synthetic Materials	Synthetic Materials	Natural Materials, Artificial Materials, Synthetic Materials	Natural Materials	Both Natural & Synthetic Materials

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

Circularity key business models, ecodesign & competitiveness: key results

Most adopted circular fashion business models:

- Sustainable inputs
- Life extension
- End-of-life solutions

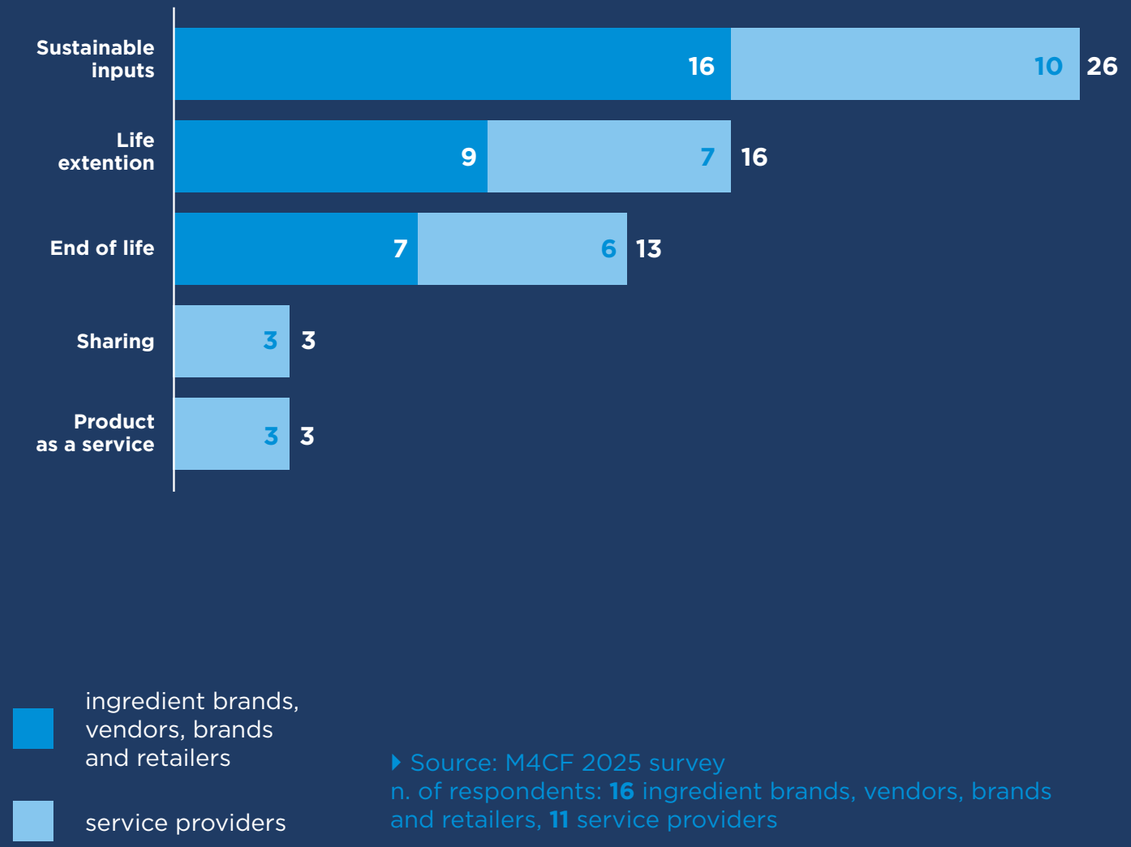
M4CF partners see the strongest future potential in life extension, sustainable inputs and end-of-life strategies, indicating a continued focus on materials and product longevity.

Service-based models are still limited.

Key benefits:

- innovation
- brand reputation
- competitiveness

FIGURE: MAIN CIRCULAR FASHION BUSINESS MODELS
Which of the following circular fashion business models are currently implemented? (one or more than one answer)



Source: M4CF 2025 survey
n. of respondents: **16** ingredient brands, vendors, brands and retailers, **11** service providers

Social impact M4CF survey results: harmonizing compliance measurements

Key social risks:

- wages
- working hours
- health & safety

Main challenges:

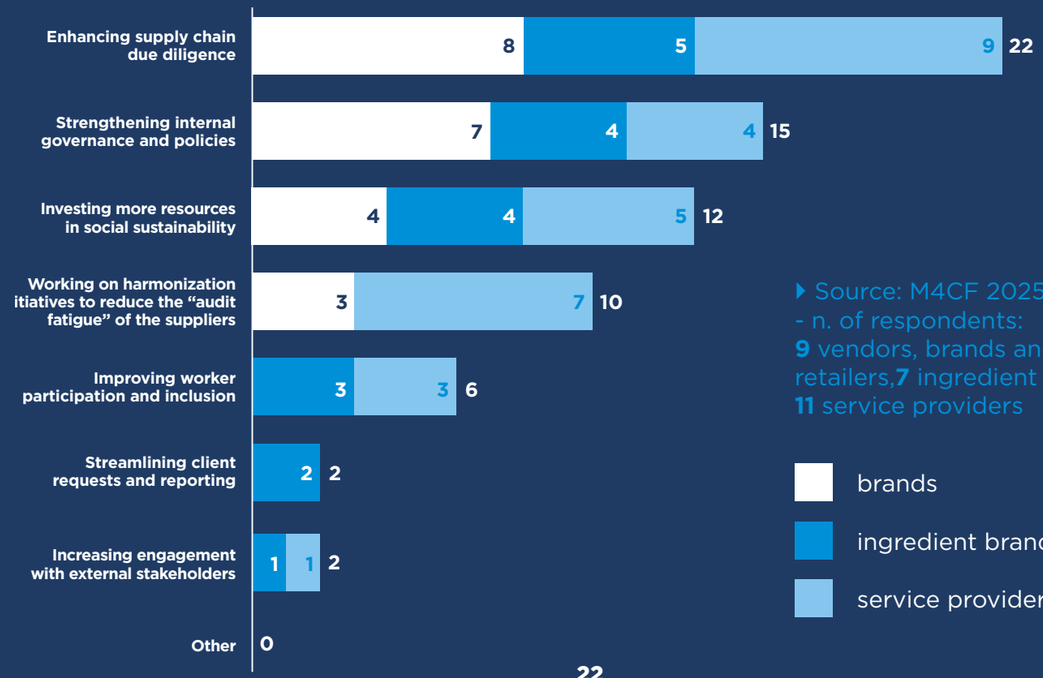
- harmonization
- data reliability
- due diligence

Key enabling technologies:

- recycling & traceability platforms
- Digital Product Passports
- AI for forecasting and compliance

FIGURE: DUE DILIGENCE PRIORITY AREAS

Which of the following areas will be a priority for your organization over the next 12 months in relation to social sustainability?



▸ Source: M4CF 2025 survey - n. of respondents: **9** vendors, brands and retailers,**7** ingredient brands, **11** service providers

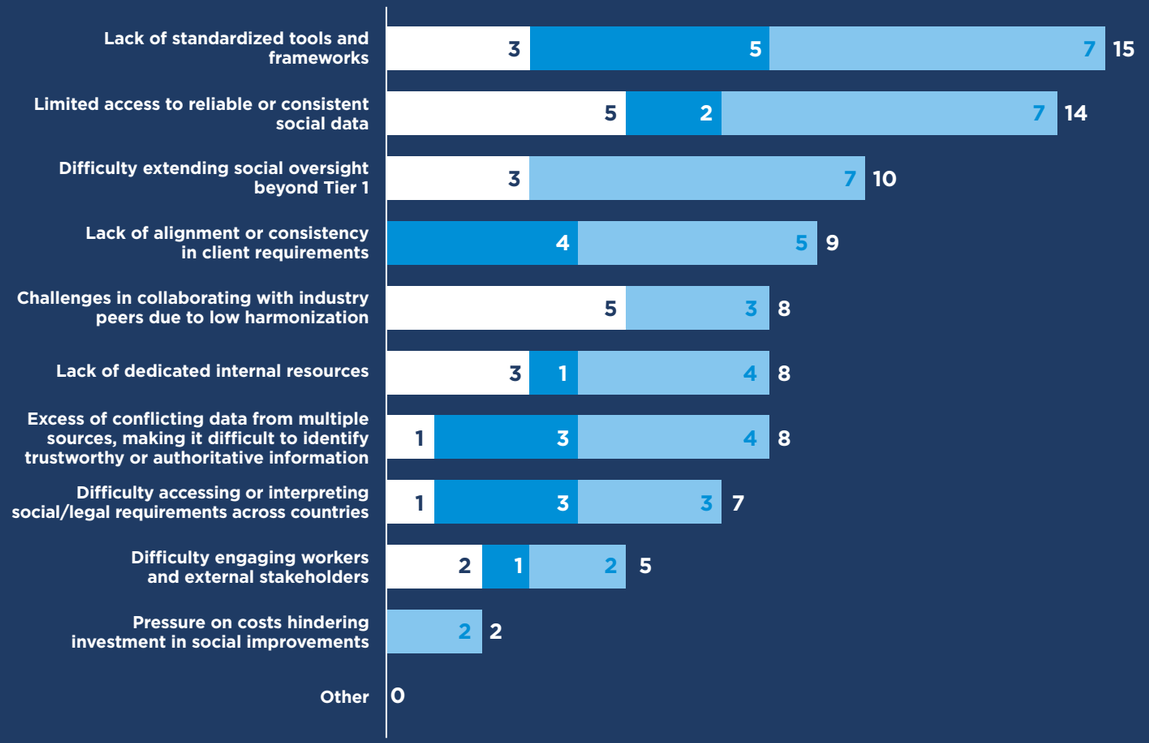
brands

ingredient brands

service providers

FIGURE: KEY CHALLENGES IN MANAGING SOCIAL SUSTAINABILITY

What are the main challenges your organization faces today in managing social sustainability across the value chain? (one or more than one answer)



▸ Source: M4CF 2025 survey - n. of respondents: **9** vendors, brands and retailers, **7** ingredient brands, **11** service providers

brands

ingredient brands

service providers

The role of technologies

DPP and AI are confirmed priority technologies with very high expected growth rate.

With regards to AI, companies at the frontier of innovation are moving from isolated applications to interconnected AI ecosystems that link design, production, logistics, and post-sale processes in a continuous feedback loop.

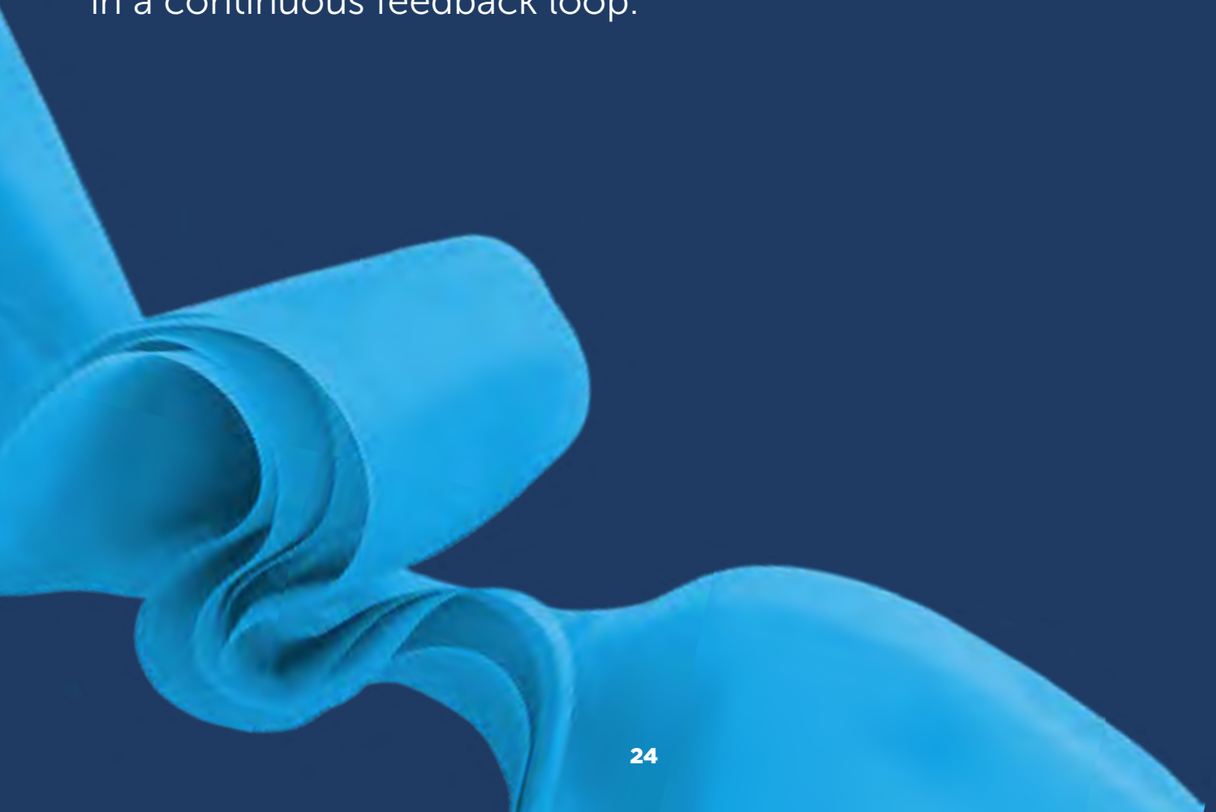


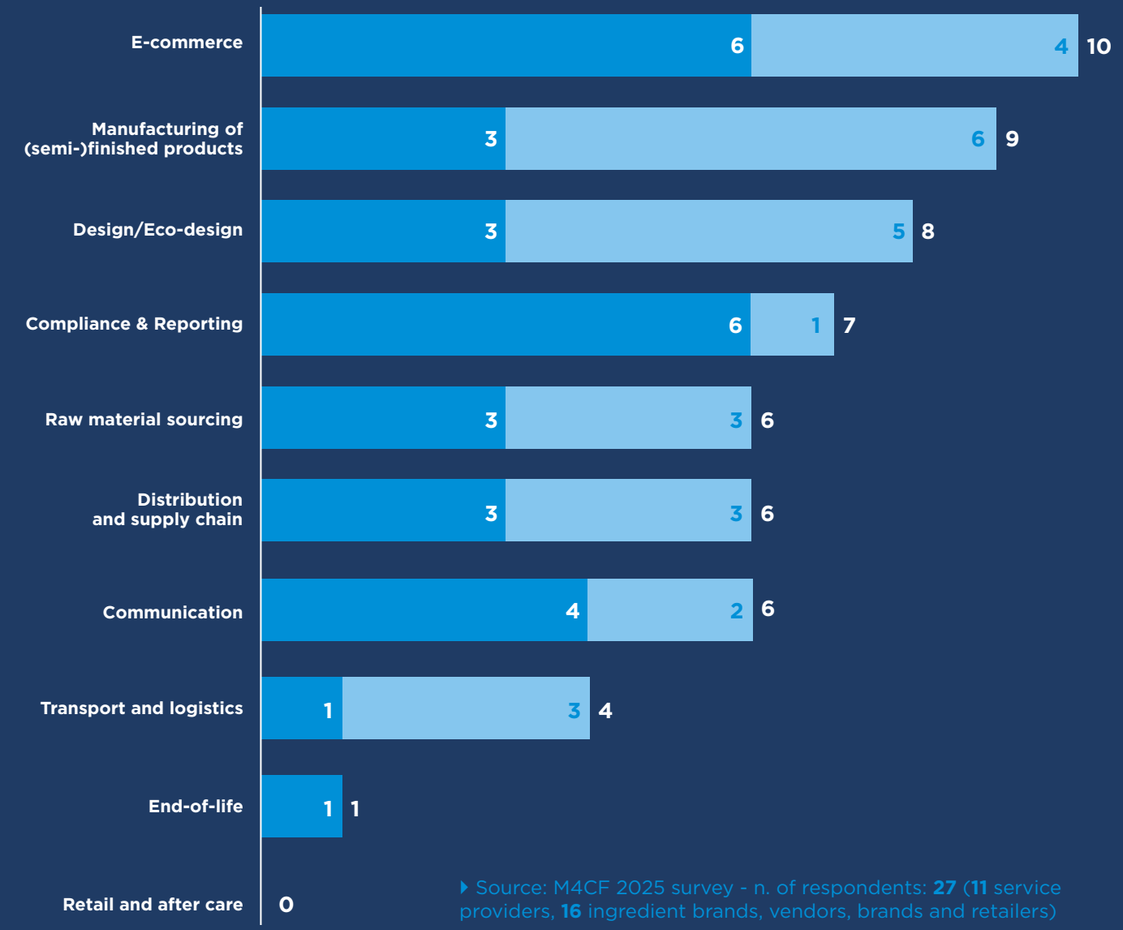
TABLE: RELEVANCE SCORES OF KEY TECHNOLOGIES IN CIRCULAR FASHION

	INGREDIENT BRANDS, VENDORS, BRANDS AND RETAILERS			SERVICE PROVIDERS			RELEVANCE SCORE
	PAST 3 YEARS	NEXT 3 YEARS	EXPECTED GROWTH	PAST 3 YEARS	NEXT 3 YEARS	EXPECTED GROWTH	
RECYCLING TECHNOLOGIES	3.69	4.31	●●	3.36	4.45	●●●	**7.92**
TRACEABILITY ONLINE PLATFORMS	3.06	3.63	●●	3.91	4.73	●●	**7.48**
DATA COLLECTION AND ANALYSIS TOOLS	3.19	3.69	●●	3.91	4.27	●	**7.41**
DIGITAL PRODUCT PASSPORTS	3.00	4.06	●●●●	3.00	4.45	●●●●	**7.22**
COMPLIANCE ONLINE PLATFORMS	2.81	3.69	●●●	3.55	4.36	●●	**7.07**
LCA SOFTWARES	3.19	3.88	●●	3.00	4.00	●●●	**7.04**
ARTIFICIAL INTELLIGENCE	2.67	3.81	●●●●	3.27	3.91	●●	**6.77**
CIRCULARITY ONLINE PLATFORMS (including IT platforms for waste management)	2.69	3.38	●●●	2.81	4.27	●●●●●	**6.48**
RFID TECHNOLOGIES	2.60	3.00	●●	3.45	4.00	●●	**6.35**
ADMINISTRATIVE SOFTWARES	2.63	3.06	●●	2.64	3.00	●	**5.67**
AUTOMATIC SORTING TECHNOLOGIES	2.44	3.44	●●●●	2.09	3.00	●●●●	**5.56**
CHEMICALS EXTRACTION TECHNOLOGIES	2.38	2.88	●●	1.45	2.91	●●●●●●●●●●	**4.89**
BLOCKCHAIN	2.00	2.81	●●●●	2.18	2.73	●●●	**4.85**
AUGMENTED REALITY	1.93	2.31	●●	1.82	2.27	●●	**4.18**
3D PRINTING	1.75	2.31	●●●	1.36	1.91	●●●●	**3.74**
3D BODY SCANNING	1.53	1.81	●●	1.27	1.82	●●●●	**3.24**
LIVE PRINTING AND KNITTING	1.31	1.88	●●●●	1.55	1.91	●●	**3.30**

▸ Source: M4CF 2025 survey - n. of respondents: **27** (**11** service providers, **16** ingredient brands, vendors, brands and retailers)

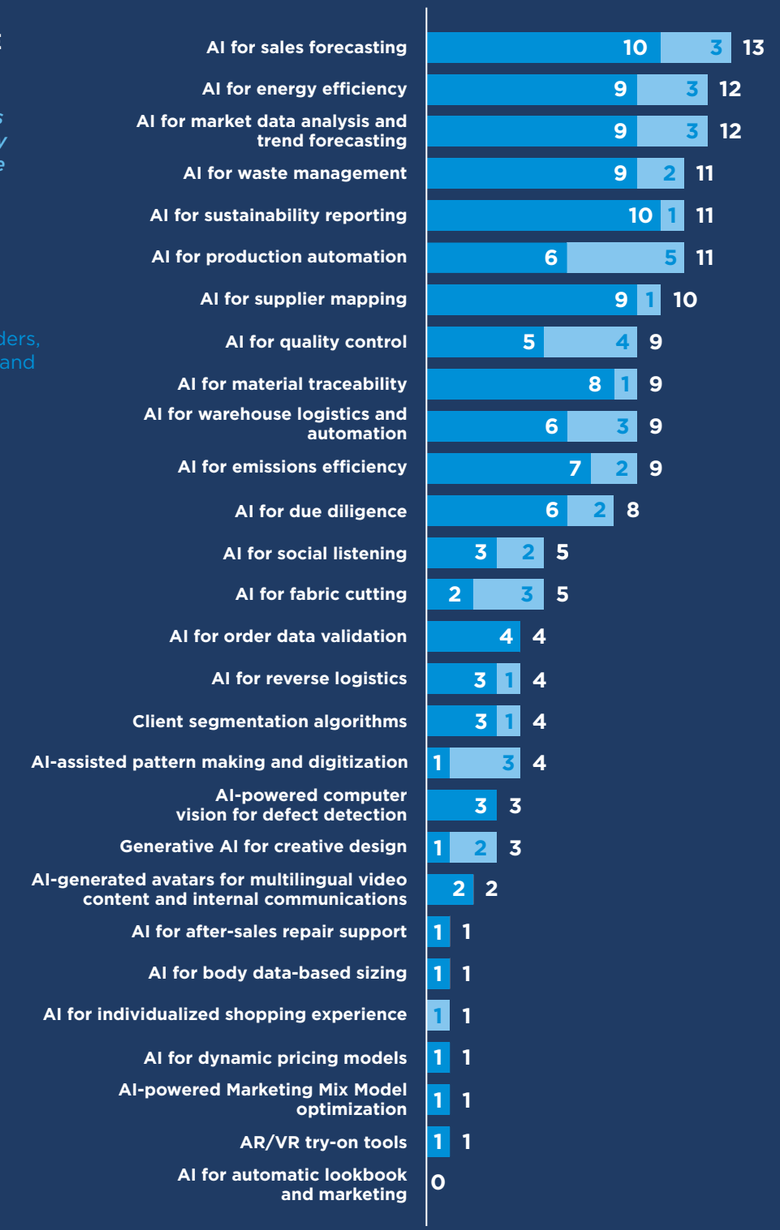
The role of technologies: rethinking circular fashion with AI

FIGURE: FASHION ACTIVITIES OF AI IMPLEMENTATION
In which of the following activities is AI implemented in the organization? (one or more than one answer).



▸ Source: M4CF 2025 survey - n. of respondents: **27** (**11** service providers, **16** ingredient brands, vendors, brands and retailers)

FIGURE: MOST RELEVANT AI USE CASES FOR SUSTAINABILITY AND CIRCULARITY IN FASHION
Which of the following AI applications are the most relevant for sustainability and circularity? (one or more than one answer).



▸ Source: M4CF 2025 survey - n. of respondents: **27** (**11** service providers, **16** ingredient brands, vendors, brands and retailers)

AI is and will increasingly play a crucial role in tracing and managing complex supply chains by minimizing waste all along the value chain.

Looking ahead, AI is expected to become the stitching function of circular fashion systems, connecting data, processes, and stakeholders throughout the value chain.

While many companies are still engaged in isolated proofs of concept, industry leaders are developing comprehensive AI roadmaps tied to sustainability performance indicators.

5 Transform to perform
LEVERAGE CIRCULARITY FOR FASHION'S FUTURE

Fashion in 2026: key trends

- Geopolitical instability and protectionism
- Strong regulatory pressure on circularity
- AI transforming design, supply chain, and retail
- Consumers demand durability, transparency, and value

Call for a collaborative pathway to transformation

Circular success and competitiveness require coordination among suppliers, manufacturers, recyclers, regulators, and consumers. Without shared measurement frameworks and transparency, efforts risk being fragmented, incomplete, or even greenwashing. To avoid fragmentation and unfair competitiveness, coordination among brands, suppliers, trade associations, and policymakers is needed to build harmonized standards and shared pathways.

Transforming through collaboration

On 13 October 2025, SDA Bocconi's M4CF and BIP co-organized a strategic workshop at BIP's Milan offices, gathering over 20 partner companies and key stakeholders, including representatives from various members of the value chain (brands, ingredient brands, component manufacturers, small craftsmanship enterprises and technological service providers. Among the main takeaways:

1 **The need to invest in interoperable digital infrastructures** (such as the Digital Product Passport) **and shared training platforms** to accelerate the adoption of sustainable & circular practices.

2 **The importance of collaborative financing and risk-sharing mechanisms** to support innovation and inclusion, especially for smaller players.

3 **The centrality of transparent communication and credible labeling** to build trust with consumers and institutions.

4 **The value of collective learning and the capitalization of experience** to spread best practices and reduce inefficiencies across the value chain.

Fashion industry competitiveness requires ecosystem coordination.

M4CF SDA Bocconi - BIP strategic workshop 2025

Monitor for Circular Fashion: year 5

WHO WE ARE

1

1.1 Monitor for Circular Fashion 2025/2026

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 (see Figure 1.2).

www.sdabocconi.it/circularfashion

SDA Bocconi SCHOOL OF MANAGEMENT

SUSTAINABILITY LAB
MONITOR FOR CIRCULAR FASHION

FIGURE 1.1: MAIN ACTIVITIES OF THE MONITOR FOR CIRCULAR FASHION 2025/2026

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 survey SDA Bocconi co-creation and strategic 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* (Third edition)**	**#REFASHIONNOW INITIATIVE AND CIRCULAR FASHION TALK**
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 13 circular fashion startups and SMEs to create a network among sustainability innovators and provide opportunities to multiple stakeholders of the fashion industry	Additional activities raising public awareness and educating SMEs and students on the positive impacts of sustainable and circular production and consumption: • Ideathon 2025 part of MUSA Spoke 5**; • "Circular Fashion Talks" Podcast (Second edition) by Monitor for Circular Fashion and Solo Moda Sostenibile.

*See more in the dedicated section Annex I.

**MUSA - Multilayered Urban Sustainability Action is the Innovation Ecosystem funded by theMinistry of University and Research as part of the National Recovery and Resilience Plan. The project sees the collaboration between the University of Milan-Bicocca, the proposing body, the Politecnico di Milano, Bocconi University, the Università Statale of Milan and numerous public and private partners. Founded in Milan in response to the challenges facing metropolitan areas in the transition towards the three dimensions of sustainability – environmental, economic and social – MUSA aims to inaugurate a new model of public-private collaboration that can be replicated at national and international level.Among the new member universities of MUSA Scarl, Università Carlo Cattaneo – LIUC and the Università Cattolica del Sacro Cuore are not direct beneficiaries of the project.

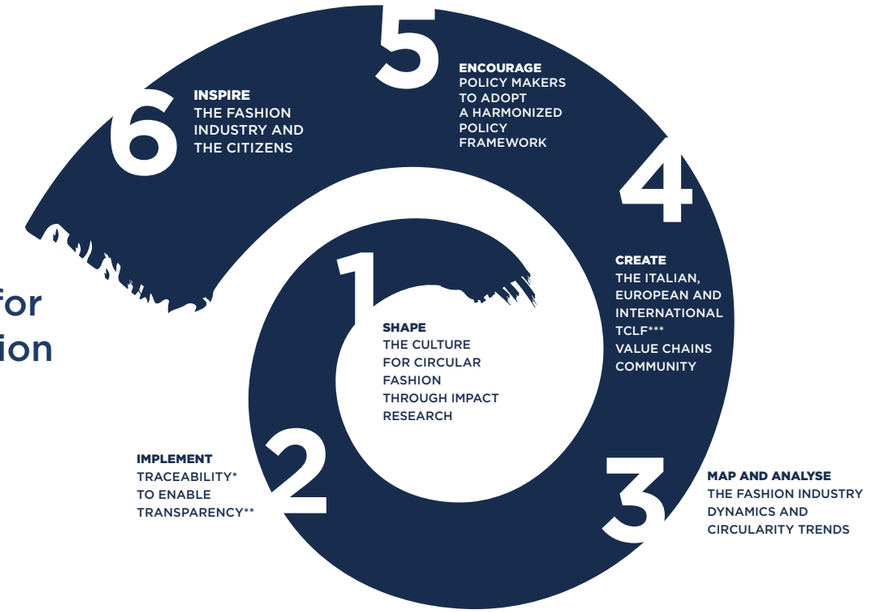
Who we are

SDA Bocconi School of Management

SDA Bocconi School of Management is the international school leading the transformation of individuals to improve the future of people, organizations, and society. Alongside its urban campus in Milan, renowned as the most sustainable in the world, the school also has a location in Rome and a pan-Asian hub in Mumbai. SDA Bocconi's programs are built on rigorous and original research activities, offering MBAs, Specialized Master, and Executive Master programs, as well as open and custom executive education. According to the Bloomberg Businessweek ranking, SDA Bocconi is the first business school in Europe. The most recent Financial Times rankings place it third in the world for custom executive education, fourth globally for the Full-Time MBA, and sixth 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.

FIGURE 1.2: MONITOR FOR CIRCULAR FASHION GOALS

The Monitor for Circular Fashion intends to...



* **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").

*** **TCLF:** (textiles, clothing, leather and footwear).

Partner companies

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 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 is one of Fashion & Luxury's most widely adopted Connected Products 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 supports Fashion and Luxury companies in expanding and strengthening their presence in both local and global markets. With over 30 years of experience, its expertise and innovative approach have earned it a prestigious portfolio of iconic international clients. As a market leader, Deda Stealth is committed to driving positive impact for people and the planet by delivering technology solutions that promote sustainable business models and circular fashion. Deda Stealth is part of Deda Group, a key player in the “Made in Italy” Information Technology sector.

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.

FERRAGAMO

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.

GIORGIO ARMANI

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.

Gi. Tessil Foderami

Since 1950, **Gi.Tessil Foderami Srl** has been producing high-quality linings that combine traditional craftsmanship with continuous innovation. Over the decades, the company has built its identity around strong values: the excellence of Made in Italy, a commitment to social and environmental responsibility, relentless innovation, and the flexibility to meet evolving customer needs. With 49 looms and an annual production of over 4 million meters of fabric, Gi.Tessil ensures rigorous quality control at every stage, guaranteeing reliability and consistency.

Today, exports account for around 40% of turnover, with Europe as the core market. Looking ahead, Gi.Tessil is committed to shaping a more sustainable textile industry. As part of the Monitor for Circular Fashion, the company is exploring ecodesign, digital product passports, and innovative solutions for end-of-life lining recycling. Its strategy is firmly focused on circularity and traceability, combining industrial efficiency with environmental responsibility.

HMODA

HModa is a hub of Made in Italy manufacturing excellence 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, internationalization and generational turnover processes.

The project involves the best fashion production realities acquisition and their enhancement through a management and development 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 create high fashion garments in different product categories such as jersey, leathers, softs, outerwear, leather goods, shoes, printing, embellishment, and textiles.

The "HPlanet" sustainability department was created internally across the three ESG areas linked to business pillars "Sustainability, Savoir Faire, Training, Innovation" in order to support the business growth and to add value to human resources, social and environmental ecosystem and supply chain.

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, 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 2024, Kering had 47,000 employees and revenue of €17.2 billion.

At the forefront of innovation since its founding in 1973, **Lectra** provides industrial intelligence technology solutions—combining software in SaaS mode, cutting equipment, data, and associated services—to players in the fashion, automotive and furniture industries. With boldness and commitment, Lectra accelerates the transformation and success of its customers in a world in perpetual motion thanks to the key technologies of Industry 4.0: AI, big data, cloud and the internet of things. The Group is present in more than one hundred countries. It operates three production sites for its cutting equipment, located in France, China and the United States. Lectra's 3,000 employees are driven by three core values: being open-minded thinkers, trusted partners and passionate innovators. They all share the same concern for social responsibility, which is one of the pillars of Lectra's strategy to ensure its sustainable growth and that of its customers.
Lectra reported revenues of €527 million in 2024, including €77 million coming from its SaaS offerings. The company is listed on Euronext, and is included in the CAC All Shares, CAC Technology, EN Tech Leaders and ENT PEA-PME 150 indices. 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.

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.

Retraced provides fashion and textile companies with the tools to turn supply chain transparency into a practical advantage. We help brands navigate complex global supply chains, meet compliance demands, and strengthen relationships with suppliers, all in one place. Our AI-first platform serves as collaborative infrastructure for sourcing, vendor management, and product compliance. By combining multi-tier traceability, due diligence, and real-time supplier data, Retraced creates a single point of truth that different teams can trust, from sustainability to sourcing and procurement.
Over 150 brands, including Skims, Desigual, Calzedonia, Samsøe Samsøe, Kiton and many others, work with Retraced to streamline vendor management, cut down on spreadsheets and redundant systems, and collaborate more effectively across all tiers of their supply chains. Today, our network connects more than 25,000 suppliers worldwide.

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 cornerstone of the company's pillars is embodied in the word RESPECT. Respect for animals, for the planet and for people. Save The Duck puts its pillars into practice through initiatives, research and development plans, and innovation projects.

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.

Ympact is the collaborative platform that enables fashion companies to trace products, processes, and stakeholders across the entire value chain, ensuring transparent and reliable impact monitoring and verification. By integrating with client companies' systems, Ympact collects and organizes value chain data and information into four key areas, mirroring those of our journey. With over 500 million digital raw material identities created, more than 1 billion materials tracked, and over 80,000 companies mapped, Ympact lays the foundation for a structured approach to Supply Chain Due Diligence and Digital Product Passports. Ympact is also the only technology solution enabled for the large-scale implementation of the 4sustainability framework.

KPIs committee

BIP is an international consulting company born in 2003 in Italy, now based in 13 countries and more than 6000 employees globally. BIP services cover wide range of industries (incl. Tech & Telco, Retail & Consumer Goods, Energy, Banking & Payment Systems etc.), 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 and traceability 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 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

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M4CF 2024/2025 multistakeholder event SDA Bocconi

1.3 Circular Fashion Manifesto

BEST PRACTICES UPDATE

The Monitor for Circular Fashion through its commitment is answering the UNECE "Sustainability Pledge" (Figure 1.3) 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 1.3).

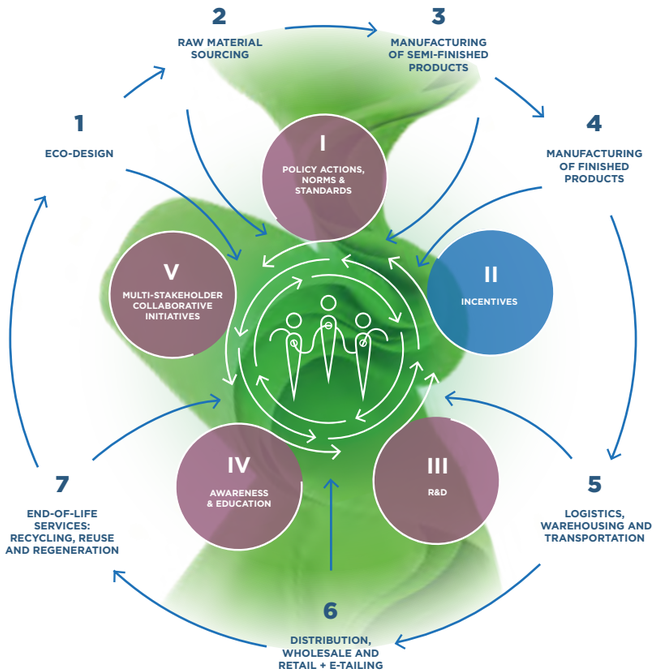
The Textiles Ecosystem Transition Pathway was published by the European Commission on 6 June 2023. The policy report includes 50 specific actions to support the twin transitions and the long-term resilience and competitiveness of the textiles ecosystem.

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 (Figure 1.4).

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 ECODESIGN PRINCIPLES INTO A REAL LIFE PRODUCT
5. ENHANCING CIRCULARITY THROUGH SERVICES

FIGURE 1.3: THE MONITOR FOR CIRCULAR FASHION MANIFESTO 2025



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 traceability and transparency;
- **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.

DISCOVER THE CIRCULAR FASHION MANIFESTO 2025

FIGURE 1.4: 8 ACTIONS IDENTIFIED IN THE TEXTILES ECOSYSTEM TRANSITION PATHWAY

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

Signatories

Signatory partners

Signatory KPIs committee

Research technical partners

Key facts

27
SIGNATORIES

97,581+ (1, 2)
EMPLOYEES (2024)

€ 28 BN (1, 2)
TOTAL REVENUES (2024)

1. UNIC data is excluded from the figures reported above. UNIC represents the Italian tanneries whose figures are 4.1 Billion EUR and 17,975 employees in 2024.
2. Certilogo and UL Solution data relate to 2023.

Methodology

FIELD ANALYSIS AND KPIs TESTING

2.1 Complete methodology of SDA Bocconi research – Monitor for Circular Fashion 2025/2026
2.2 Testing the tailored KPIs for fashion

2

2.1 Complete methodology of SDA Bocconi research – Monitor for Circular Fashion 2025/2026

The Monitor for Circular Fashion (M4CF) has been implementing an ESG approach to circularity (see table 2.1 for the complete methodology).
Within this framework, dedicated circularity projects were developed to test and implement concrete circular and sustainable initiatives, while validating the circular KPIs.

Leveraging on an extensive literature review (see selected bibliography) the 2025 research results come from a field analysis based on two surveys (one for pipeline players and one for service providers), co-creation workshops and working group activites with special focus on the following areas:

- ecodesign and waste management;
- social impact;
- role of technologies.

Co-organized by M4CF SDA Bocconi and BIP, the strategic workshop "Reinforce robustness and competitiveness through sustainability and circularity workshop" had the objectives of:

- sharing insights relavant to C-level executives and gathering their perspectives on possible supply chain transformation models;
- identifying the most attractive supply chain transformation models for M4CF companies;
- networking.

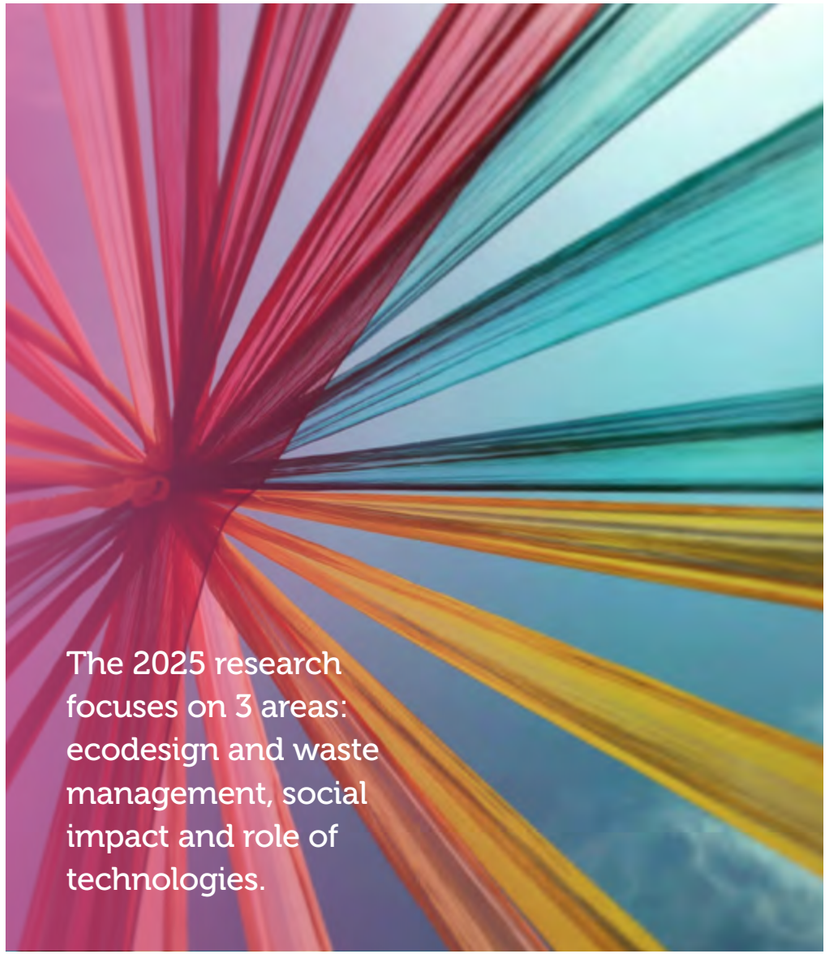


TABLE 2.1: COMPLETE METHODOLOGY OF SDA BOCCONI RESEARCH – MONITOR FOR CIRCULAR FASHION 2025/2026

MARCH 2025 ↓ DECEMBER 2025

HOW	WHO	WHAT
DESK RESEARCH	**SDA Bocconi team**	Analysis of 30+ updated sources focusing on circular fashion.
FIELD ANALYSIS	**SDA Bocconi team & Partners**	Testing the industry-specific KPIs through circularity projects and building the sustainability claims.
	SDA Bocconi team & Partners	Survey. Co-creation workshops with 3 working groups: ecodesign & waste management, social impact, role of technologies for the twin transition.
	SDA Bocconi and BIP team	Strategic workshop for C-Level executives.
SURVEY ANALYSIS AND VALIDATION	**SDA Bocconi team & Partners**	Plenary meetings with Partners for collective discussion on research results.

Key results from surveys and workshops are presented in Chapter 4.
Workshop key results can be found in Chapter 5.

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

2.2 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.

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 2022-2025 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, ecodesign 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 2.1.).

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 2.2). 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 the Circular Fashion Manifesto 2025.

FIGURE 2.1: CIRCULAR FASHION ACTIVITIES

Source: Monitor for Circular Fashion Report 2022

FIGURE 2.2: KPIs MAIN CHARACTERISTICS

Source: Monitor for Circular Fashion Report 2022

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 legislative roadmap for strategic advantage

STAKEHOLDERS' VOICES

3

Circular fashion legislative roadmap

The European textile sector is entering a new legal era. Circularity is no longer a voluntary business choice: it is a regulatory framework reshaping design, production, and market access.

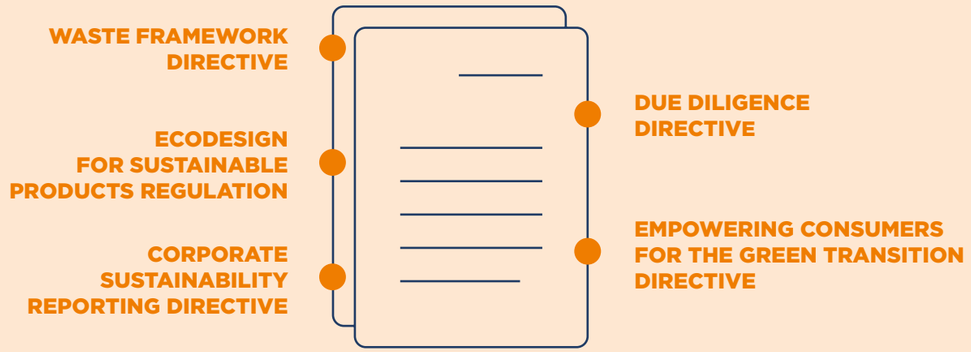
The European Union has introduced a coherent package of laws from the revision of the Waste Framework Directive[3] to the Ecodesign for Sustainable Products Regulation[4], the Corporate Sustainability Reporting[5] and Due Diligence Directive[6], the Empowering Consumers for the Green Transition Directive[7] (Figure 3.1).

For fashion companies already investing in circularity, this package of laws represents both a compliance challenge and a competitive opportunity. It defines the legal architecture of circular transition setting common rules for durability, recyclability, producer responsibility, transparency, traceability and truthful communication.

This regulatory evolution is now being complemented by a broader industrial policy shift. In February 2025, the European Commission presented the Clean Industrial Deal[8], positioning competitiveness and decarbonization as central pillars of Europe's industrial strategy.

The initiative underscores the strategic role of energy-intensive sectors and clean technologies, while reinforcing the importance of circular economy principles to reduce dependence on external raw materials and ensure the sustainable use of Europe's limited resources. It also anticipates a Chemicals Industry Package recognizing the foundational role of chemical inputs across manufacturing, including textiles and fashion.

FIGURE 3.1: KEY EU SUSTAINABILITY AND CIRCULARITY LEGISLATION



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4-https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32024R1781&qid=1719580391746
5-https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022L2464
6-https://eur-lex.europa.eu/eli/dir/2024/1760/oj
7-https://eur-lex.europa.eu/eli/dir/2024/825/oj/eng
8-https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52025DC0085

The Clean Industrial Deal introduces a set of measures to support this transition. These include accelerated permitting for low-carbon industrial processes and the introduction of carbon-intensity labelling for key materials, designed to reward lower-impact production. A revision of public procurement rules aims to increase demand for circular and low-impact products, while the forthcoming Circular Economy Act will establish a Single Market for secondary raw materials and reusable resources—an essential step for scaling textile-to-textile recycling.

A new State Aid Framework will facilitate support for industrial decarbonization and clean-technology manufacturing capacity. In addition, a delegated act on low-carbon hydrogen and the planned extension of the Carbon Border Adjustment Mechanism to additional sectors are intended to secure investment certainty and safeguard fair competition. Taken together, these policies signal a structural shift: circularity and decarbonization are becoming conditions for market participation and levers for long-term competitiveness.

THE QUESTION FOR COMPANIES IS NO LONGER WHETHER TO COMPLY, BUT HOW TO CONVERT REGULATORY ALIGNMENT INTO STRATEGIC ADVANTAGE.

THIS REQUIRES RETHINKING PRODUCT DESIGN, MATERIAL CHOICES, SUPPLY CHAIN PARTNERSHIPS, BUSINESS MODELS AND COMMUNICATION PRACTICES IN LINE WITH THE NEW INDUSTRIAL AND SUSTAINABILITY FRAMEWORK.

3.1 Why law matters in circular fashion

Regulators are no longer relying on voluntary standards or brand initiatives: they are legislating design, due diligence, waste, and claims. This shift means that circularity is no longer an option, it's a license to operate.

The key difference between past voluntary programs and the new legal framework is enforceability:

- It defines who is responsible.
- It specifies how circularity must be achieved.
- It imposes sanctions for non-compliance.

For brands, the question is not why investing on circularity, but how to align circular innovation with binding legal requirements.

3.2 The new legal framework shaping circular textiles

3.2.1 Waste Framework Directive: mandatory Extended Producer Responsibility for textiles (EPR)

In September 2025, the European Parliament approved a far-reaching revision of the Waste Framework Directive (Directive 2008/98/EC), introducing for the first time at EU level mandatory Extended Producer Responsibility (EPR) for textiles and binding food waste reduction targets.

The reform is part of the EU's broader circular economy agenda, shifting financial and operational responsibility for waste management from taxpayers to producers in line with the polluter-pays principle. Under the revised Directive, all companies placing textiles on the EU market — including non-EU producers and exporters — will be required to cover the costs of collecting, sorting, reusing, and recycling post-consumer textiles through EPR schemes established in every Member State.

The obligation applies to clothing, footwear, accessories, and home with the possibility for national extensions to other categories.
Producers will typically comply by joining or financing Producer Responsibility Organizations (PROs), collective systems that manage waste collection and recycling on behalf of participating companies.

Importantly, financial contributions will be eco-modulated: producers will pay more for items that are harder to recycle or have a larger environmental footprint, and less for more sustainable, durable designs.

This mechanism directly incentivizes ecodesign and material innovation, encouraging companies to prioritize durability, repairability, and recyclability from the earliest design stage.

Several Member States, including France, the Netherlands, Italy, Spain, and Sweden, already operate or are developing national textile EPR systems.
These early schemes provide valuable implementation models and will soon be harmonized under the revised Directive, creating a uniform EU framework and reducing market fragmentation.

What it means for business:

The revised Waste Framework Directive makes waste management a core business responsibility rather than an obligation. Extended Producer Responsibility (EPR) turns end-of-life costs into a measurable part of product economics but it also gives forward-thinking brands control over material flows and recycling infrastructure.
Companies that design products for durability and recyclability will not only pay lower EPR fees but also gain access to secondary raw materials, improving resource security and cost efficiency. In practice, compliance becomes a design and supply-chain strategy: the earlier sustainability is integrated, the lighter the regulatory and financial burden. In short: circular design cuts both waste and cost.

3.2.2 The Ecodesign for Sustainable Products Regulation (ESPR): embedding circularity into product law

Adopted in July 2024, the Ecodesign for Sustainable Products Regulation (Regulation (EU) 2024/1781) establishes the new legal foundation for sustainable product policy in the EU. It replaces the previous Ecodesign Directive and expands its scope far beyond energy-related goods to cover almost all physical products placed on the EU market, including textiles and apparel.

The ESPR introduces product-specific sustainability requirements aimed at improving durability, repairability, recyclability, and resource efficiency, as well as new transparency and traceability tools such as the Digital Product Passport (DPP). Textile-specific delegated acts are expected by 2026–2027, defining detailed parameters for fiber composition, design, and recyclability.
A key provision for the fashion sector is the ban on the destruction of unsold consumer products, including clothing, footwear, and accessories. The ban on destruction of unsold goods is planned for 2027. Companies are then expected to comply in 18 months (exact timing to be confirmed in the Delegated Act).

Complementing the ban is a new disclosure obligation: large companies must publicly report on their website the number and weight of unsold products discarded annually, the reasons for doing so, and the proportion reused, recycled, or recovered. These measures are designed to discourage overproduction and align business models with circular economy goals.

The regulation also requires all economic operators—manufacturers, importers, distributors, and online sellers—to take preventive measures against waste generation.
This includes better demand forecasting, reuse, remanufacturing, and recycling of unsold items.

By making destruction a regulated act, the ESPR embeds circularity into the very economics of fashion retail. Compliance will depend not only on meeting design and material standards, but also on adopting data-driven inventory and transparency systems that reduce unsold stock at the source.

What it means for business:

The ESPR transforms design and stock management into legal obligations. Brands must anticipate regulatory timelines, adapt supply chains, and integrate DPP data and disclosure systems. Those who design for durability, transparency, and traceable resale will turn compliance into efficiency and brand value.

3.2.3 Corporate Sustainability Reporting Directive (CSRD) and Due Diligence Directive (CSDDD): streamlining compliance and accountability

On 13 October 2025, the European Parliament's Legal Affairs Committee (JURI) approved major revisions to the Corporate Sustainability Reporting Directive (CSRD) and the Corporate Sustainability Due Diligence Directive (CSDDD) under the Omnibus I simplification package[9]. The reform aims to ease regulatory pressure on businesses and recalibrate the balance between sustainability ambition and competitiveness. On 16 December 2025, the European Parliament approved a provisional agreement between MEPs and EU governments, significantly clarifying the final direction of the reform and narrowing the scope of mandatory sustainability obligations. Under the revised framework CSRD sustainability reporting will apply only to EU companies with more than 1,000 employees and €450 million in net annual turnover. The rules will also apply to non-EU companies with more than €450 million in net turnover in the EU, as well as their EU subsidiaries and branches generating over €200 million in EU turnover.

Reporting requirements will be significantly simplified, and sector-specific reporting standards will become voluntary. To prevent compliance "cascading," companies with fewer than 1,000 employees will not be required to provide information to larger business partners beyond what is included in voluntary reporting standards. In particular, companies under 1,000 employees may refuse to provide sustainability information beyond that set out in the Voluntary Sustainability Reporting Standard for SMEs (VSME). The European Commission will establish a digital portal providing templates and guidance on EU and national reporting requirements.
Due diligence obligations under the CSDDD will apply only to very large companies, namely EU companies with over 5,000 employees and €1.5 billion in turnover.
For non-EU companies, the same turnover thresholds apply to EU operations.
Companies in scope will be required to adopt a risk-based approach, carrying out scoping exercises to identify the most significant and likely adverse impacts in their chain of activities. Requests for information from business partners with fewer than 5,000 employees must be targeted and proportionate and should be made only where such information cannot reasonably be obtained by other means. Companies subject to CSDDD will be required to rely primarily on reasonably available information rather than systematically requesting information from smaller value-chain partners. Mandatory transition plans ensuring alignment with climate neutrality objectives will no longer be required.

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What it means for business:

The Omnibus I reform marks a decisive shift from expansive sustainability regulation toward a more selective, risk-based framework. Fewer companies will face mandatory reporting or due diligence duties, but the largest groups will remain under close scrutiny. For most brands and suppliers, due diligence pressure will continue through market expectations: investors, retailers, and customers are unlikely to lower their transparency demands simply because the law narrows. In practice, voluntary reporting and credible supply-chain data will remain essential for maintaining access to capital, contracts, and consumer trust.

3.2.4 Empowering Consumers for the Green Transition Directive and Green Claims Directive: ensuring transparency and trust

On 27 March 2024, the Directive on Empowering Consumers for the Green Transition ("Green Transition Directive") was adopted, amending the Unfair Commercial Practices Directive (UCPD) and the Consumer Rights Directive (CRD).
These changes embed environmental, social, and circularity considerations directly into EU consumer law, aiming to ensure that consumers receive accurate, verifiable, and comparable sustainability information while protecting them from misleading green marketing. Under the revised UCPD, vague or generic environmental claims — such as "green", "eco-friendly", or "planet-safe" — are prohibited unless supported by robust, verifiable evidence. Claims like "carbon-neutral" or "net zero" based solely on offsetting projects are also banned. Sustainability labels must be backed by accredited certification schemes or public authorities, and traders must disclose the methodology behind any comparative environmental claims.

The Directive also strengthens protection against early obsolescence by requiring businesses to provide clear information on product durability, repairability, and availability of spare parts. Producers offering commercial guarantees of durability must use new harmonized EU labels and notices, helping consumers to easily compare product lifespans. Member States must transpose the Directive by March 2026, with application from September 2026.
In parallel, the Commission had proposed a Green Claims Directive (2023) to complement these rules by setting detailed requirements for the substantiation and third-party verification of voluntary environmental claims. The proposal introduced "ex-ante verification" — requiring companies to obtain independent certification before using any environmental claim in marketing or labelling.
However, in June 2025, the Commission announced its intention to withdraw the proposal, citing administrative burdens for smaller enterprises.
This decision, while politically controversial, does not affect the Green Transition Directive, which remains binding. Together, these instruments modernise the EU's approach to green marketing and consumer protection, clarifying what companies can and cannot say about sustainability. In Italy, the national implementation has taken on particular strategic relevance.

In October 2025, the Italian Council of Ministers approved the legislative decree transposing Directive (EU) 2024/825, explicitly linking the fight against misleading green claims to the protection of the "authentically sustainable" Made in Italy. The decree updates the Consumer Code by expanding the list of prohibited commercial practices, including unsubstantiated claims of products being "neutral" or "zero impact."
It also introduces clear definitions of environmental claims, sustainability labels, durability, and repairability, with the aim of ensuring transparent communication and enabling consumers to distinguish genuinely sustainable products.

The decree is especially significant for sectors such as fashion and textiles, where environmental communication is widely used and where misleading claims can distort competition to the detriment of firms investing in credible circular and low-impact practices.
Enforcement and penalties remain at the national level. In Italy, oversight will be carried out by the Autorità Garante della Concorrenza e del Mercato (AGCM), which remains empowered to apply sanctions under the unfair commercial practices regime.

What it means for business:

The Green Transition Directive establishes a legal benchmark for sustainability communication. Brands must substantiate every environmental claim, ensure that product labels and certifications are credible, and provide transparent information about durability and repairability. Marketing teams will need legal verification before using green language,while product and compliance teams must align durability data and claims. In essence, green communication is now a legal matter: credibility, not creativity, defines compliance.

9-https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52025PC0081

3.3 Legislative roadmap for strategic advantage

The new legislative framework is not only a compliance challenge it also creates a clear roadmap for strategic advantage.

By aligning design, sourcing, logistics, and communication with legal requirements, companies can turn regulation into an engine of innovation and competitiveness.
Circularity obligations are redefining efficiency: EPR links cost to design performance, ESPR connects transparency to market access, and reporting rules tie sustainability to capital.
In this sense, law is not a barrier but a strategic language that rewards companies able to anticipate it. Those who integrate legal foresight into product design, data systems, and marketing governance will lead the transition toward a credible, resilient, and profitable circular economy. For fashion businesses already committed to circularity, the message is clear: regulation is catching up and those who are prepared will lead. The emerging EU legal framework provides the rules of the game for circular transformation.
Understanding these rules allows businesses to design, communicate, and grow confidently within a compliant, credible, and competitive system.
Circularity is no longer just good practice: it is the legal foundation of the next fashion economy.

Stakeholders' voices: policymaking for fashion circularity

The M4CF partners have worked on a series of recommendations on key issues for the regulation of the fashion sector, establishing at the end of 2024 three working groups on ecodesign & waste management, social impact and the role of technologies to accelerate the sustainable and circular transition.
The definition of the fashion sector for the M4CF is understood in a broad sense as TCLF (Textile, Clothing, Leather and Footwear) and includes the variety of materials used in the various supply chains. In view of the arrival of the delegated act for the ecodesign regulation and the revision of the CSRD[10] and the CSDDD[11] with the Omnibus[12] package, the M4CF companies would like to share some key points of attention with Policy makers.
As a general premise, the M4CF reiterates the importance of adapting policies and regulations on sustainability and circularity in the TCLF sector, taking into account company size, promoting a balance between large and small players, and encouraging collaboration between upstream and downstream players. The recommendations presented here aim to remove regulatory barriers, incentivize best practices along the entire value chain, and support legislators in establishing realistic, feasible, and effectively implementable rules.
The M4CF also believes it is essential to strengthen controls on all products imported into the European market in order to combat social, environmental, and economic dumping. The lack of stringent requirements for non-EU goods undermines competitive equality, favoring less sustainable operators to the detriment of European companies that comply with increasingly advanced standards (see Focus 3.1 and 3.2).

10-https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022L2464
11-https://eur-lex.europa.eu/eli/dir/2024/1760/oj/eng
12-https://commission.europa.eu/publications/omnibus-i_en

M4CF SDA Bocconi and CNA Federmoda "Circular economy and the fashion sector: dialogue on key priorities" 2025 event at the European Parliament.

FOCUS 3.1

M4CF 2025 Multistakeholder event at the European Parliament in Brussels

On June 11–12, 2025, the M4CF organized a two-day mission in Brussels involving partner companies, representatives from European institutions, and stakeholders from the fashion industry. The initiative presented a key opportunity to discuss the future of European regulations regarding sustainability and circularity for the textile, Clothing, Leather, and Footwear (TCLF) sector.

On June 12, M4CF SDA Bocconi and CNA Federmoda, with support from CNA Brussels, hosted the event "Circular economy and the fashion sector: dialogue on key priorities" at the European Parliament. Among the key topics: the importance of tailoring regulations to company size, promoting a "smart mix" between large and small players, and the need to strengthen partnerships between upstream and downstream actors in the supply chain.
According to CNA Federmoda, compared to 2009, the fashion sector in 2024 recorded a loss of 33,677 businesses (-29.7%), half of which belonged to the artisan sector (-17,988 companies). This represents not just a loss of businesses but also of cultural and educational capital—resulting in the erosion of 'Made in Italy' as both a label and an economic and social value.
To avoid further losses, new supply chain relationships are needed as a lever for sustainability—ones in which SMEs are viewed not as weak links but as pillars of the Made in Italy model.

The meeting also highlighted the strategic role of the EU Textiles Ecosystem Platform, established by the European Commission, in fostering dialogue between businesses and institutions, as well as facilitating the exchange of knowledge and best practices, particularly in engaging and training SMEs across the supply chain.

FOCUS 3.2

M4CF Joint position paper 2025

TCLF WASTE MANAGEMENT RECOMMENDATIONS

The M4CF intends to provide Policy makers with some recommendations to promote a more effective circular economy, improve waste management and promote the transition towards more sustainable and responsible production and consumption models.

The aim is to support the European legislator in defining regulations that encourage the prevention, reuse, recycling and valorisation of materials along the entire supply chain, while ensuring that companies and consumers can actively contribute to the regulatory process. Only through close collaboration between industry, pipeline players and consumers will it be possible to propose concrete, applicable and consistent solutions with the operational challenges of the sector and accelerate the change towards a more circular system.

1 Reduce restrictions in the configuration of TCLF by-products

The M4CF suggests that some waste, currently classified as waste, can be recognized as by-products, thus increasing the number of companies interested in purchasing them and encouraging the creation of supply chains capable of absorbing and valorising them. The M4CF recommends paying attention to the valorisation of pre-consumer industrial processes soft waste.

2 Encourage the implementation of the waste hierarchy in the TCLF sector

Currently, by equating recycling with waste disposal, companies encounter difficulties in promoting recycling over less virtuous alternatives in the waste hierarchy, such as energy recovery (recovery) or disposal (disposal).
The M4CF suggests introducing regulatory measures and economic incentives that make recycling more advantageous and a priority over hierarchically lower options.

TCLF waste: classifiable as post-industrial, pre- and post-consumer, destined for recycling or disposal. Pre-consumer includes production scraps, rag ends, defective and unsold products; post-consumer includes clothing, fabrics, footwear, accessories and home textiles discarded by consumers.

TCLF waste: production leftovers, unsold and/or used goods, destined for reuse chains through sale, donation or free transfer.

The lack of regulatory recognition of the "End of Waste" status for textile materials represents a critical obstacle to recycling. It is proposed to introduce a unified definition of textile waste and guidelines to promote the recognition of recycled materials as "non-waste," reducing management costs and enabling new industrial supply chains.

ECODESIGN RECOMMENDATIONS FOR THE TCLF

The M4CF intends to provide Policy makers with recommendations to encourage the adoption of ecodesign practices that respond not only to aesthetic needs, but also to customized performance requirements and responsible management throughout the product life cycle.

The aim is to promote regulations that favor the design of durable, repairable and recyclable products, while at the same time valorizing the most virtuous actors in the supply chain and ensuring transparent communication towards the end-consumer. Particular attention is paid to the end-of-use and end-of-life phases of the product: it is essential to raise consumer awareness on the correct disposal, reuse and repairability, while companies must offer solutions and services to facilitate recovery, regeneration and recycling.

Only through close collaboration between industry, supply chain, consumers and policy makers will it be possible to accelerate the transition towards more sustainable and responsible consumption and production models.

1 Work on durability thresholds for product families and occasions of use

The M4CF aims to define specific durability thresholds for different product families, occasions of use and types of materials, differentiating where necessary between virgin and recycled materials.

The M4CF also aims to be a lab for experimenting and sharing data for these thresholds, for the product families and types of materials existing in the M4CF, supporting a technical comparison between stakeholders.

2 Identify indicators and thresholds related to durability, with a scale understandable for the consumer

The M4CF suggests identifying thresholds and indicators related to CO_2 emissions and other environmental impacts, related to durability, accompanied by clear and easily understandable evaluation scales for the final consumer.

An example is represented by information sheets in the food sector. Policy makers can play a strategic role in promoting public awareness, while the DPPs should represent a key tool for communicating this information.

3 Ensure adequate time for the transposition of the new REACH[13] restrictions for recycled TCLF materials

Considering the presence on the market of used garments that do not comply with the current limitations of the REACH Regulation, the M4CF recommends providing a longer implementation time for the new REACH restrictions applied to recycled TCLF materials compared to virgin ones, in order not to penalize innovation and the reuse of materials.

4 Define comparative Life Cycle Assessment (LCA) parameters between virgin and recycled products

The M4CF, to assess the feasibility of introducing mandatory percentages of recycled content in products, suggests defining comparative LCA parameters between virgin and recycled products.
These parameters should measure the environmental impact, as well as the economic impact for companies, giving importance to performance and durability criteria and taking into account availability in the supply chain. In some cases, in fact, the virgin products may have a lower economic and environmental impact than the recycled ones.

13-https://eur-lex.europa.eu/eli/reg/2006/1907/2025-04-22

5 Incentivize repairability and access to repair services

The M4CF suggests introducing incentives to promote a "turnkey" approach to repair, linking repairability to durability KPIs and encouraging the adoption of advanced standards for product care. It is essential to incentivize companies to offer repair services or to transparently indicate qualified third-party centers for product families.

Furthermore, it is essential to ensure that consumers have access to clear and detailed information to be able to independently repair products, when possible. This information should be communicated through multiple channels — not only the DPPs, but also the website, social media, labels and other information tools.

RECOMMENDATIONS ON DPP

M4CF recognises the Digital Product Passport (DPP) as a strategic tool to accelerate the transition toward a circular and transparent model in the fashion sector (TCLF).

Partner companies highlight two key priorities to ensure its effective and sustainable implementation.

1 Harmonize and standardize regulations and data protocols to ensure fairness, interoperability, security and effective implementation of the DPP across the EU

The M4CF recommends the DPP to be built on clear and consistent regulatory requirements that apply equally to all products sold in the EU, including imports. This is essential to ensure a level playing field and enable full supply chain traceability, as well as prevent and manage counterfeiting.
The recommendation is also to promote interoperable digital infrastructures and shared methodologies for data collection and sharing.

2 Promote transparency and harmonization with the new labeling regulation by introducing clear consumer impact scores in the DPP and rewarding sustainability

To guide consumer choices and increase demand for sustainable products, DPPs should provide simple, understandable environmental and social information. Since the DPP in the work of the European Commission is industry-facing and the Labelling Regulation will be consumers-facing, it is important to harmonize the two regulations. Companies with low-impact practices should be rewarded through harmonized metrics and verified data reliability, recognising and encouraging virtuous business models.

M4CF RECOMMENDATIONS ON SOCIAL IMPACT

The TCLF sector employs millions of low-skilled workers and serves as an entry point into the formal economy in many countries. Enterprises in this sector have the potential to drive growth, employment, and skill development through both their operations and sourcing activities. However, TCLF supply chains are highly complex and fragmented, with production stages distributed across multiple countries, short lead times, and transient buyer-supplier relationships. These factors reduce visibility and control, making it challenging for companies to fully meet their social and environmental responsibilities (OECD, 2018[14]).

The TCLF sector faces a range of sector-specific risks, including child labour, forced labour, discrimination, excessive working hours, occupational health and safety issues, restrictions on freedom of association and collective bargaining, and low wages (OECD, 2018[15]). Due to the nature of these supply chains, such risks typically emerge beyond Tier 1. Over time, several standards have been developed and adopted, such as the OECD Due Diligence Guidelines, Sedex, SLCP, and ZDHC, which have integrated well-established frameworks like SA8000. In the last decades, companies have invested significantly in implementing these standards, demonstrating a strong commitment to responsible practices.
In order to address sector-specific challenges, M4CF proposes to Policy makers the following recommendations with a focus on social impact:

1 Recognize existing standards and sector specificities

The sector's unique characteristics and the significant progress already made through existing standards (e.g., SA8000, OECD) should be acknowledged.
Policy makers should build upon these foundations by rationalizing and aligning existing standards, and by clarifying which obligations are already fulfilled by companies that have adopted them.

2 Clarify when Due Diligence scope obligation goes beyond Tier 1

It is essential to clarify that supply chain analysis must not stop at Tier 1, but should extend to all levels where potential risks may arise and need to be managed. This process should begin with a thorough mapping of suppliers and include an in-depth ESG risk assessment, which must be structurally integrated into contractual clauses.
While this is currently the case, online, quick-reference communication around recent regulatory developments (e.g., the CSRD and the Omnibus Simplification Package) could create confusion by suggesting that Tier 1 is now the definitive limit set for risk analysis.
In TCLF supply chains, the main ESG impacts occur beyond Tier 1 and limiting the requirement to this level risks incentivizing sham practices and penalizing the most virtuous companies that invest in thorough due diligence.
It is therefore recommended to:

- ensure that the risk analysis is proportionate but extended upstream when evidence or systemic risks exist beyond Tier 1;
- harmonize transparency obligations along the supply chain;
- reward companies that invest in traceability with rewarding tools and regulatory recognition.

3 Enable harmonization and mutual recognition of audits

Promote shared audit checklists, minimum requirements, and data standards to facilitate mutual recognition among brands, reducing the burden on suppliers for continuous improvement of the production system. It is essential to work in close coordination with the independent national authority endowed with supervisory powers to ensure the effectiveness of the audit system. Audits should be viewed, on both sides, as tools for continuous improvement, not merely for compliance.

4 Enable data interoperability

Ensure that data platforms can communicate with each other and harmonize data collection methods, streamlining information exchange and reducing reporting demands on suppliers.

5 Support stakeholder engagement and supplier training

It is important to involve the relevant actors (i.e. workers and their representatives, trade unions, non-governmental organizations, local communities, sector associations) for a constructive listening and dialogue and to encourage capacity building throughout the supply chain, for example through initiatives like the EU Pact for Skills and other opportunities promoted through the EU textiles ecosystem platform[16].

Medium-Large companies should actively engage and support smaller players, upstream and downstream, transferring knowledge to assist them in due diligence processes and aligning them with common objectives.

14-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
15-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

16-https://transition-pathways.europa.eu/textiles-ecosystem

Looking beyond compliance

ECODESIGN & SOCIAL IMPACT FOR A SHIFT TO COMPETITIVENESS

4

4.1 SDA Bocconi research sample

During 2025 the partners of the M4CF have been asked to answer an extensive survey focused on the following topics:

- **circularity key business models, ecodesign & competitiveness;**
- **social impact;**
- **role of technologies;**
- **upskilling & reskilling.**

The first three will be presented in this chapter, the last one will be presented in chapter 5.
The M4CF respondents are 27, both SMEs and large companies (table 4.1) and cover both B2B and B2C business models (table 4.2).
Service providers represent on average the responses for their over 24.000 fashion clients and accounts.

TABLE 4.1: RESPONDENTS BY BUSINESS MODEL

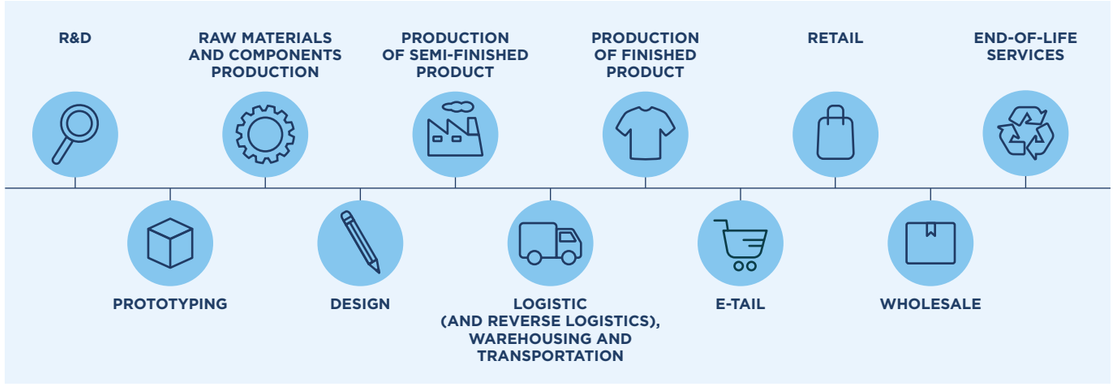
SEMI-FINISHED GOODS PRODUCTION (INGREDIENT BRAND)	7
FINISHED GOODS PRODUCTION (VENDOR & BRAND)	9
SERVICE PROVISION (SERVICE PROVIDER, ASSOCIATION, CONSULTING FIRM, CERTIFICATION BODY, ETC.)	11

TABLE 4.2: RESPONDENTS BY SIZE*

SME	12
LARGE	15

The M4CF partners cover all value chain activities reported in figure 4.1.

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



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

M4CF partners include leading premium brands and related groups such as Salvatore Ferragamo, Giorgio Armani, 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 high performance polymers.
In denim, Candiani Denim leads the way, while Manteco provides innovative new-generation wool, Gi.Tessil Foderami srl produces Made in Italy linings and fabrics with artificial yarns (acetate, viscose, and cupro). 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 INGREDIENT BRANDS, VENDORS, BRANDS AND RETAILERS RESPONDENTS

4.2 Circularity key business models, ecodesign & competitiveness: key results

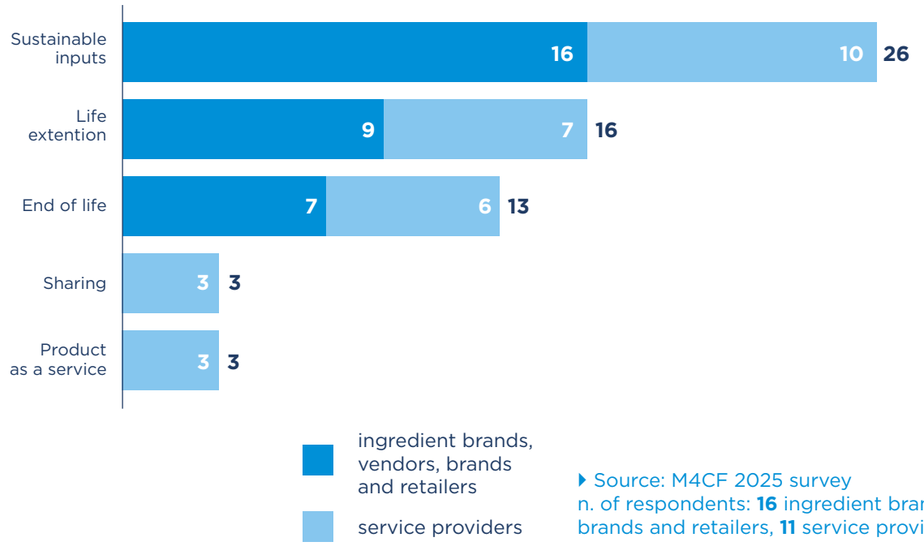
Key circular fashion business models

Figure 4.3 is showing the circular fashion business models currently implemented by M4CF pipeline players and M4CF service providers's clients.

Among M4CF pipeline players, *sustainable inputs* are the most widely adopted circular model (16 mentions), followed by *life extension* (9) and *end-of-life solutions* (7). *Sharing and product-as-a-service* models are not currently implemented.

INGREDIENT BRANDS AND VENDORS, BRANDS AND RETAILERS ARE STILL MAINLY FOCUSING ON MATERIAL SUSTAINABILITY RATHER THAN SERVICE-DRIVEN CIRCULARITY.

FIGURE 4.3: MAIN CIRCULAR FASHION BUSINESS MODELS
Which of the following circular fashion business models are currently implemented? (one or more than one answer)



▸ Source: M4CF 2025 survey
n. of respondents: **16** ingredient brands, vendors, brands and retailers, **11** service providers

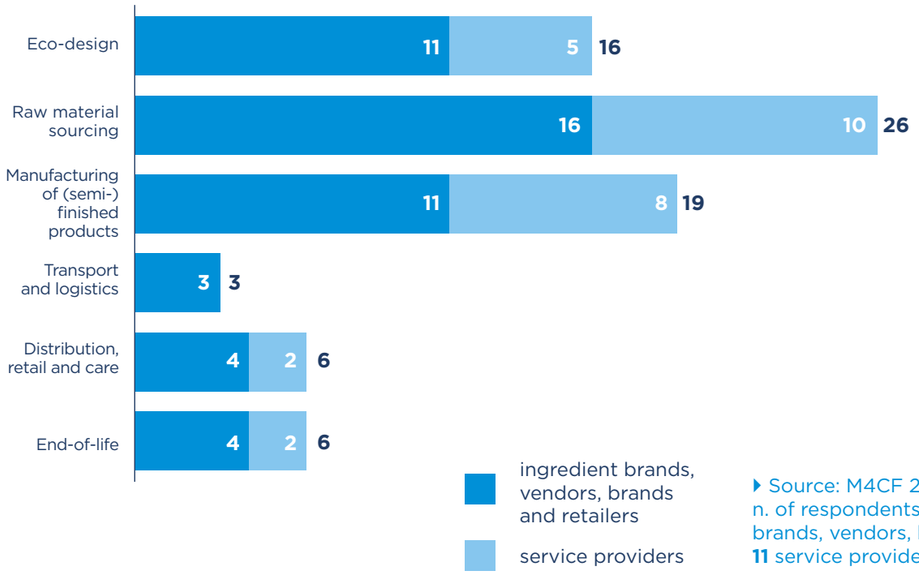
From the perspective of service providers, sustainable inputs remain dominant (10 mentions), but life extension (7) and end-of-life (6) models are gaining traction. A few respondents mention sharing (3), though product-as-a-service remains rare.

STEP BY STEP, DOWNSTREAM ACTORS ARE STARTING TO DIVERSIFY CIRCULAR STRATEGIES BEYOND MATERIALS, INCORPORATING CONSUMER-FACING REUSE AND RECYCLING INITIATIVES.

Consistent results are also visible looking at the value chain stages where companies see the implementation of circularity initiatives, which is shown in figure 4.4.

UPSTREAM INTERVENTIONS ARE STILL PREVAILING, WITH RELATIVELY LIMITED POST-CONSUMER INITIATIVES.

FIGURE 4.4: MAIN VALUE CHAIN PHASES INVOLVED BY CIRCULARITY
At which stages of the value chain does your company currently implement circularity initiatives?

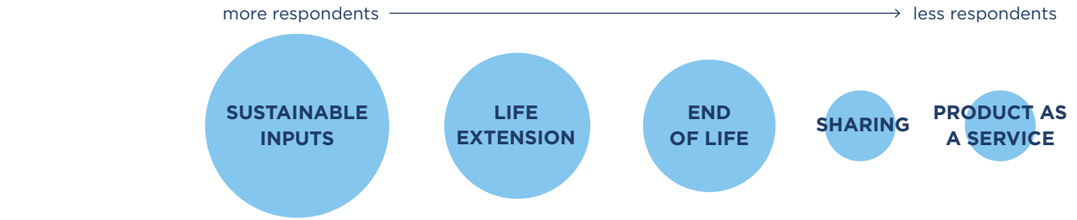


▸ Source: M4CF 2025 survey
n. of respondents: **16** ingredient brands, vendors, brands and retailers, **11** service providers

Circular fashion business models: barriers to implementation

Figure 4.5 is showing the M4CF evaluation of investment, cost, and complexity for each circular fashion model by M4CF pipeline players and M4CF service providers's clients.

FIGURE 4.5: CIRCULAR FASHION BUSINESS MODELS CURRENTLY IMPLEMENTED BY M4CF PIPELINE PLAYERS AND M4CF SERVICE PROVIDERS'S CLIENTS
Please evaluate the level of initial investments, operational cost and complexity involved for the implementation of the circular fashion business models



		SUSTAINABLE INPUTS	LIFE EXTENSION	END OF LIFE	SHARING	PRODUCT AS A SERVICE
PARTNERS	INITIAL INVESTMENTS	**3.44**	**2.78**	**2.86**	-	-
	OPERATIONAL COST	**3.63**	**3.11**	**3.43**	-	-
	COMPLEXITY	**3.69**	**3.56**	**3.71**	-	-
SERVICE PROVIDERS	INITIAL INVESTMENTS	**2.60**	**3.00**	**2.33**	**3.33**	**2.67**
	OPERATIONAL COST	**3.00**	**3.57**	**3.33**	**3.00**	**3.00**
	COMPLEXITY	**3.70**	**3.86**	**3.83**	**3.33**	**3.67**

(Please consider 1 = Not significant at all and 5 = Very significant)

highest number in evidence

▸ Source: M4CF 2025 survey - n. of respondents:
16 ingredient brands, vendors, brands and retailers, **11** service providers.

M4CF PIPELINE PLAYERS PERCEIVE LIFE EXTENSION AND END-OF-LIFE STRATEGIES LESS COSTLY COMPARED WITH MATERIAL-FOCUSED CIRCULARITY, EVEN IF STILL HIGHLY COMPLEX. OVERALL, UPSTREAM ACTORS FACE FEWER OPERATIONAL HURDLES WITH MATERIAL-FOCUSED CIRCULARITY THAN WITH CONSUMER-LINKED MODELS.

SERVICE PROVIDERS CONFIRMED THE SAME, HIGHLIGHTING HIGHER IMPLEMENTATION BARRIERS FOR SERVICE-ORIENTED OR CUSTOMER-ENGAGEMENT MODELS (I.E. LIFE EXTENSION, END-OF-LIFE) COMPARED TO MATERIAL-FOCUSED ONES.

Circular fashion business models: main benefits

Table 4.2 is showing the M4CF evaluation of the main benefits coming from the implementation of each circular fashion model by M4CF pipeline players (A) and M4CF service providers's clients (B).

TABLE 4.2 (A): CIRCULAR FASHION KEY BENEFITS - PIPELINE PLAYERS
Please evaluate which is the main benefit for the company coming from the implementation of the circular fashion business models

SUSTAINABLE INPUTS	Innovation
	Brand reputation
	Market competitiveness
LIFE EXTENTION	Consumer loyalty & Brand reputation
	Market competitiveness
	Willingness to pay a premium price for sustainable products
END-OF-LIFE	Innovation
	Regulatory compliance
	Market competitiveness & Brand reputation

▸ Source: M4CF 2025 survey - n. of respondents: **16** ingredient brands, vendors, brands and retailers.

M4CF PIPELINE PLAYERS IDENTIFY INNOVATION, BRAND REPUTATION AND CONSUMER LOYALTY AS THE MAIN BENEFITS OF ADOPTING CIRCULAR MODELS.

On their point of view, while sustainable inputs and end-of-life strategies are mainly linked to innovation, life extension strategies are linked to brand reputation and consumer loyalty.

TABLE 4.2 (B): CIRCULAR FASHION KEY BENEFITS - SERVICE PROVIDERS
Please evaluate which is the main benefit for your fashion clients coming from the implementation of the circular fashion business models

SUSTAINABLE INPUTS	Market competitiveness
	Brand reputation
	Regulatory compliance
LIFE EXTENTION	Brand reputation & Market competitiveness & Consumer loyalty
	Willingness to pay a premium price for sustainable products
END-OF-LIFE	Regulatory compliance
	Willingness to pay a premium price for sustainable products & Innovation
SHARING	Brand reputation
	Willingness to pay a premium price for sustainable products
PRODUCT AS A SERVICE	New business opportunities & Consumer loyalty & Regulatory compliance

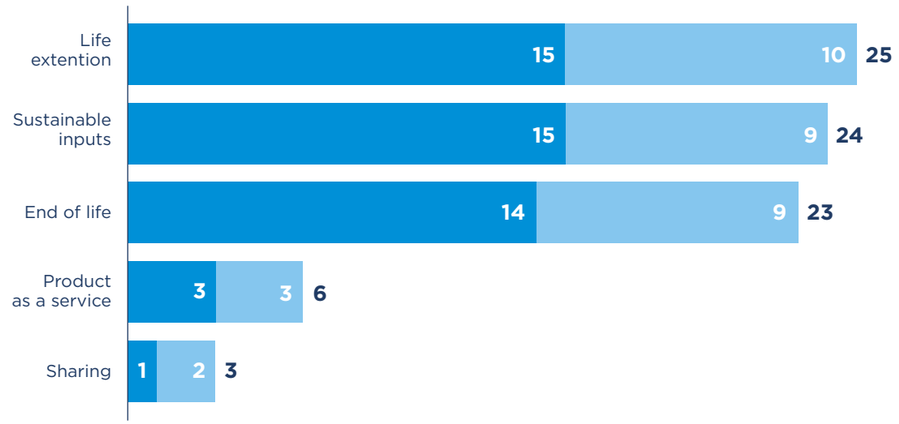
▸ Source: M4CF 2025 survey - n. of respondents: **11** service providers.

M4CF SERVICE PROVIDER PARTNERS IDENTIFY BRAND REPUTATION, REGULATORY COMPLIANCE AND MARKET COMPETITIVENESS AS THE MAIN BENEFITS OF ADOPTING CIRCULAR MODELS.

On their point of view, while sustainable inputs is mainly linked to brand reputation, life extension is also linked to market competitiveness and consumer loyalty and end-of-life approaches are linked to regulatory compliance, reflecting growing pressure on waste management strategies.

Figure 4.6 is showing the M4CF evaluation of the development potential for each circular fashion model (top 3) by M4CF pipeline players (A) and M4CF service providers's clients (B).

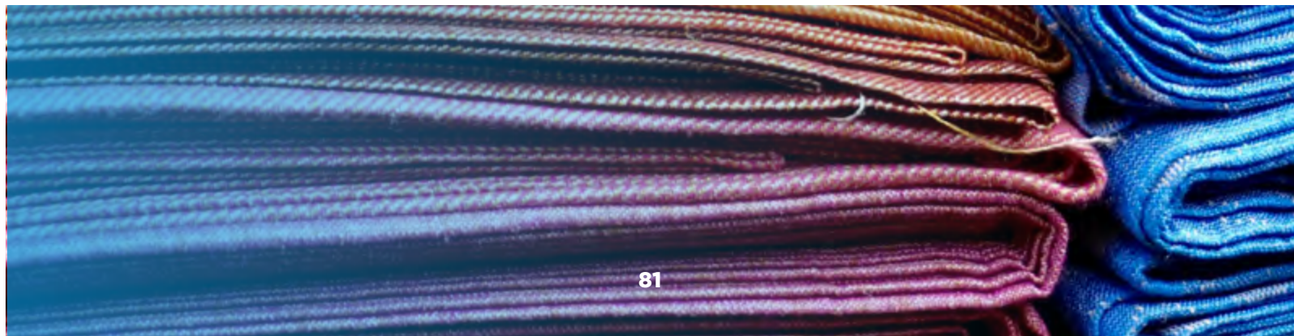
FIGURE 4.6: CIRCULAR FASHION BUSINESS MODELS POTENTIAL
Which of the following circular fashion business models do you expect to have more potential over the next 3 years? (top 3 choices)



▸ Source: M4CF 2025 survey - n. of respondents: **16** ingredient brands, vendors, brands and retailers, **11** service providers.

M4CF PARTNERS SEE THE STRONGEST FUTURE POTENTIAL IN LIFE EXTENSION, SUSTAINABLE INPUTS AND END-OF-LIFE STRATEGIES, INDICATING A CONTINUED FOCUS ON MATERIALS AND PRODUCT LONGEVITY.

A growing relevance of product-as-a-service and service-based circular strategies confirms the alignment of companies with evolving consumer behavior and new retail models.



"At RadiciGroup, sustainable innovation is not just about reducing impact — it's about rethinking resources in the light of ecodesign. By giving new life to what already exists, we create new raw materials without drawing on natural resources, turning circularity into a true competitive advantage."

RADICIGROUP
Chiara Ferraris, Chief Communication Officer

"Circularity is not only a competitive advantage, it is also our responsibility. By redesigning zippers to be easily disassembled, recyclable, and repairable, we're not just minimizing environmental impact: we're creating value across the entire production chain. This approach enables us to integrate innovation, efficiency, and responsibility, strengthening the resilience of our industrial model."

YKK ITALIA S.P.A
Alice Annovazzi, Chief Sustainability Officer

"With the correct digital tools and strategies, circularity becomes more than just an ambition, it turns into a strategic advantage. It reduces costs, strengthens brand reputation, supports long-term growth, and creates lasting value for both businesses and the environment."

DEDA STEALTH

"Recycling is effective if efficient. Production of fabrics containing recycled, low-quality fibers does not lead to an environmental advantage as the finished item of clothing must be thrown away after a few wears. Furthermore, non-qualitative fabrics make it difficult to supply high-quality recycled fibres. From a circularity perspective, the recycled content, quality and recyclability of the textile product must be considered.

MANTECO
Giuseppe Picerno, Head of Innovation and Sustainability

"Moving away from the conventional model of take-make-waste is not only about recycling. Transitioning to a truly circular economy requires a complete rethink of the way we produce and use resources as well as the way we extend the life of products."

KERING

"Circularity is key to reducing waste and virgin materials. Vibram believes that, after initial investments, medium- to long-term benefits will arise through strong partnerships and clear international standards. This will increase product value, educate consumers, and improve environmental and social impacts, enabling more people to enjoy nature and outdoor being confident in every step."

VIBRAM S.P.A.
Marco Guazzoni, Global Sustainability Director

"Ecodesign should be a cornerstone of each brand's sustainability journey and a concrete tool to meet younger consumer's demand. It reduces environmental impact across the product lifecycle and supports compliance with upcoming regulations. Long-term, it will lower costs through efficiency 360 degrees."

FERRAGAMO
Davide Triacca, Sustainability Director

"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

"Embracing circularity is more than a technological shift—it's a fundamental rethinking of fashion, consumption and sustainability. Its greatest competitive advantage lies in the raw materials: when they are traceable and circular, they become a source of growth and access to responsibly sourced value."

LECTRA
Philippe Ribera, Vice President of Innovation

"From the Armani Group's perspective, circularity represents a strategic responsibility for the fashion industry, essential to creating long-term value while respecting resources, craftsmanship, environmental and social balance."

ARMANI GROUP

4.3 Social impact M4CF survey results: harmonizing compliance measurements

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.

The M4CF pipeline players (i.e. ingredient brands, vendors, brands, retailers) were asked to identify the most relevant risks based on their operations. The most selected ones were: occupational working hours, health and safety, and wages. These priorities are consistent with the previous year's findings (Figure 4.7).

FIGURE 4.7: KEY AREAS OF SOCIAL RISK
Which are the most relevant areas of social risks identified? (one or more than one answer)

▸ Source: M4CF 2025 survey - n. of respondents: **16** ingredient brands, vendors, brands and retailers.

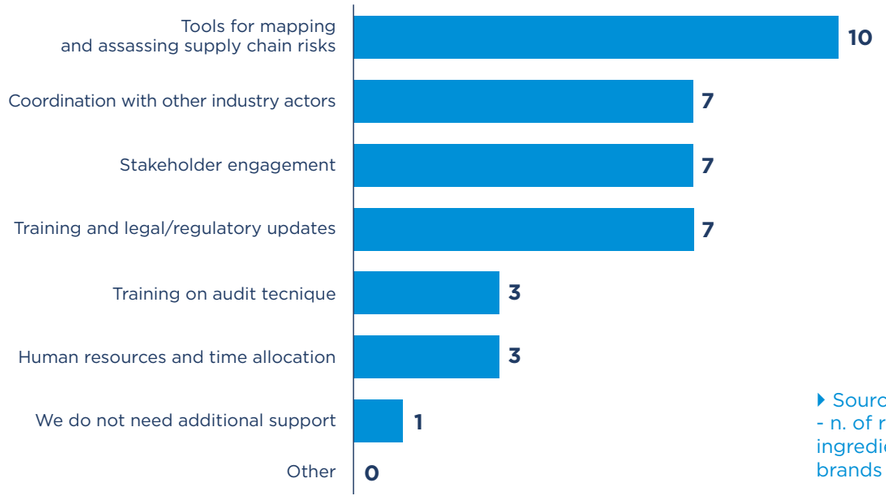
Supply chain mapping and involvement

Focusing on vendors, brands and retailers, we see that more than half of them now map their supply chains to at least Tier 2 and conduct due diligence activities such as audits, risk assessments, and data collection. The commitment to Tier 2 mapping reflects an understanding that **critical manufacturing processes and labor-intensive activities often occur beyond the first tier of direct suppliers, making this level of transparency essential for meaningful social sustainability interventions.**

Support needed to strengthen social sustainability

The areas requiring external support according to pipeline M4CF partners are: tools for mapping and assessing supply chain risks, coordination with other industry actors, stakeholder engagement, and training on legal and regulatory updates (Figure 4.8).

FIGURE 4.8: MOST NEEDED AREAS OF SUPPORT
On which aspects would your organization need the most support to strengthen social sustainability? (one or more than one answer)



▸ Source: M4CF 2025 survey - n. of respondents: **16** ingredient brands, vendors, brands and retailers.

These needs are consistent with the services offered by the M4CF service provider partners which cover different areas of support for social initiatives:

- Data collection and mapping through digital platforms (6/11);
- Webinars and training (6/11);
- Supply chain mapping and more general consultancy (5/11);
- Risks identification (3/11).

Social audit effectiveness

An interesting finding emerges from the evaluation of social audit effectiveness: while the majority of brand partners rate audits as effective tools for identifying social and labor issues, ingredient brands—reflecting on their experience across their entire client portfolio—assess them as only "medium-low" in effectiveness.

WHEN EVALUATING THE SOCIAL AUDIT EFFECTIVENESS A PERCEPTION GAP WAS FOUND AMONG BRANDS AND INGREDIENT BRANDS. THIS GAP SUGGESTS POTENTIAL DIFFERENCES IN AUDIT IMPLEMENTATION OR EXPECTATIONS ACROSS THE BROADER INDUSTRY.

Support mechanisms in ingredients- brands relationships

The challenge of adequate support remains significant: most ingredient brands report receiving no assistance from their brand clients, and when support is provided, it is primarily through technical documents.

The majority of ingredient brands evaluate this support as medium-low in effectiveness. In contrast, the majority of brands report offering at least one support mechanism (with technical documentation as the most common practice, followed by training sessions & webinars and direct dialogue and collaboration approaches), with more than half of them considering this to have a medium-high level of effectiveness.

> THIS PERCEPTION GAP ON DUE DILIGENCE COMPLIANCE SUPPORT MECHANISMS IMPLEMENTATION, , CALLS FOR A HIGHER NEED OF TRANSPARENCY AND DIALOGUE AMONG UPSTREAM AND DOWNSTREAM PLAYERS OF THE TCLF VALUE CHAIN.

Data interoperability and data sharing

A critical operational barrier identified is data interoperability: the majority of ingredient brands indicate that **data requirements differ substantially from one brand client to another**, with limited ability to transfer information across platforms and tools. This fragmentation creates inefficiencies and increases the administrative burden throughout the supply chain.

Looking at brands, we see a similar situation where significant opportunities for efficiency remain untapped: **less than half of brands accept audits conducted by other clients or engage in audit-sharing practices, despite the potential for reduced duplication and resource optimization**. On a positive note, there are brand partners willing to adopt these practices.

Main due diligence challenges faced today

The challenges faced today by M4CF brands and ingredient brands are closely interconnected, as illustrated by the graphs. For brands, the most significant barriers are "challenges in collaborating with industry peers due to low harmonization" and "limited access to reliable or consistent social data." Ingredient , meanwhile, point to "lack of standardized tools and frameworks" and "lack of alignment and consistency in client requirements", issues that directly contribute to the low harmonization and data inconsistencies highlighted by brands. Service providers present a view on the industry that aligns closely with both groups , with their top challenges including "difficulty extending social oversight beyond Tier 1," "lack of standardized tools and frameworks," and "limited access to reliable or consistent social data." Together, these perspectives underscore how structural gaps in tools, alignment, and collaboration shape the industry's social sustainability challenges (Figure 4.9).

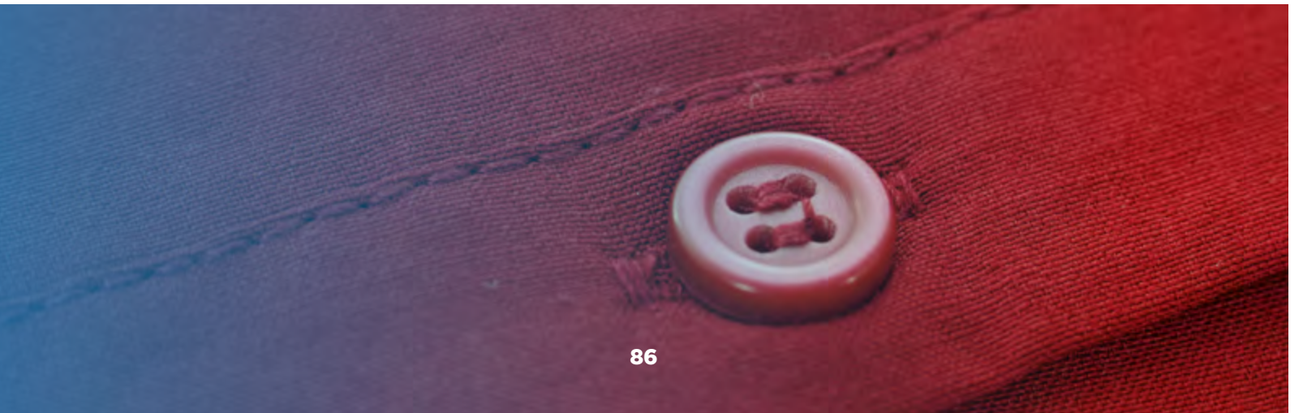
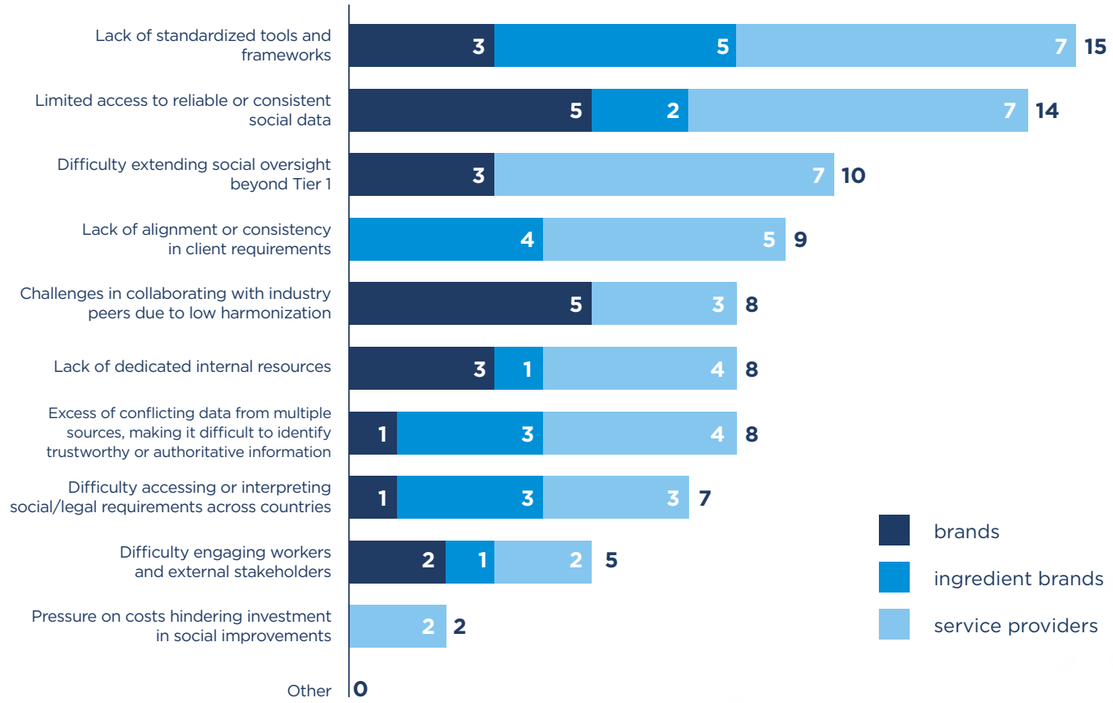


FIGURE 4.9: KEY CHALLENGES IN MANAGING SOCIAL SUSTAINABILITY[17]
What are the main challenges your organization faces today in managing social sustainability across the value chain? (one or more than one answer)



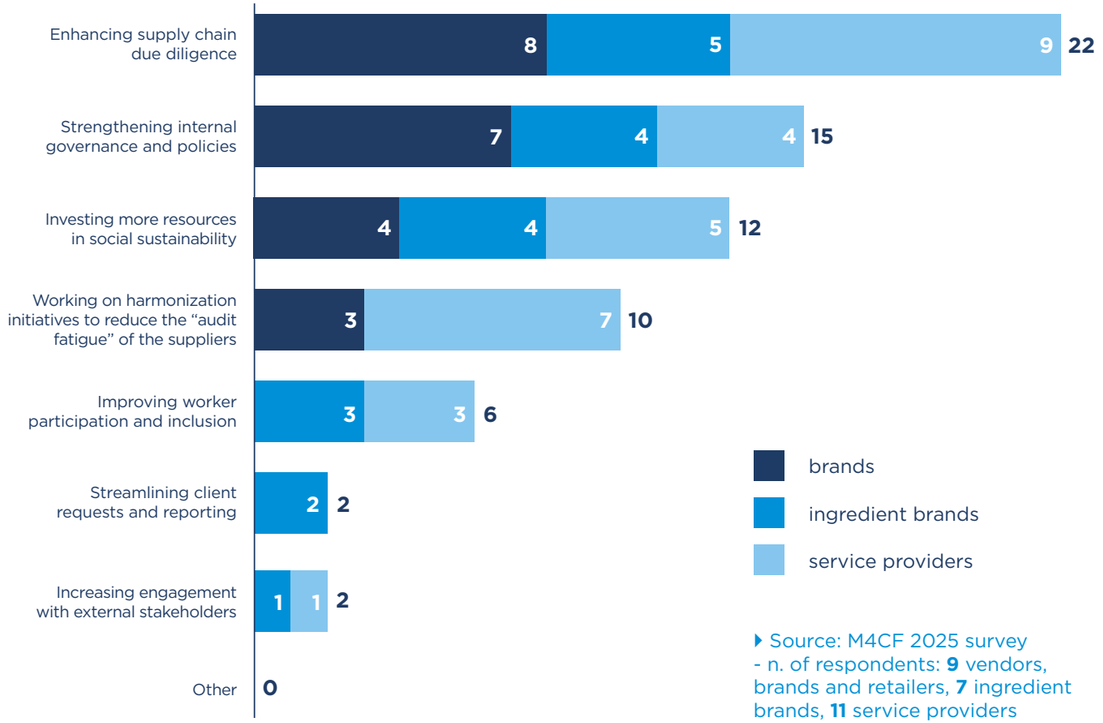
▸ Source: M4CF 2025 survey
- n. of respondents: **9** vendors, brands and retailers, **7** ingredient brands, **11** service providers

17-While service providers had visibility over all the options, some options were available only to brands or ingredient due to their business-specific relevance. In particular, "Difficulty extending social oversight beyond Tier 1" and "Challenges in collaborating with industry peers due to low harmonization" were included only for brands, while "Lack of alignment or consistency in clients' requests" was included only for ingredient brands.

Due diligence priorities for the next 12 months

Looking forward, both brands and ingredient brands demonstrate substantial alignment on priorities for the coming year: enhancing supply chain due diligence, strengthening internal governance and policies, and investing more resources in social sustainability. The fashion industry's top 3 priorities from the service providers' perspective partially differ from those highlighted by ingredients and brands: the first and third priorities remain the same (enhancing due diligence and strengthening governance), but the second priority here is working on harmonization initiatives to reduce audit fatigue (Figure 4.10).

FIGURE 4.10: DUE DILIGENCE PRIORITY AREAS[18]
Which of the following areas will be a priority for your organization over the next 12 months in relation to social sustainability?



▸ Source: M4CF 2025 survey
- n. of respondents: **9** vendors, brands and retailers, **7** ingredient brands, **11** service providers

18-While service providers had visibility over all the options, some options were available only to brands or ingredient suppliers due to their business-specific relevance. In particular, "Working on harmonization initiatives to reduce the audit fatigue of suppliers" was included only for brands, while "Streamlining client requests and reporting" was included only for ingredient brands.

Looking forward, both brands and ingredient brands demonstrate substantial alignment on priorities for the coming year: enhancing supply chain due diligence, strengthening internal governance and policies, and investing more resources in social sustainability.

4.4 The role of technologies

Technology plays a crucial role in accelerating the shift towards circular fashion by enabling more sustainable practices across the value chain. To understand the technological maturity of circularity, with a focus on transparency, the Digital Product Passport (DPP) and data collection and management, all M4CF partners were asked to share insights regarding the technologies that could drive the transition of fashion processes towards circularity. Respondents 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 tables and figures represent the results of this survey, highlighting the perspectives of these industry experts. Additionally, this chapter will highlight some of the key results of the M4CF Technology working group (Focus 4.1) and the key insights coming from qualitative semi-structured interviews to industry experts and M4CF survey results.

4.4.1 Relevance of key technologies in circular fashion

Table 4.3 presents the average relevance rating of technologies enabling the transition of fashion processes towards circularity, as assessed by the vendors, ingredient brands and brands and service provider respondents. Technologies were rated on a scale from 1 to 5, and the columns compare their perceived relevance over the past three years with their projected relevance for the next three years. The figure also displays the expected growth for each technology according to the delta between evaluations of relevance for future 3 years and past 3 years. The technologies in the table are sorted by their relevance score (r.s.), from highest to smallest. This relevance score is a weighted sum of the past and next three-year relevance ratings, where the weights reflect the relative number of respondents from vendors, brands, ingredient brands and service providers. The highest possible score is 10, while the smallest is 1.
The data shows that **recycling technologies** (r.s. = 7.92) hold the highest relevance, reflecting their central role in circularity strategies and increasing focus on waste as a resource and fibre-to-fibre recovery.
A second group of technologies, including **Traceability online platforms** (r.s. =7.48), **Data collection and analysis tools** (r.s.7.41), and **Digital Product Passports** (r.s.=7.22), remains consistently important. These tools form the backbone of transparency and data-sharing systems, which are necessary for meeting compliance requirements and supporting circular models. Their projected increases suggest stable momentum.
LCA softwares (r.s.=7.04) rank highly, indicating the growing need for impact measurement and environmental reporting across the value chain. **Compliance platforms** (r.s.=7.07) and **Circularity online platforms** (including IT platforms for waste management) (r.s.=6.48) also record noticeable increases, particularly from service providers. This points to a strengthening demand for tools that help organizations manage due diligence and regulatory obligations.
Incremental growth is also observed for technologies such as **Artificial Intelligence** (r.s.=6.77) and **RFID** (r.s.=6.35) reflecting their perceived utility in improving operational efficiency. It is worth noting that, although scoring relatively low (r.s.=4.89), **Chemicals extraction technologies** are expected to gain steep growth according to fashion clients of the service providers surveyed.
By contrast, technologies including blockchain, augmented reality, 3D printing, 3D body scanning and Live printing and knitting continue to score lower in overall relevance. Although their projected growth is positive, they remain peripheral compared to data-centric and material-recovery technologies.

Overall, the ranking indicates a clear prioritization of solutions that enhance recycling capacity, environmental measurement, and traceability, which are considered foundational for advancing circularity in the fashion sector.

TABLE 4.3: RELEVANCE SCORES OF KEY TECHNOLOGIES IN CIRCULAR FASHION[19]

	INGREDIENT BRANDS, VENDORS, BRANDS AND RETAILERS			SERVICE PROVIDERS			RELEVANCE SCORE
	PAST 3 YEARS	NEXT 3 YEARS	EXPECTED GROWTH	PAST 3 YEARS	NEXT 3 YEARS	EXPECTED GROWTH	
RECYCLING TECHNOLOGIES	3.69	4.31	●●	3.36	4.45	●●●	7.92
TRACEABILITY ONLINE PLATFORMS	3.06	3.63	●●	3.91	4.73	●●	7.48
DATA COLLECTION AND ANALYSIS TOOLS	3.19	3.69	●●	3.91	4.27	●	7.41
DIGITAL PRODUCT PASSPORTS	3.00	4.06	●●●●	3.00	4.45	●●●●	7.22
COMPLIANCE ONLINE PLATFORMS	2.81	3.69	●●●	3.55	4.36	●●	7.07
LCA SOFTWARES	3.19	3.88	●●	3.00	4.00	●●●	7.04
ARTIFICIAL INTELLIGENCE	2.67	3.81	●●●●	3.27	3.91	●●	6.77
CIRCULARITY ONLINE PLATFORMS	2.69	3.38	●●●	2.81	4.27	●●●●●	6.48
RFID TECHNOLOGIES	2.60	3.00	●●	3.45	4.00	●●	6.35
ADMINISTRATIVE SOFTWARES	2.63	3.06	●●	2.64	3.00	●	5.67
AUTOMATIC SORTING TECHNOLOGIES	2.44	3.44	●●●●	2.09	3.00	●●●●	5.56
CHEMICALS EXTRACTION TECHNOLOGIES	2.38	2.88	●●	1.45	2.91	●●●●●●●●●●	4.89
BLOCKCHAIN	2.00	2.81	●●●●	2.18	2.73	●●●	4.85
AUGMENTED REALITY	1.93	2.31	●●	1.82	2.27	●●	4.18
3D PRINTING	1.75	2.31	●●●	1.36	1.91	●●●●	3.74
3D BODY SCANNING	1.53	1.81	●●	1.27	1.82	●●●●	3.24
LIVE PRINTING AND KNITTING	1.31	1.88	●●●●	1.55	1.91	●●	3.30

▸ Source: M4CF 2025 survey - n. of respondents: **27** (**11** service providers, **16** ingredient brands, vendors, brands and retailers)

19-*Questions asked to ingredient brands, vendors, brands and retailers:*
1) Please provide a score from 1 (lowest relevance) to 5 (highest relevance), evaluating how important or applicable each technology has been to your organization's transition towards circularity over the past 3 years. 2) Please provide a score from 1 (lowest relevance) to 5 (highest relevance), evaluating how important or applicable each technology is expected to be to your organization's transition towards circularity over the next 3 years.
Questions asked to service providers:
1) Please provide a score from 1 (lowest relevance) to 5 (highest relevance), evaluating how important or applicable each technology has been to your fashion clients' transition towards circularity over the past 3 years. 2) Please provide a score from 1 (lowest relevance) to 5 (highest relevance), evaluating how important or applicable each technology is expected to be to your fashion clients' transition towards circularity over the next 3 years.

FOCUS 4.1

M4CF technology working group key results

The section of the survey focused on technologies reflects the work of the technology working group, a collective effort carried out over several months. This work informed the Digital Product Passport section of the position paper referenced in Chapter 3 and supported a broader reflection on the priorities, opportunities, and challenges the fashion industry faces in relation to technology.

Overall, the Technology working group activity resulted in the following findings:

- **Regulatory coherence and level playing field**: There is a need for clearly defined, enforceable, and uniform sustainability requirements to ensure fair competition across all market actors, regardless of origin.
- **Data reliability and standardization as foundational pillars**: Accurate, comparable, and interoperable data is essential for any digital product information system. Harmonized data-collection methodologies and shared standards are critical to ensure credibility.
- **Importance of interoperable digital infrastructure**: Technological solutions must enable seamless information exchange across diverse supply chains. Interoperability, common formats, and scalable digital tools are central to effective implementation.
- **Transparency for informed decision-making**: Consumers and professional users require accessible, standardized sustainability information. A consistent impact-communication framework can strengthen trust and guide more responsible choices.
- **Incentive structures to support sustainability leadership**: Reward mechanisms for lower environmental impact can accelerate progress, but they must rely on harmonized measurement methods and verified data to avoid unintended consequences.
- **Responsible data governance**: Clear rules are needed to balance transparency with the protection of commercially sensitive information, ensuring secure data sharing while fostering industry collaboration.
- **Inclusive approach across the value chain**: Effective digital product information systems must incorporate all tiers of the supply chain, including upstream actors, to ensure completeness, accuracy, and traceability.

Based on these reflections, as well as a needs analysis conducted throughout the year, the group also developed questions primarily addressing transparency and the DPP, aligning with ongoing legislative developments at the EU level. Additional questions on data collection and management were included to help the industry better understand the current fragmentation of data. The results will be explored in the following pages.

4.4.2 Traceability as key enabler for sustainability and circularity

Traceability is one of the foundational enablers of circular fashion, as the ability to follow materials, components, and products along the value chain determines how efficiently resources can be recovered and recirculated. As regulatory expectations rise and brands adopt more circular business models, the need for granular, verifiable traceability becomes increasingly urgent. This section presents the survey results regarding the maturity and adoption of traceability technologies, revealing where organizations currently stand and where progress is still needed.

M4CF ingredient brands, vendors, brands and retailers show the strongest traceability implementation at the manufacturing of (semi-)finished goods stage, with decreasing visibility upstream and downstream, while the service providers – who gave an answer representing on average their over 24,000 fashion clients and accounts - show more homogenous levels of traceability across the value chain, with lowest end-of-life traceability implementation for both respondent types, given the current challenges in tracing waste resources.

Looking at the traceability implementation across supply-chain tiers (Tier 1 through Tier 4), both respondent groups show higher traceability at Tier 1 (4.31/5 for ingredient brands, vendors, brands and retailers and 4.45/5 for service providers). Visibility decreases with each upstream tier, and Tier 4 displays the lowest traceability levels (3.06/5 for ingredient brands, vendors, brands and retailers and 2.09/5 for service providers). Ingredient brands, vendors, brands and retailers generally report slightly higher visibility than service providers across all tiers.

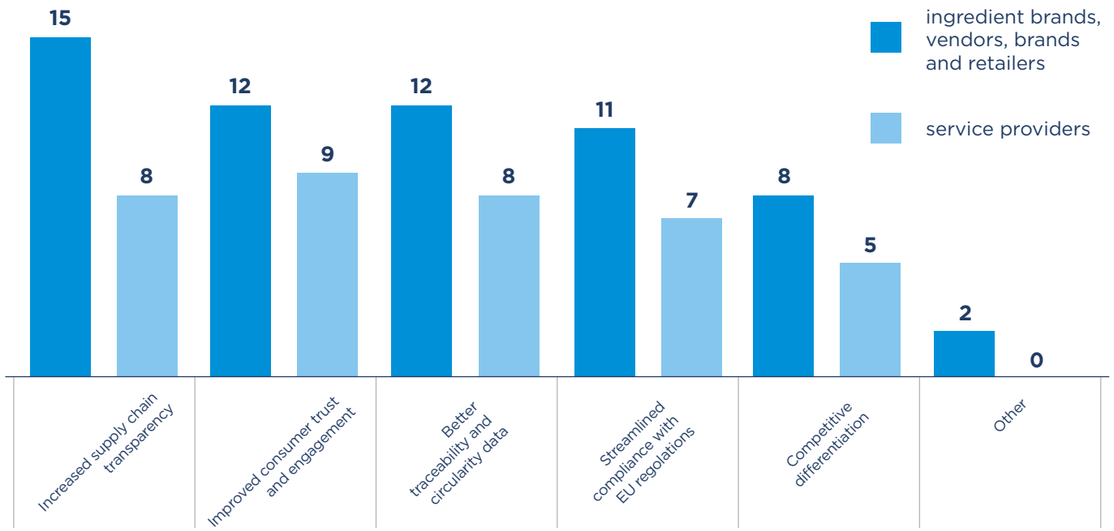
4.4.3 Relevance of DPP across the value chain

Digital Product Passports (DPPs) are expected to become one of the most transformative instruments for enabling circular fashion systems. By storing structured, standardized product-level information, DPPs provide a mechanism for improving transparency, supporting compliance, and enabling new circular services.
This section examines how respondents perceive the relevance of DPPs across key value chain activities, revealing where industry stakeholders anticipate the strongest impact.

When asked to provide an overall evaluation of the relevance of DPPs across the M4CF six stages of the circular fashion value chain, both ingredient brands, vendors, brands and retailers and service providers consider DPPs

most relevant for ecodesign, raw material sourcing and manufacturing of (semi-) finished products.
Overall, both groups provide a rather comparable evaluation. Regarding the implementation across tiers, DPPs are perceived as particularly relevant for Tier 1 and Tier 2, where most product-specific data originates.
Figure 4.11 identifies the principal opportunities associated with DPP adoption. Brands and service providers align on key benefits such as increased supply chain transparency, improved consumer trust and engagement, better traceability and circularity data and streamlined compliance with EU legislation. Both respondent groups expect competitive differentiation to not be one of the main opportunities.

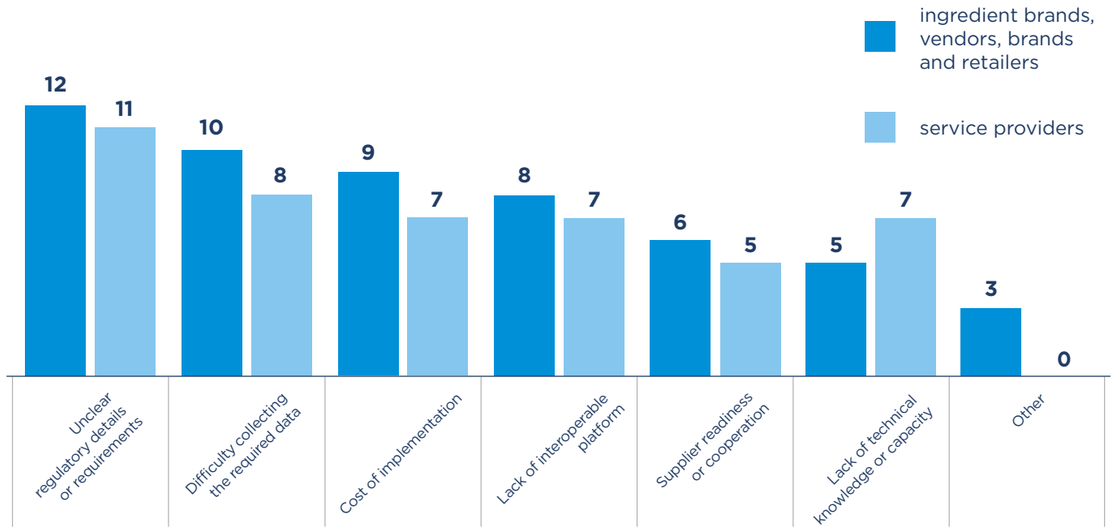
FIGURE 4.11: MAIN OPPORTUNITIES OF THE DPP
What do you see as the main opportunities of the DPP for your business? / What do you see as the main opportunities of the DPP for your fashion clients? (one or more than one answer)



▸ Source: M4CF 2025 survey - n. of respondents: **27** (**11** service providers, **16** ingredient brands, vendors, brands and retailers)

Figure 4.12 highlights the main barriers to DPP deployment. Both groups identify unclear regulatory details or requirements, difficulties in data collection, and costs of implementation as top concerns. Fashion clients of service providers place greater emphasis on lack of technical knowledge, whereas ingredient brands, vendors, brands and retailers show stronger concern regarding the lack of interoperable platforms, perhaps suggesting the complex variety of stakeholders involved in their supply chain.

FIGURE 4.12: MAIN CHALLENGES AND CONCERNS ABOUT IMPLEMENTING THE DPP
What are the main challenges or concerns your company has about implementing the DPP? / What are the main challenges or concerns your fashion clients have about implementing the DPP? (one or more than one answer)



▸ Source: M4CF 2025 survey - n. of respondents: **27** (**11** service providers, **16** ingredient brands, vendors, brands and retailers)

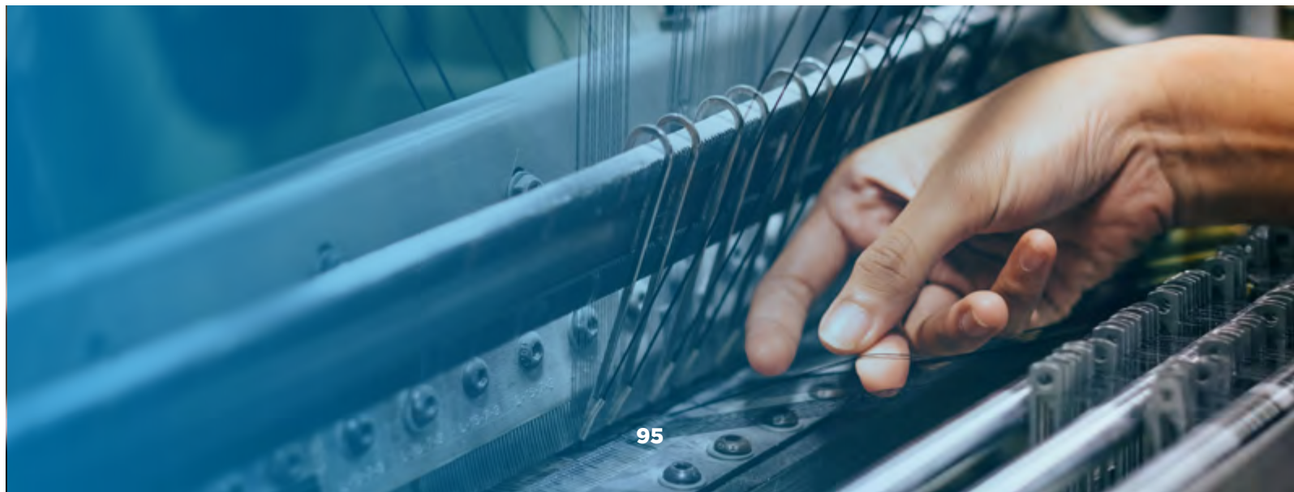
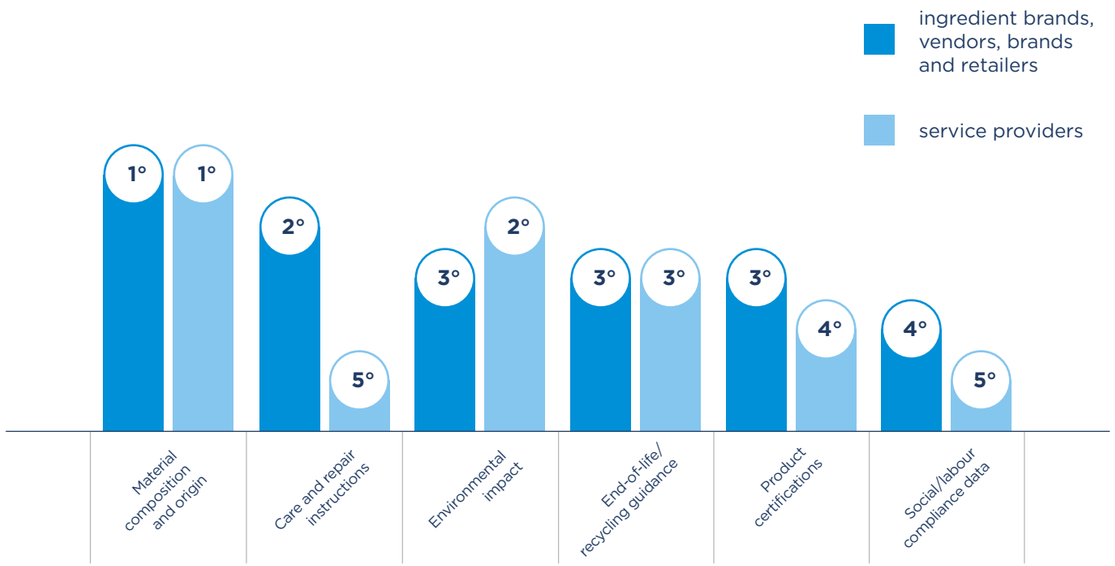


Figure 4.13 shows the types of information that ingredient brands, vendors, brands and retailers and fashion clients of service providers see as essential for DPPs. Material composition and origin, environmental impact data, and end of life/recycling guidance rank highest in both groups, while ingredient brands, vendors, brands and retailers prioritize care and repair instructions more strongly.

FIGURE 4.13: RANKING OF PRIORITY DPP PRODUCT INFORMATION
Which types of product information do you believe should be prioritized in the DPP? / Which types of product information do your fashion clients believe should be prioritized in the DPP?



▸ Source: M4CF 2025 survey - n. of respondents: **27** (**11** service providers, **16** ingredient brands, vendors, brands and retailers)

4.4.4 Data collection and management

Reliable, high-quality data underpins every circular fashion strategy, from environmental impact measurement to regulatory reporting and end-of-life decision-making. As companies face increasing demands for transparency and quantification, the ability to collect, verify, and integrate data becomes a strategic differentiator. This section explores the tools and systems used by respondents for data collection and management, reflecting how organizations are preparing for a more digitally connected and compliance-driven operating environment.

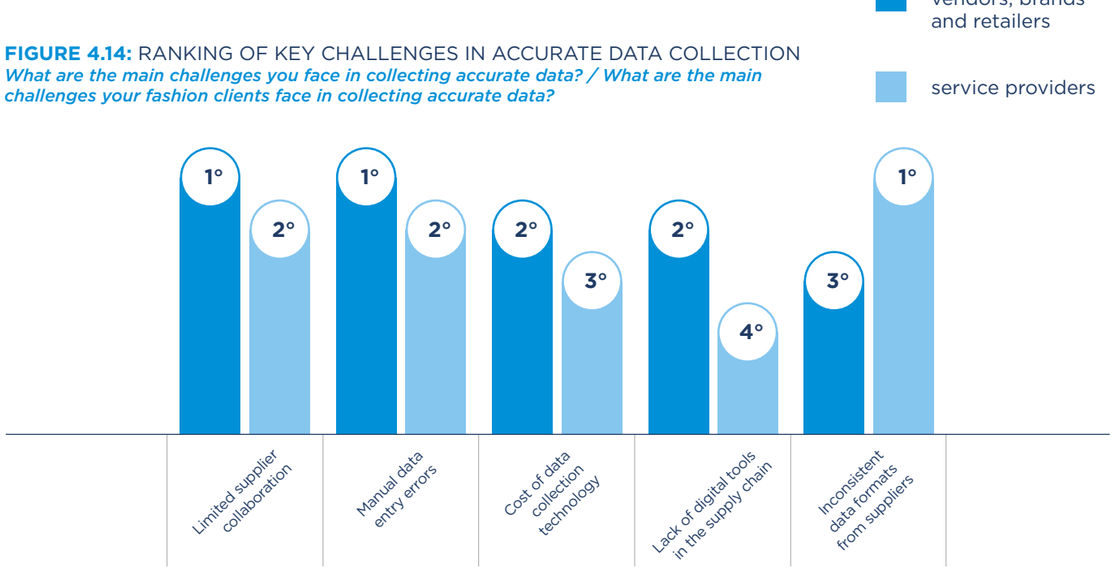
The survey assessed how confident respondents feel about the accuracy of their data for circularity. Both ingredient brands, vendors, brands and retailers and the fashion clients of service providers report being somewhat confident, even though, as the following charts show, the data-collection process remains far from streamlined. Both groups also indicate that their data is only partially integrated.

Currently, access to supply chain and sustainability data sits mainly with sustainability and sourcing teams, followed by executive management and product development teams. Suppliers, customers, and marketing and communications teams are far less connected, suggesting that data silos continue to limit end-to-end transparency.

Finally, both vendors, ingredient brands and brands and fashion clients of service providers rate industry standards as "very important," highlighting a shared need for greater harmonization.

Figure 4.14 identifies key obstacles to collecting reliable data. Both groups point to limited supplier collaboration, inconsistent formats, and high manual workload as the most significant issues. Ingredient brands, vendors, brands and retailers place more weight on internal misalignment between departments, whereas service providers emphasise lack of technological interoperability.

FIGURE 4.14: RANKING OF KEY CHALLENGES IN ACCURATE DATA COLLECTION
What are the main challenges you face in collecting accurate data? / What are the main challenges your fashion clients face in collecting accurate data?



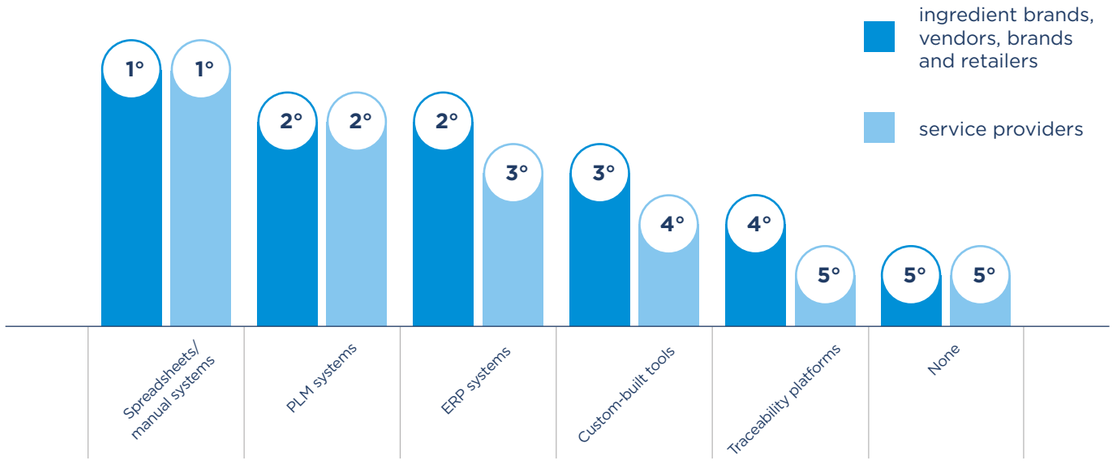
▸ Source: M4CF 2025 survey - n. of respondents: **27** (**11** service providers, **16** ingredient brands, vendors, brands and retailers)

Figure 4.15 compares the adoption of different data-collection technologies for circularity. Both groups show that spreadsheets and manual systems are still the predominant method, followed by PLM and ERP systems.

Custom-built tools show moderate adoption, while traceability platforms display high adoption in fashion clients of service providers.

FIGURE 4.15: RANKING OF TYPES OF TECHNOLOGY USED FOR DATA COLLECTION

What types of technology are you currently using for data collection? / What types of technology are your fashion clients currently using for data collection?



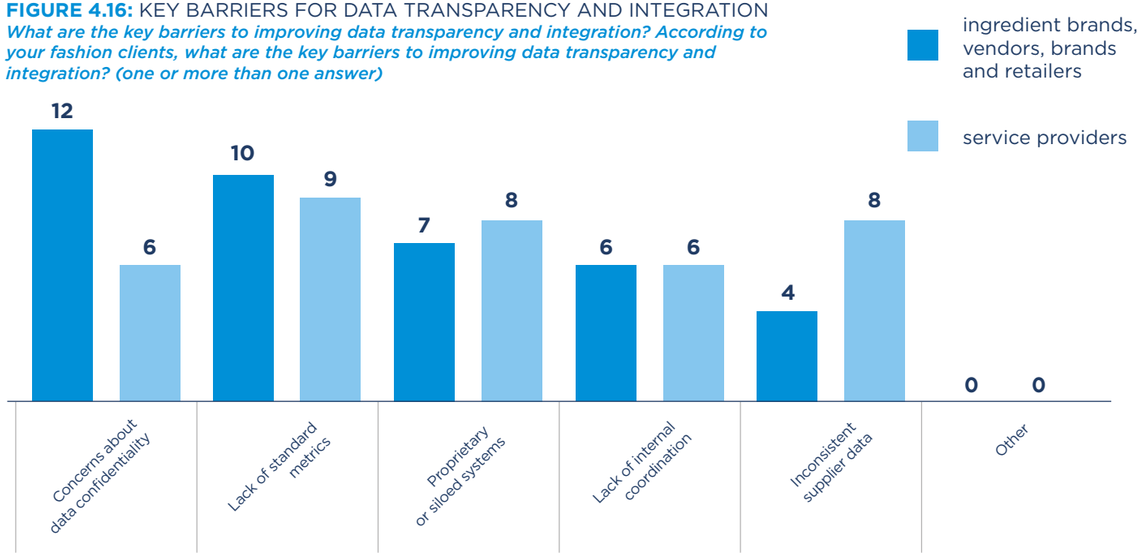
▸ Source: M4CF 2025 survey - n. of respondents: **27** (**11** service providers, **16** ingredient brands, vendors, brands and retailers)

Figure 4.16 captures the main barriers to better data transparency and integration. In this case, there is a partial misalignment between the vendors, ingredient brands and brands and the fashion clients of service providers.

While ingredient brands, vendors, brands and retailers' main concerns come from data confidentiality, lack of standard metrics and proprietary or siloed systems, fashion clients of service providers are more concerned with inconsistent supplier data, while also identifying lack of standard metrics and proprietary or siloed systems as barriers.

FIGURE 4.16: KEY BARRIERS FOR DATA TRANSPARENCY AND INTEGRATION

What are the key barriers to improving data transparency and integration? According to your fashion clients, what are the key barriers to improving data transparency and integration? (one or more than one answer)

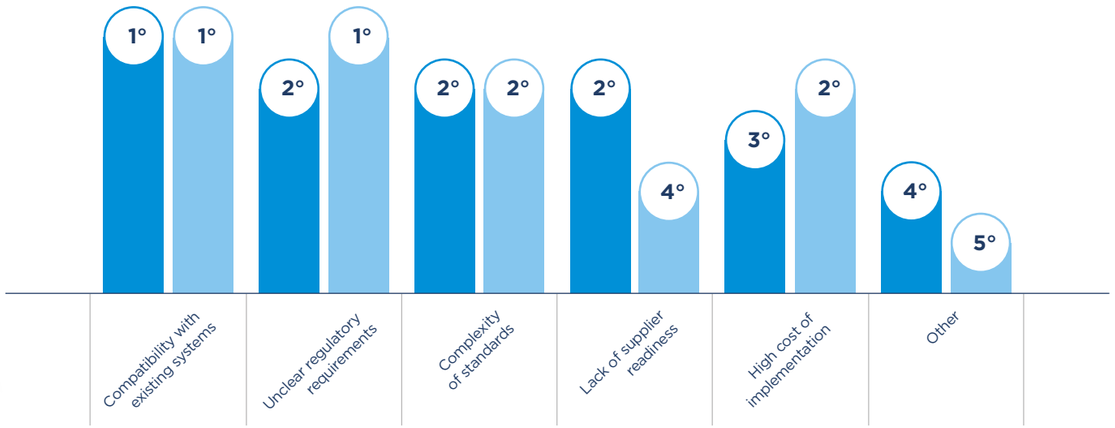


▸ Source: M4CF 2025 survey - n. of respondents: **27** (**11** service providers, **16** ingredient brands, vendors, brands and retailers)

Figure 4.17 presents concerns regarding cross-industry data standardization. Compatibility with existing systems and unclear regulatory requirements are top concerns for both clusters. Ingredient brands, vendors, brands and retailers are also more concerned about complexity of standards and lack of supplier readiness, while fashion clients of service providers are more worried about high costs of implementation.

FIGURE 4.17: RANKING OF KEY CONCERNS REGARDING COMMON STANDARDS

What are your biggest concerns about adopting common standards and interoperable systems? / What are your fashion clients' biggest concerns about adopting common standards and interoperable systems? (one or more than one answer)



▸ Source: M4CF 2025 survey - n. of respondents: **27** (**11** service providers, **16** ingredient brands, vendors, brands and retailers)

The highest concerns regarding common standards are related to the compatibility with existing systems and unclear regulatory requirements.

4.4.5 Rethinking circular fashion with AI

The research conducted involved 8 interviews with AI experts and 12 AI-related questions included in the M4CF survey targeting 27 companies operating in the fashion industry.

Artificial Intelligence (AI) is reshaping the fashion industry, offering unprecedented opportunities to align creativity with sustainability and circularity. Insights drawn from in-depth interviews with industry experts, consultants, and innovation leaders carried out in 2025 reveal a shared conviction: AI is no longer a peripheral technology. It is becoming the connective infrastructure that allows companies to design, produce, distribute, and recover products in ways that are both economically competitive and environmentally responsible. With light and shadows (see Focus 4.2).

About M4CF Partners, most organizations have experience ranging from 6 months to 2 years of AI implementation in their activities and processes. Nevertheless, applications remain mainly related to use cases and pilot projects. When it comes to making decisions about AI, the Chief Information Officer (CIO), the Chief Executive Officer (CEO), the Chief Digital Officer (CDO), and their related teams are the point of reference.

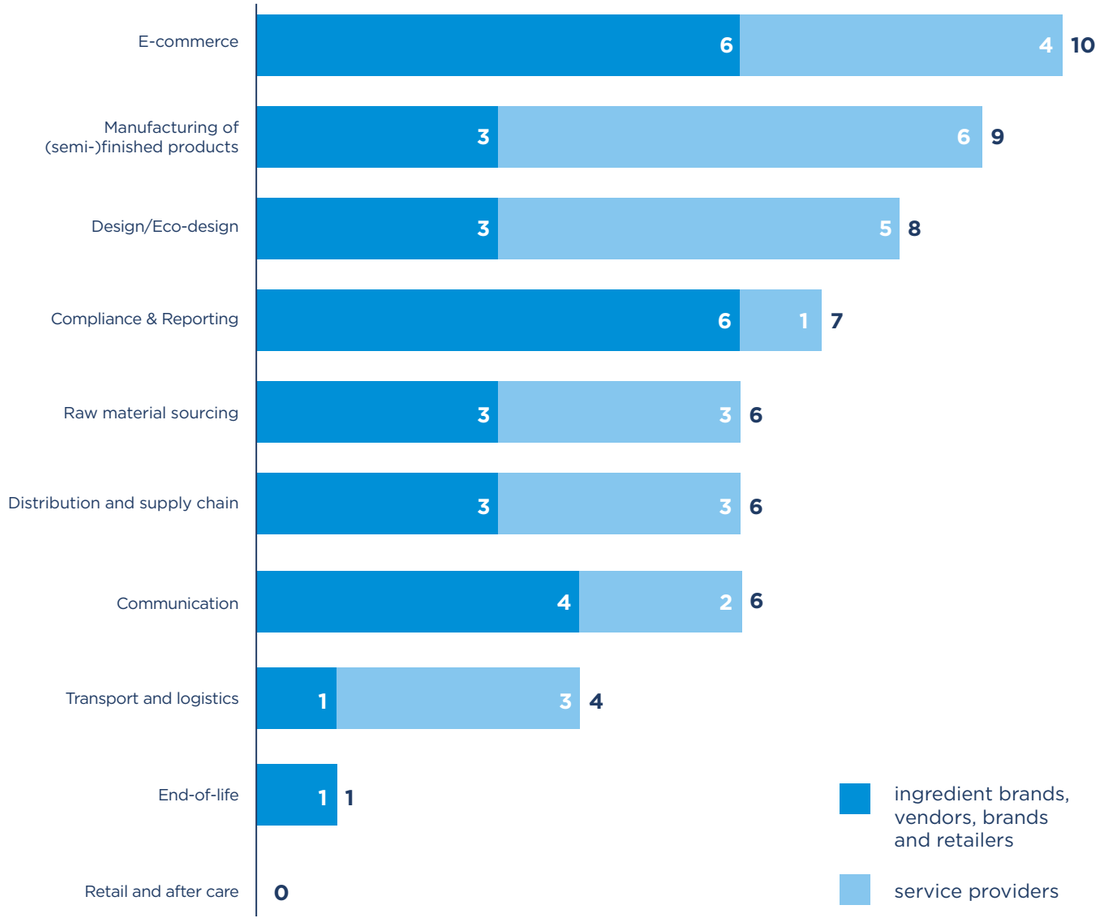
Most organizations today prioritize AI for operational efficiency, design innovation, and data transparency.
Predictive algorithms are being deployed to improve demand forecasting, optimize production cycles, and reduce overproduction, addressing one of the industry's most pressing sustainability challenges. In the creative sphere, generative AI is increasingly integrated into design processes, allowing for the simulation of materials, the prediction of environmental impacts, and the optimization of durability and reparability. Beyond design, AI is also advancing the traceability agenda: by combining data analytics with blockchain and tagging technologies, companies can now track materials throughout the value chain and automate life-cycle assessments in compliance with emerging European regulations such as the Digital Product Passport and the Product Environmental Footprint framework. Finally, AI is enhancing consumer engagement by personalizing experiences in repair, resale, and rental models, encouraging longer product lifespans and circular consumption patterns.

> THE MOST EFFECTIVE USE OF AI EMERGES WHEN TECHNOLOGY IS EMBEDDED IN A COMPANY'S STRATEGIC CORE RATHER THAN TREATED AS A SERIES OF EXPERIMENTAL PILOTS.

Some best practices integrate AI across their operations to forecast demand and optimize logistics, achieving sustainability through efficiency. Some other best practices focus on personalization and product authentication. Some players include the automation of environmental impact assessments, which are now faster and more affordable, and the creation of AI-enabled circular systems, which use image recognition and data analytics to authenticate products, enable resale, and trace materials (Figure 4.18 and 4.19).

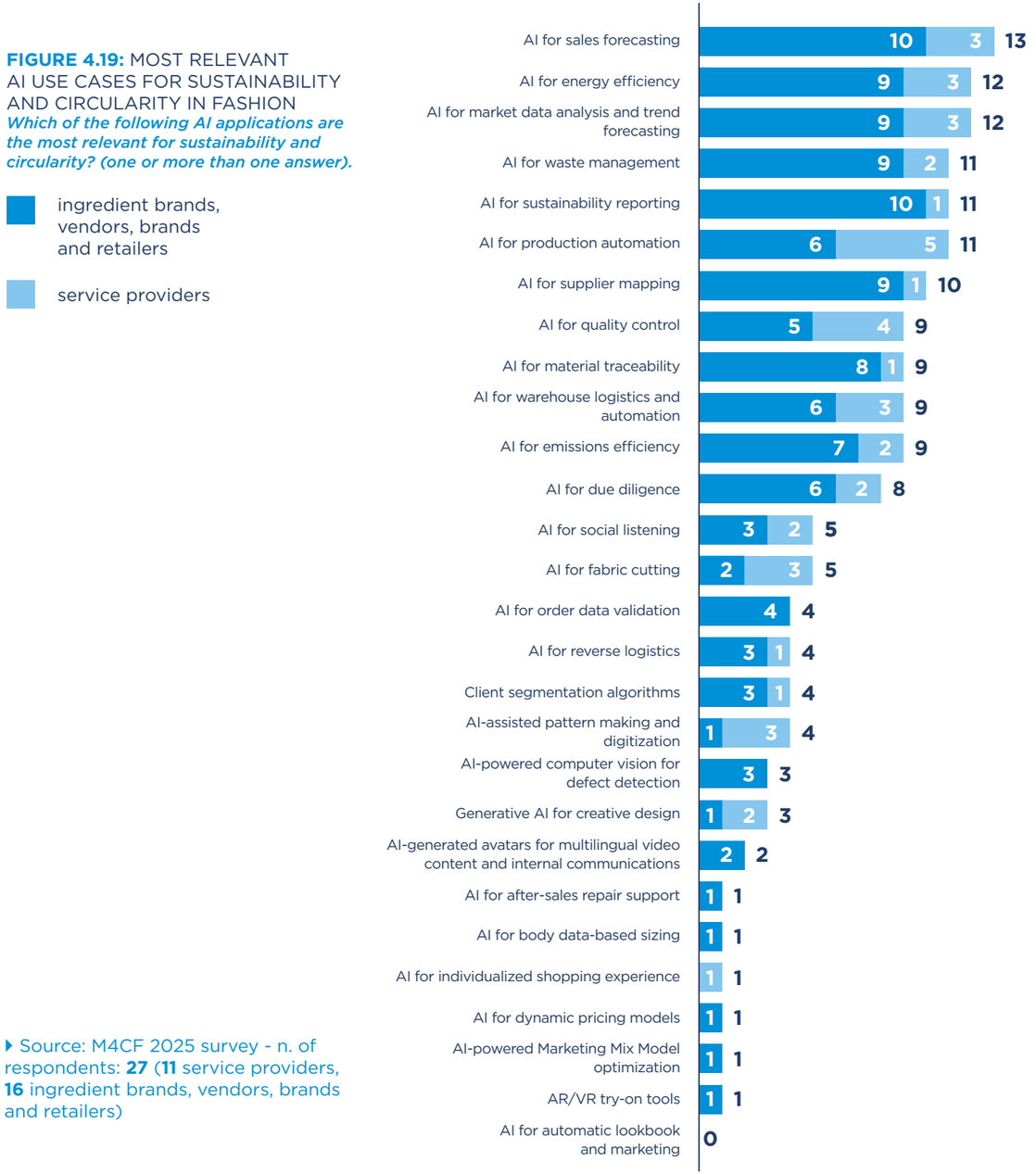
> COMPANIES AT THE FRONTIER OF INNOVATION ARE MOVING FROM ISOLATED APPLICATIONS TO INTERCONNECTED AI ECOSYSTEMS THAT LINK DESIGN, PRODUCTION, LOGISTICS, AND POST-SALE PROCESSES IN A CONTINUOUS FEEDBACK LOOP.

FIGURE 4.18: FASHION ACTIVITIES OF AI IMPLEMENTATION
In which of the following activities is AI implemented in the organization? (one or more than one answer).



▸ Source: M4CF 2025 survey - n. of respondents: **27** (**11** service providers, **16** ingredient brands, vendors, brands and retailers)

FIGURE 4.19: MOST RELEVANT AI USE CASES FOR SUSTAINABILITY AND CIRCULARITY IN FASHION
Which of the following AI applications are the most relevant for sustainability and circularity? (one or more than one answer).



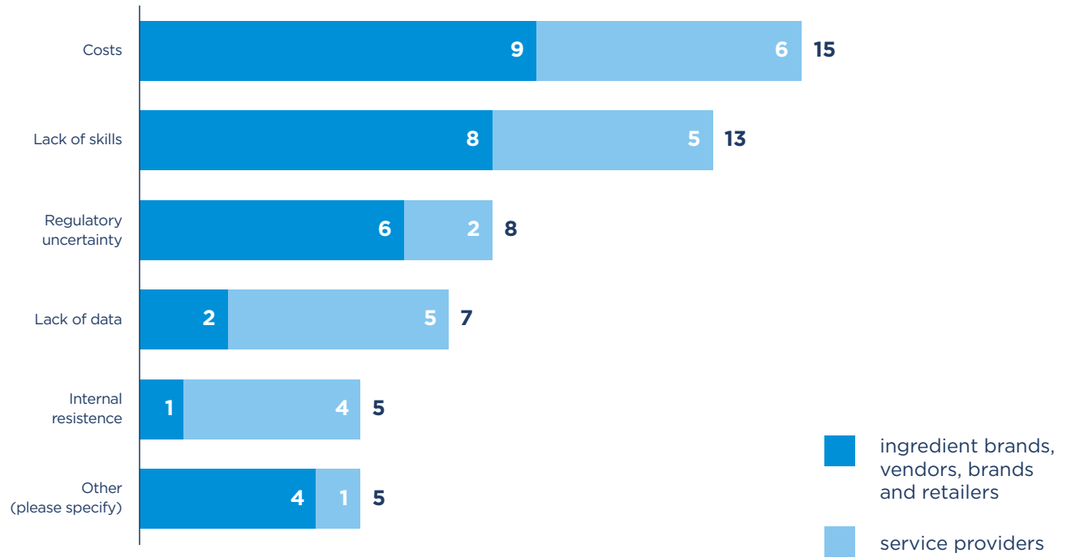
▸ Source: M4CF 2025 survey - n. of respondents: **27** (**11** service providers, **16** ingredient brands, vendors, brands and retailers)

Despite this progress, several barriers continue to limit widespread adoption (Figure 4.20).

DATA QUALITY AND FRAGMENTATION REMAIN THE MOST SIGNIFICANT TECHNICAL CONSTRAINTS.

Many fashion companies lack integrated data systems, which reduces the reliability of AI outputs. Cultural resistance is another obstacle: creative professionals often perceive AI as a threat to artistic identity, and technical teams sometimes fail to communicate effectively with design and product functions. Economic factors also play a role, as the costs of integration remain high and the return on investment is still uncertain for small and mid-sized enterprises. Ethical and environmental concerns add further complexity, including the high energy use of large-scale AI models and fears of job displacement.

FIGURE 4.20: MAIN BARRIERS TO AI IMPLEMENTATION
What are the main barriers to implementing AI for sustainability in your organization? (one or more than one answer).



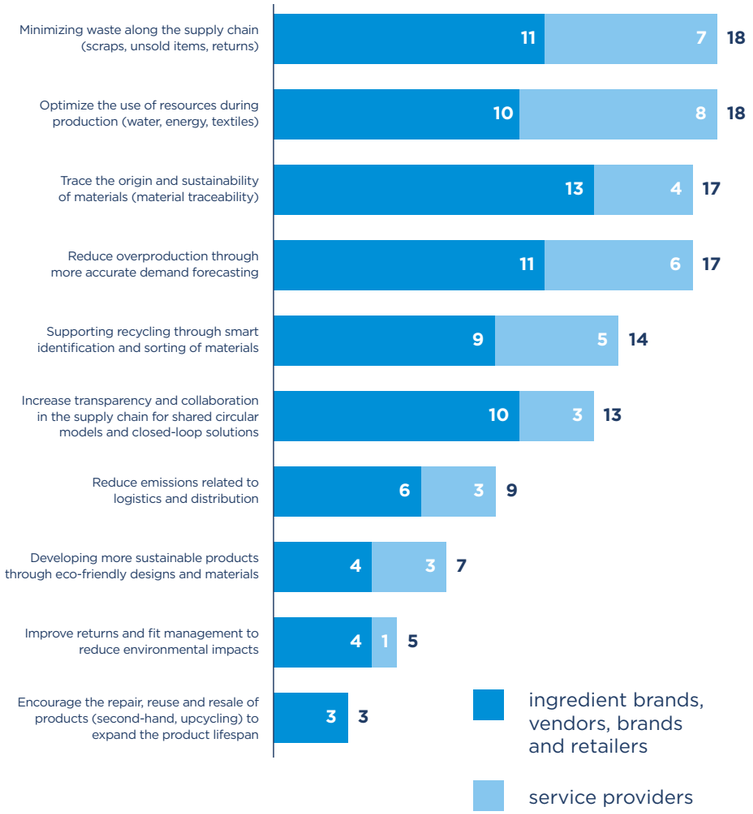
▸ Source: M4CF 2025 survey - n. of respondents: **27** (**11** service providers, **16** ingredient brands, vendors, brands and retailers)

The effective implementation of AI for sustainability depends on a new mix of capabilities and governance structures. Organizations must develop technical expertise in data science and machine learning, but these skills are not sufficient on their own.

They need to be complemented by managerial and organizational competencies such as change management, design thinking, and cross-functional coordination, as well as by deep industry knowledge in areas like supply chains, materials science, and life-cycle assessment. Leading firms are creating central AI competence hubs and appointing Chief AI Officers to coordinate standards across departments.

Equally important is the diffusion of AI literacy across all levels of the organization. Employees need not only technical training but also an understanding of ethical AI use, environmental implications, and the importance of aligning AI initiatives with broader sustainability goals.

FIGURE 4.21: MOST RELEVANT ASPECTS WHERE AI CAN IMPROVE SUSTAINABILITY AND CIRCULARITY IN FASHION
Which of the following aspects are the most relevant for AI application to improve sustainability and circularity? (one or more than one answer).



▸ Source: M4CF 2025 survey - n. of respondents: **27** (**11** service providers, **16** ingredient brands, vendors, brands and retailers)

About the impact of AI on sustainability and circularity performance, M4CF Partners reported that

> AI IS ALREADY PLAYING AND WILL INCREASINGLY CONTINUE TO PLAY A CRUCIAL ROLE IN TRACING AND MANAGING COMPLEX SUPPLY CHAINS BY MINIMIZING WASTE ACROSS THE ENTIRE VALUE CHAIN.

Additionally, AI supports sustainability reporting and other heavily time-consuming tasks (Figure 4.21).

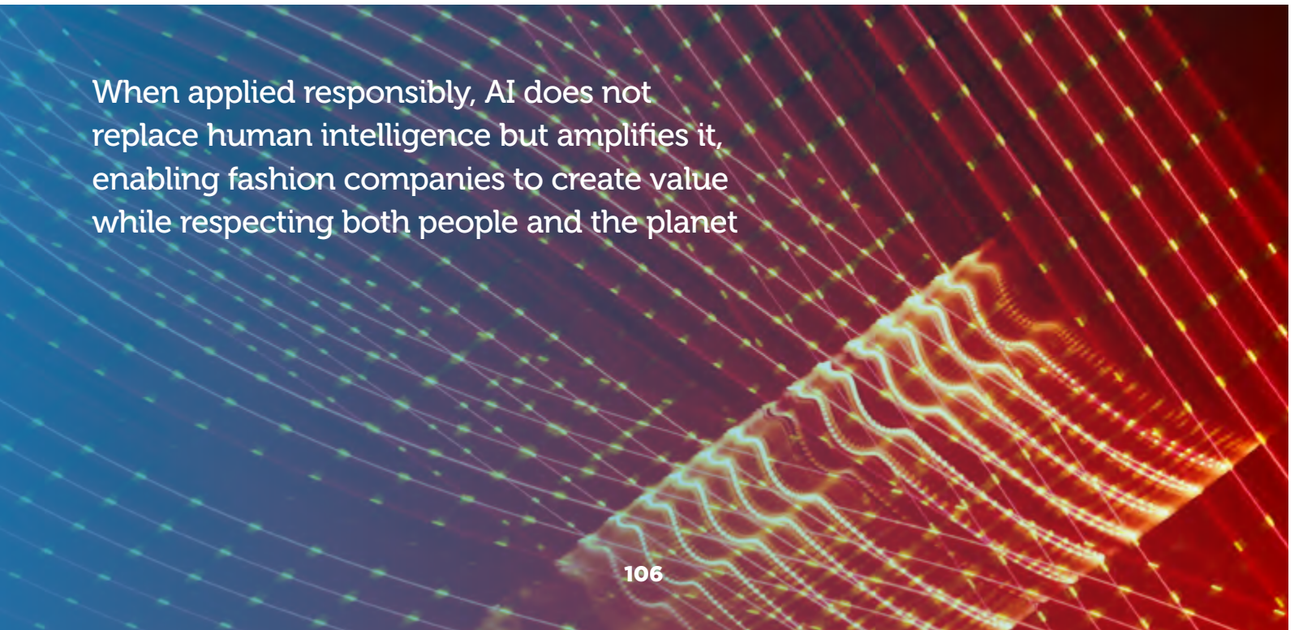
> LOOKING AHEAD, AI IS EXPECTED TO BECOME THE STITCHING FUNCTION OF CIRCULAR FASHION SYSTEMS, CONNECTING DATA, PROCESSES, AND STAKEHOLDERS THROUGHOUT THE VALUE CHAIN.

> THE NEXT FRONTIER WILL BE THE CREATION OF CONNECTED CIRCULAR ECOSYSTEMS WHERE DESIGN, PRODUCTION, DISTRIBUTION, AND END-OF-LIFE RECOVERY ARE SYNCHRONIZED THROUGH SHARED DATA INFRASTRUCTURES.

Digital twins and product-level identities will make it possible to track garments and materials across multiple lifecycles, while AI-powered ecodesign assistants will help designers simulate the impact of their choices in real time. Regulatory frameworks such as the European Union's circularity legislation will accelerate this transformation by requiring companies to manage product-level data, a task that will be feasible only through AI-driven automation.

> THE FINANCIAL LOGIC OF AI ADOPTION IS EVOLVING FROM EXPERIMENTATION TOWARD STRATEGIC INVESTMENT. WHILE MANY COMPANIES ARE STILL ENGAGED IN ISOLATED PROOFS OF CONCEPT, INDUSTRY LEADERS ARE DEVELOPING COMPREHENSIVE AI ROADMAPS TIED TO SUSTAINABILITY PERFORMANCE INDICATORS.

The relevant question is no longer how much companies spend on AI, but how much value AI enables them to unlock—through reduced waste, faster decision-making, and enhanced accountability across the circular economy.



FOCUS 4.2

Environmental costs of AI

The main environmental costs of AI come from the large amount of energy, water, and materials required to develop and run modern systems. Training and operating AI models demand powerful data centers that consume significant electricity, which can lead to substantial carbon emissions when powered by fossil fuels. These facilities also require large quantities of water for cooling, adding pressure to local water resources. In addition, manufacturing specialized AI hardware relies on mining and processing metals and rare earth elements, contributing to pollution, habitat disruption, and electronic waste.

Taken together, the energy use, water consumption, and material demands of AI create a notable environmental footprint that grows as AI adoption expands. A 2025 Cornell University study, published in Nature Sustainability, reveals that by 2030, the current rate of AI growth would annually put 24 to 44 million metric tons of carbon dioxide into the atmosphere, the emissions equivalent of adding 5 to 10 million cars to U.S. roadways. It would also drain 731 to 1,125 million cubic meters of water per year, equal to the annual household water usage of 6 to 10 million Americans.

The cumulative effect would put the AI industry's net-zero emissions targets out of reach. On the upside, the study also outlines an actionable roadmap that would use smart siting, faster grid decarbonization and operational efficiency to cut these impacts by approximately 73% (carbon dioxide) and 86% (water) compared with worst-case scenarios. If decarbonization does not catch up with computing demand, emissions could rise roughly 20%. There is a need for coordinated planning between industry, utilities and regulators to avoid local water scarcity and higher grid emissions (Xiao, T. et al., 2025).

"Digital Product Passport is the perfect demostration that a legal/compliance requirement can and should become a tool to reinforce trust and protect the value and heritage of a Brand. The communication of sustainability performances and results has changed along the years and the possibility to rely on a powerful and reliable storytelling tool as the DPP is one Brands should take very seriously and invest upon."

TOD'S GROUP
Michela Gioacchini, Head of Sustainability & Corporate Social Responsibility

"The Digital Product Passport is a powerful tool for transparency and informed consumer choices. But its value depends on fair and verified implementation—especially for imported goods, which make up 77% of clothing sold in Europe. If enforced properly, it can become a driver of competitiveness for European fashion."

CANDIANI DENIM
Simon Giuliani, Global Marketing Director

"Embracing circularity through our Digital Product Passport is both a responsibility and a catalyst for innovation. The DPP creates a direct, transparent relationship with customers, sharing durability, quality and social impact data. It also educates and empowers people to understand circular fashion, make informed choices, and collectively build a more regenerative, competitive fashion system together."

SAVE THE DUCK

"Transparency is at the heart of Vitale Barberis Canonico. This translates into complete traceability of the manufacturing process, keeping track of every single step starting from the origin of the raw materials. The Digital Product Passport (DPP) embodies this commitment, enabling us to provide reliable, verifiable, and accessible information throughout the entire value chain."

VITALE BARBERIS CANONICO S.P.A.
Lucia Bianchi Maiocchi, Head of Sustainability

"Circularity only works when data works. At Retraced, we see Digital Product Passports as the backbone of circular fashion and AI as the intelligence layer that makes traceability data useful. Together, they help brands shift from basic compliance to scalable circularity, powered by real data, informed decisions, and stronger supply chains built for the long term."

RETRACED
Roman Houlbreque, Director Policy Compliance & Partnerships

"Driving economic impact through sustainability requires changing consumer behavior as well as manufacturing. Surveys show consumers value Digital Product Passports not only for sustainability or compliance data, but also for richer purchase experiences, secure authentication that preserves product value over time, and personalized services that make them feel engaged, valued and motivated."

CERTILOGO, EBAY GROUP
Rossella Munafò, Head of Strategy and Business Innovation

"Tracing a product's life-cycle is like telling its story, and Temera's story is all about traceability and pioneering technological solutions in the fashion industry. It is a journey where passion, innovation and the will to lead create a new kind of competitiveness."

TEMERA

"From predictive analytics in manufacturing to generative tools that enhance creativity and decision-making, AI is expanding what's possible by amplifying human potential. The real innovation happens when our teams combine human insight with machine intelligence to imagine better ways of working, creating and serving...Technology used to help us fix what was broken. Now, it's helping us uncover what's possible — and at Avery Dennison, that spirit of possibility is at the heart of our digital journey."

AVERY DENNISON

Transform to perform

LEVERAGE CIRCULARITY FOR FASHION'S FUTURE

5.1 Key macro-economic and industry trends influencing fashion in 2026

Fashion in 2026 operates in a complex, rapidly evolving environment shaped by economic volatility, regulatory transformation, and profound shifts in consumer values. The convergence of AI-driven transformation, circularity pressures, and geopolitical uncertainty is reshaping the foundations of competitiveness.

BRANDS THAT SUCCEED WILL BE THOSE ABLE TO ANTICIPATE POLICY SHIFTS, LEVERAGE TECHNOLOGY FOR EFFICIENCY AND ENGAGEMENT, AND ALIGN CULTURAL STORYTELLING WITH CHANGING ASPIRATIONS — PRIORITISING DURABILITY, AUTHENTICITY AND RESPONSIBLE INNOVATION.

The industry enters 2026 navigating an environment defined by persistent geopolitical tensions, accelerating technological adoption and tightening sustainability expectations. Together, these forces highlighted from the literature review, reshape global demand patterns, supply chain structures, and competitive dynamics.

THE CHALLENGING MACRO-ECONOMIC AND GEOPOLITICAL OUTLOOK IS CHARACTERIZED BY TARIFF TURBULENCE AND FRAGMENTATION.

The resurgence of protectionism, particularly from the US, has increased input costs, disrupted supply chain routes, and added administrative burdens for brands operating across multiple markets. Geopolitical instability continues to exert pressure, with conflicts, sanctions, and diplomatic realignments creating unpredictable demand and supply conditions.

EUROPE, IN PARTICULAR, FACES THE DUAL CHALLENGE OF GEOPOLITICAL FRAGILITY AND INDUSTRIAL COMPETITIVENESS, PROMPTING NEW STRATEGIC INITIATIVES SUCH AS THE EU CLEAN INDUSTRIAL DEAL.

The most relevant industry trends for 2026 highlight an evolving consumer behaviour and demand patterns.

Consumers in 2026 prioritize value more than everseeking durability, functionality, and transparency.

At the same time, wellness spending (fitness, health, mental wellbeing) competes directly with fashion budgets, reducing apparel's share of discretionary consumption.

Consumers increasingly rely on AI assistants to research products, compare prices, and receive personalized recommendations.

RESALE, REPAIR, RENTAL, AND CIRCULARITY BECOME MAINSTREAM.

The resale market grows much faster than the overall apparel sector.

The increasing regulatory pressure around waste and the emergence of DPPs accelerate consumer participation in circular ecosystems. Platforms and brands alike embrace buyback models, authentication tools, and repair services.

FASHION BRANDS ACCELERATE THE REDESIGN OF WORKFLOWS, ADOPTING AI FOR DEMAND FORECASTING, MERCHANDISING, CONTENT CREATION, SUPPLY CHAIN OPTIMISATION, AND CUSTOMER EXPERIENCE.

Agentic AI reshapes job roles, moving human capital toward creative, analytical, and strategic tasks while automating repetitive operational functions.

DIGITAL PRODUCT PASSPORTS (DPPs) UNLOCK NEW VALUE.

By 2026, companies must prepare for DPP compliance under EU ecodesign legislation. Brands that treat DPPs as a strategic investment, not just a compliance cost, will gain new revenue opportunities through secondhand markets, personalized services, and improved customer engagement.

REGULATION REMAINS A DRIVER FOR CIRCULAR TRANSFORMATION, ELEVATING CIRCULARITY FROM A VOLUNTARY INITIATIVE TO A COMPLIANCE-DRIVEN NECESSITY, RESHAPING SOURCING, DESIGN, AND WASTE MANAGEMENT STRATEGIES.

As already discussed in chapter 3, regulation include the revision of the Waste Framework Directive, which will introduce harmonized EPR schemes across Member States and the ESPR which demands durability, repairability, and recyclability at product level. The EU is also preparing its Circular Economy Act, expected in 2026, which will create a more unified framework for secondary materials markets and strengthen measures against greenwashing.

5.2 A collaborative pathway to transformation

The M4CF calls for collaborative and multi-stakeholder efforts to make the TCLF industry more competitive and circular. Impacts, both environmental and social, are distributed across tiers: isolated action by a brand alone will not address upstream or downstream problems.

CIRCULAR SUCCESS AND COMPETITIVENESS REQUIRE COORDINATION AMONG BRANDS, SUPPLIERS, MANUFACTURERS, RECYCLERS, REGULATORS, AND CONSUMERS.

WITHOUT SHARED MEASUREMENT FRAMEWORKS AND TRANSPARENCY, EFFORTS RISK BEING FRAGMENTED, INCOMPLETE, OR EVEN GREENWASHING.

TO AVOID FRAGMENTATION AND UNFAIR COMPETITIVENESS, COORDINATION AMONG BRANDS, SUPPLIERS, TRADE ASSOCIATIONS, AND POLICYMAKERS IS NEEDED TO BUILD HARMONIZED STANDARDS AND SHARED PATHWAYS (FOCUS 5.1).

FOCUS 5.1

Harmonizing supplier data collection in the fashion industry

During the M4CF social impact working groups activities, partners consistently highlighted the growing burden placed on suppliers who must respond to multiple, uncoordinated data requests from different brands. As transparency becomes a core requirement in the fashion industry, brands are increasingly collecting social and environmental data from their supply chains. Without alignment, however, this process leads to duplication: similar information is repeatedly requested in different formats, units of measurement, time frames, and reporting tools.
This fragmented system generates two main inefficiencies:

- redundant requests: suppliers repeatedly provide comparable data through multiple, non-aligned questionnaires;
- limited comparability and interpretation: the lack of shared benchmarks and common methodologies makes it difficult to interpret and meaningfully compare collected data.

To address these issues, harmonization is essential. Alignment can occur across three main dimensions:

1. **Data points or requirements:** agreeing on a shared set of information to be collected and verified.
2. **Collection methods:** standardizing units, time frames, collection and verification methods, and calculation rules.
3. **Collection channels:** using shared or interoperable platforms instead of separate and redundant tools.

A concrete example of the harmonization of data points is the creation of an environmental questionnaire by the European Accelerator of the Fashion Pact, which brings together major luxury and fashion groups, including Chanel, Ermenegildo Zegna Group, Kering, Moncler Group, and Prada Group. This initiative is considered a first attempt to define a harmonized set of environmental data points on water, energy, emissions, and waste. It has created an optional, non-exhaustive questionnaire designed to reduce the administrative burden on suppliers and promote clearer, more consistent reporting.
The shared template for environmental data collection developed by the European Accelerator aims to enhance clarity, reduce duplication, and support more meaningful environmental progress across fashion supply chains.
The framework is publicly available and represents a first step towards sector-wide coordination: https://europeanaccelerator.org/

Finally, strengthening capacity-building and education for both brands and suppliers is essential to make harmonization truly effective. It is important to reinforce not only the knowledge of the tools used for data collection, but also the understanding of the underlying concepts and the significance of the information being requested. Data should not be collected merely to satisfy external requests but all actors must deeply understand the relevance, value, and purpose of the indicators they report.

Within this broader need for education and clarity, clear guidance is needed on which data should be provided, how it should be measured and reported, and which supporting documentation is required for social and, particularly, for complex environmental indicators which are more technically demanding and harder to interpret.

TRANSFORMING TO CIRCULAR FASHION IS NOT ONLY A TECHNICAL SWITCH, IT REQUIRES RETHINKING DESIGN, CONSUMPTION MODELS, MARKETING, END-OF-LIFE PROCESSES, AND ULTIMATELY THE VALUE PROPOSITION.

ONLY THROUGH COORDINATED, TRANSPARENT, CROSS-STAKEHOLDER EFFORTS CAN THE FASHION INDUSTRY RECONFIGURE ITSELF, CLOSING MATERIAL LOOPS, REDUCING ENVIRONMENTAL AND SOCIAL RISKS, AND BUILDING RESILIENT, FUTURE-PROOF VALUE CHAINS.

> *"The fashion industry has to work on harmonizing requests, adopting shared audit approaches, so that companies can reduce duplication, strengthen trust with suppliers, and build a more resilient value chain."*
>
> **HMODA**

> *"At Ympact, we support harmonising supply chain monitoring and traceability. We built a digital model framework called 4sustainability® for collecting and verifying data aligned with leading industry methodologies such as ZDHC, Textile Exchange, Aii, European Accelerator and OECD. We are now working for the harmonization of the onsite audit with 4s ETHIC."*
>
> **YMPACT**
> Francesca Rulli, Co-Founder

5.3 Transformative value chain models

On 13 October 2025, SDA Bocconi's Monitor for Circular Fashion (M4CF) and BIP co-organized a strategic workshop at BIP's Milan offices, gathering over 20 partner companies and key stakeholders, including representatives from various members of the value chain (brands, ingredient brands, component manufacturers, small craftsmanship enterprises and technological service providers. The workshop was designed as a high-level, executive forum to foster open dialogue on the future of the fashion and luxury value chain, with a focus on sustainability, circularity, and competitiveness.

The objectives were threefold: to share insights with C-level executives, collect perspectives on transformation models, and identify the most relevant strategic directions for the sector.

The workshop's methodology was rooted in collective intelligence. Participants engaged in visioning exercises, roadmap development, and action planning, all aimed at defining the structural conditions for a robust, adaptive, and sustainable value chain.

To stimulate the discussion and provide a common language, a set of "enablers" was shared in advance: a toolbox to help participants reflect on the levers available for transformation (Focus 5.2). The process highlighted the need for a systemic approach, where transformation is not only technological but also organizational, cultural, and regulatory. Among the main takeaways (Figure 5.1):

- **The need to invest in interoperable digital infrastructures (such as the Digital Product Passport) and shared training platforms to accelerate the adoption of sustainable and circular practices.**
- **The importance of collaborative**

FIGURE 5.1: M4CF STRATEGIC WORKSHOP WORD-CLOUD OF KEY TAKEAWAYS

financing and risk-sharing mechanisms to support innovation and inclusion, especially for smaller players.

- **The centrality of transparent communication and credible labeling to build trust with consumers and institutions.**
- **The value of collective learning and the capitalization of experience to spread best practices and reduce inefficiencies across the value chain.**

Ultimately, the workshop reinforced the idea that **transformation is a collective journey**. The enablers provided a common language and a practical toolbox, but it is the willingness to cooperate, experiment, and share responsibility that will determine the sector's ability to thrive in a context of growing regulatory, market, and environmental challenges.

> PARTICIPANTS CONVERGED ON A SHARED VISION: FUTURE COMPETITIVENESS WILL DEPEND ON THE ABILITY TO CREATE A COLLABORATIVE ECOSYSTEM.

The discussion highlighted that no single approach or enabler is sufficient on its own—sufficient on its own: the most resilient ecosystems will be those able to hybridize selective integration, collective governance, and protective normalization, leveraging the full spectrum of enablers as strategic levers.

"Over the next five years, fashion will demand highly specialized, data-driven sustainability skills. Building internal expertise in carbon footprint measurement, LCA and supply chain analysis, strengthening analytical roles, enables the transformation of complex data into actionable insights, supports regulatory compliance, enhances transparency, and creates a lasting competitive advantage."

VIVIENNE WESTWOOD S.R.L.
Giorgio Ravasio, Country Manager

"Transformation of the TCLF industry value chain is a collective journey. Robustness, resilience and competitiveness emerge when collaboration is supported by shared enablers, providing a common language and practical tools to experiment, coordinate and build more effective and future-ready ecosystems."

BIP

"Among the key skills to transform the fashion industry is the ability to collect, validate, and communicate environmental data. Data is not only a reporting requirement but an industrial asset. At Gitessil, our Energy Sentinel system enables monitoring of energy and water consumption, ensuring transparency and competitiveness in increasingly regulated and data-driven markets."

GITESSIL FODERAMI SRL
Paolo Giamberini, Ceo

"The biggest issue we're facing is the enormous costs we bear in training technological and manual skills all along the manufacturing supply chain with little help from schools, universities and local authorities, when, on the contrary, manufacturing jobs are regularly undervalued in favour of services."

OSCALITO 1936
Dario Casalini, CEO Maglificio Po

""Manufacturers should opt for a holistic strategy. One that brings the agility and speed of automation together with new generative AI and specialized AI capabilities to improve operational excellence, accelerate revenue growth, and streamline customer experiences; improving compliance, sustainability, and risk management."

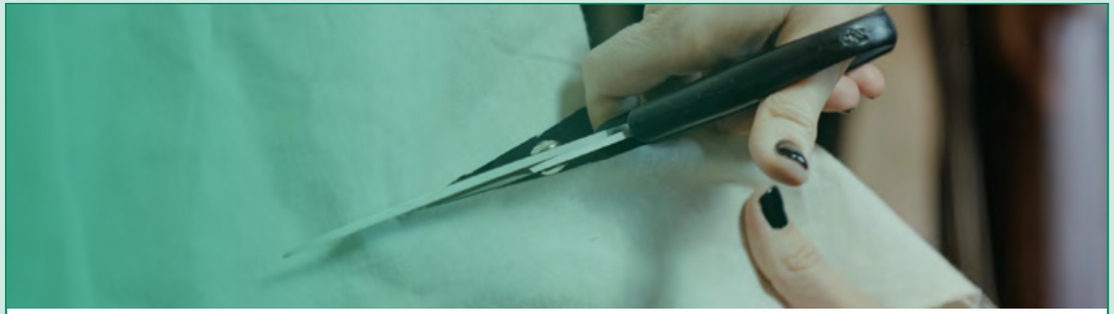
ICEC

"The textile industry is changing daily to keep up with the new demands and needs of consumers, who are increasingly aware that sustainability must be taken seriously by the companies they decide to buy from. Building a team of people with extensive technical skills from a chemical, environmental and social point of view is a strategy that more and more companies are implementing to satisfy end consumers, safeguard the planet and protect their brand reputation."

UL SOLUTIONS

"Skills in sustainable innovation, regulations, environmental impact, structured and transparent reporting are strategic drivers for building responsible and future-ready supply chains. Solid technical skills help us make better decisions, reduce risks, work more closely with partners, design and build durable products creating value and trust over time."

EUROJERSEY
Liuba Napoli, Sustainable Innovation Manager



FOCUS 5.2 **BY** bip.

The role of enablers: from vision to action

Before delving into the variety of enablers we retain as activable in such context, we have shared three possible macro-approaches, inspired by return on experience from different industries, that can be pursued for the transformation of the value chain to ensure structural robustness and resilience. These 3 approaches are illustrative; they are directional and are likely in many instances overlap and reinforce each other:

1 **Selective Integration** involves a more organic, less fragmented, vision of the value chain. It may develop through the industrial or capitalistic integration of the most sensitive rings of the value chain, through targeted reshoring initiatives, but also possibly through the development of downstream capabilities to ensure industrial scale circularity. This approach strengthens control over critical phases, reduces dependency on intermediaries, and increases the capacity to respond to shocks.

2 **Collective Governance** assumes that both the cleanliness and the performance of an industrial ecosystem are structurally improved by cooperation and shared responsibility. It may materialize through the creation of specialized industrial poles and multi-actor networks, with shared governance models that allow collaborative management of volume variability and industrial risks.

Knowledge sharing and the capitalization of experience become levers for collective learning and the diffusion of best practices for the common good of the industry.

3 **Protective Normalization** recognizes that global competition requires defensive mechanisms, it deploys through the definition of standards, labels, and closed digital systems (such as the Digital Product Passport, interconnected smart manufacturing, and digital twins) to guarantee traceability, intellectual property protection, and process consistency throughout the value chain.

This approach creates a shared framework that safeguards reputation and facilitates regulatory compliance.

These three directional models are not mutually exclusive, but represent different ways of orchestrating transformation, depending on sectoral specificities and company priorities.

To support these programmatic axes, the enablers provided to workshop participants serve as a framework of combinable levers and practices to stimulate discussion on how to operationalize transformation. Each thematical group of enablers responds to a key challenge and suggests concrete ways to address it.

COLLABORATIVE FINANCING & INVESTMENT

The objective here is to overcome the fragmentation of investments and reduce individual risk, creating shared financial instruments that accelerate innovation and the circular transition. For example, the creation of ad hoc mutualized financing vehicles or joint industry funds allows resources to be concentrated on strategic projects—such as building infrastructure for industrial waste collection and sorting. Mobilizing national and European subsidies enables large-scale capital deployment, while microcredit schemes for small subcontractors or precarious workers foster inclusion and social resilience. In practice, these enablers help companies share risk, invest in enabling infrastructure, and support even the smallest actors, strengthening the entire ecosystem.

KNOWLEDGE, RESOURCES & METHODS SHARING

This group aims to build a common heritage of skills, experiences, and tools, reducing duplication and information asymmetry. Cross-industry training programs, shared repositories of lessons learned, shared pools of auditors, and standardized legal templates enable the alignment of behaviours and practices across the value chain, facilitating the rapid adoption of new standards (for example, in circularity or social compliance). Knowledge does not remain siloed within individual companies but becomes a collective asset that serves efficiency and safety while accelerating the spread of innovation.

TECHNOLOGIES PLATFORMING & INTEROPERABILITY

The goal of these enablers is to ensure end-to-end traceability, transparency, and operational efficiency through interoperable digital platforms. The adoption of the Digital Product Passport, integration of RFID systems and digital twins, and the use of artificial intelligence tools for material optimization or circularity assessment make it possible to collect reliable data and orchestrate complex processes in real time. These technologies not only respond to new regulations but also enable data-driven business models and value-added services for clients and partners across the chain.

INFLUENCE & COMMUNICATION

Here, the objective is to strengthen the sector's legitimacy and shape market and policy behaviours. Joint institutional campaigns, consumer awareness initiatives, and coordinated lobbying allow the value chain to defend its interests, promote its reputation, and stimulate more conscious and sustainable demand. Transparent communication and the management of sustainability claims are fundamental to building stable trust and differentiating the offer from global competition.

NORMALIZATION & LABELLING

The aim is to create a common language and objective criteria for assessing and communicating sustainability. The introduction of industry labels, visual scoring systems, and standardized audit processes facilitates comparability, reduces the risk of greenwashing, and highlights excellence where it builds and lives. These tools are particularly effective when accompanied by normalization processes that are shared and institutionally recognized.

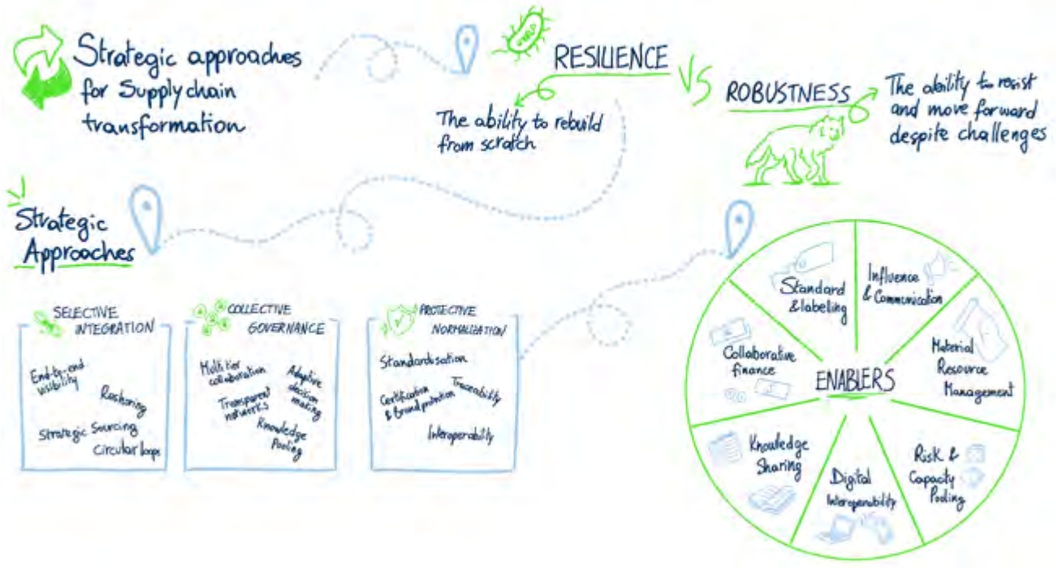
INDUSTRIAL RISK SHARING

The challenge here is to manage uncertainty and demand volatility, preventing risks from being borne solely by the weakest actors. Sharing production capacity, joint scenario planning, and collaborative management platforms for skilled labour allow better absorption of fluctuations, preservation of know-how, and operational continuity even in turbulent contexts.

MATERIAL RESOURCES MANAGEMENT

Finally, the objective of these enablers is to optimize the use of material resources, reduce waste and supply risks, and enable circular economy models. Selective reshoring initiatives, co-development of alternative materials, collaborative stock management, and closed-loop logistics for materials increase supply security, reduce environmental footprint, and create new business opportunities.

FIGURE 5.2: ILLUSTRATION INTRODUCING THE ENABLERS



5.4 Building the skills to transform fashion

NO TRANSFORMATION IS POSSIBLE WITHOUT SKILLED PEOPLE. UPSKILLING AND RESKILLING ACTIVITIES ARE ONE OF THE CENTRAL ACTIVITIES OF THE M4CF, IN ITS MISSION TO CREATE AND REINFORCE A CIRCULARITY CULTURE.

This mission brought the M4CF closer to the activities of European Commission DG GROW, which launched in 2025 the EU Textiles Ecosystem Platform (Figure 5.3) aiming to create an integrated support mechanism that facilitates collaboration, knowledge sharing, and capacity building among stakeholders in the textiles ecosystem, in line with the goals of the Transition Pathway.

Key features

In this platform, you will find:

- **Accessible and up-to-date information for the ecosystem.** This includes relevant news, events, legislative developments and funding opportunities.
- **Community pages on specific topics of the ecosystem.** There you will be able to share knowledge and collaborate with the members of your chosen community(ies).
- **Access to networking and collaboration opportunities with your peers across the EU, and beyond.** By registering to the platform, you will be able to attend capacity building events and learning opportunities, as well as engage in discussion forums.
- **Guidelines on how to pledge for the Transition Pathway, and inspiration for your future commitments.** This is thanks to many pledges already available, as well as identified best practices across the TCLF ecosystem.

Among the activities of the EU Textiles Ecosystem Platform, a first Challenge campaign workshop was organized in November 2025, with a focus on skills. Key findings are summarized in Focus 5.3.

FOCUS 5.3

Challenge campaign workshop: developing skills in TCLF for the twin transition

The Challenge campaign workshop "Developing skills in TCLF for the twin transition" carried out on 18 November 2025 gathered 51 participants (out of 68 registrants; 75% turnout) representing a diverse range of organizations including among the stakeholders, academic/research and VET institutions (20%), small and medium-sized enterprises (SMEs) (14%), industry associations and chambers of commerce (12%) and business support organizations (11%). In addition, large companies, cluster organizations, media and journalists, networks and federations/confederations, international organizations, EU institutions, local authorities, social economy entities were also represented.

Geographically, stakeholders joined primarily from Central and Southern Europe, mainly Italy, Belgium, Spain, France, Portugal, with additional participants from Eastern and Northern Europe and several non-EU countries.

The workshop was hosted within the EU Textiles Ecosystem Platform, the collaborative hub supporting implementation of the Textiles Ecosystem Transition Pathway. It aimed to mobilize stakeholders, share knowledge, and coordinate actions accelerating the sector's green and digital transitions. SDA Bocconi School of Management was the lead organiser of the workshop.

The Challenge campaign workshop objectives were the following:

- Deepen engagement by gathering bottom-up insights and co-developing solutions directly with community members.
- Explore ways to support the textiles ecosystem in embracing the green and digital transitions while strengthening its resilience and competitiveness.
- Discuss approaches to addressing the skills-related challenges encountered by community members within the Textiles Ecosystem Transition Pathway.

Discussions were facilitated in three breakout rooms on sustainability and circularity skills, digital and technological skills, demographic and social challenges.

They have been moderated by EU Pact for Skills team composed by Euratex, COTANCE and European Footwear Confederation (CEC), documented on Miro boards, and synthesized in the plenary session.

Evidence from Erasmus+ AEQUALIS Blueprint project and building on several years of skills intelligence, surveys, and stakeholder consultations across Europe are summarised below:

- Acute shortages are evident in digital competences such as CAD/CAM, 3D modelling, data analysis, automated production systems.
- Green skills gaps can be found in ecodesign, sustainable materials, waste reduction, LCA, traceability and compliance.
- Transversal competences such as problem-solving, remain underdeveloped across the sector.
- SMEs face persistent barriers: limited financial/human resources, administrative burden, slow curriculum renewal, and weak industry–education cooperation.
- Several job roles will require substantially updated competences in the coming years.

These findings formed the evidence base for an EU TCLF Skills Strategy, which emphasises seven priority areas which will guide implementation:

1. aligning education with industry needs;
2. promoting inclusion and equal opportunities;
3. fostering lifelong learning;
4. improving SMEs' access to training;
5. addressing regional disparities;
6. making EU funding more coherent and accessible;
7. enhancing sector attractiveness, especially for young people, through improved communication and role-model initiatives.

Some key results from the three breakout discussions can be synthetised below.

1 SUSTAINABILITY & CIRCULARITY SKILLS

- Strong demand for ecodesign skills is embedded across all roles, not just design teams.
- A strong need for transversal skills, such as systems thinking, design thinking, ESG basics, stakeholder mapping is evident.
- There is a call for harmonised European skills frameworks and a shared digital learning platform.

2 DIGITAL & TECHNOLOGICAL SKILLS

- Urgent competencies were identified in AI, robotics, 3D tools, digital twins, and data analytics.
- Emphasis on hybrid profiles is needed, blending craftsmanship with digital literacy and regulatory awareness.
- SMEs need modular, hands-on, publicly supported training, clearer access to existing initiatives, and peer-to-peer learning.
- Risks linked to AI, such as data protection, accuracy, ethics, must be integrated into training.

3 DEMOGRAPHIC & SOCIAL CHALLENGES

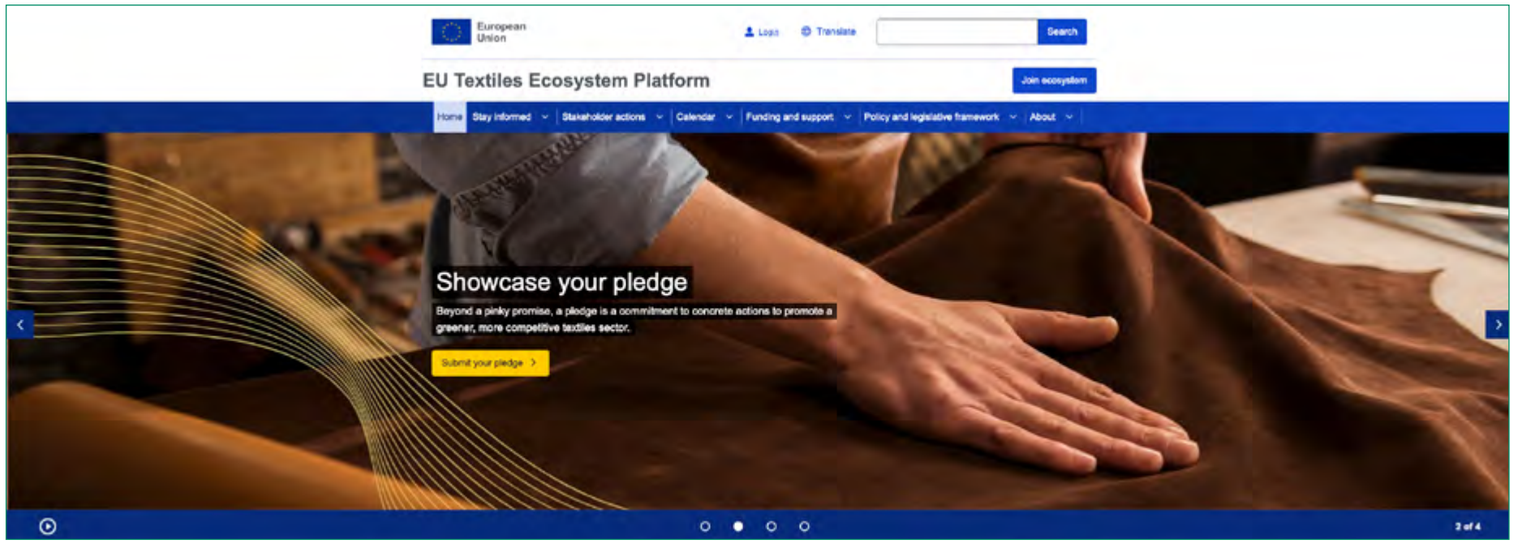
- There is a need to rebrand the sector to attract younger talent by highlighting sustainability, creativity, and advanced technology.
- Diversity and inclusion were recognised as drivers of innovation, resilience and talent attractiveness.
- Addressing ageing and gender imbalance requires mentorship schemes, flexible working, and stronger cooperation between employers, education providers and authorities.

Finally, the Challenge campaign workshop poll aimed to identify the key drivers of change, urgent skill needs for the period 2025-2030, and effective mechanisms for collaboration between education providers, industry stakeholders, and policymakers. In addition, participants were asked to reflect on actions to support SMEs and inclusion in upskilling, as well as strategies for aligning national and EU-level skills initiatives.
The following section summarises the poll questions and the related results.
The Challenge campaign workshop poll (27 respondents) showed a strong consensus that sustainability and environmental regulation are the main drivers of change for national TCLF ecosystems, with digitalisation and shifting consumer trends following at a distance. Looking ahead to 2025–2030, participants identified green and circular skills as the most urgent skill need.
When asked how to strengthen education–industry cooperation, respondents favoured incentives for companies to collaborate with training providers, alongside the creation of sectoral skills councils and national partnerships for co-designing curricula.
Supporting SMEs in upskilling was seen primarily as a matter of targeted public funding, complemented by shared regional training centres or online learning hubs.

Finally, aligning national and EU action on skills was viewed as requiring a combination of measures, with highest support for joint monitoring and forecasting of skills needs, and equal backing for integrating qualification frameworks with EU with EU green/digital TCLF skill standards and for using EU funding tools (ESF+, Erasmus+, Pact for Skills) to co-finance national upskilling initiatives.

DISCOVER
THE EU TEXTILES
ECOSYSTEM
PLATFORM

FIGURE 5.3: EU TEXTILES ECOSYSTEM PLATFORM



5.5 M4CF next steps

During the fifth year of activities, the M4CF continued testing selected KPIs through 6 additional circularity projects, strengthened the community for Circular Fashion with new partners, published the "Circular Fashion Manifesto 2025 Best Practices Update" including the M4CF Joint position paper 2025 and the annual Report to be presented to companies and industry associations, institutions, policy makers and other key stakeholders.

The M4CF supports 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 II).

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 DIALOGUE WITH NEW INDUSTRIES WILL GUIDE THE M4CF TO HAVE A STRONGER VOICE.

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:

- support TCLF sustainability and circularity harmonization initiatives;
- contribute to create value chain transformation frameworks;
- keep on monitoring their circularity performance by testing the industry specific KPIs;
- keep on implementing the industry specific KPIs in pilot and industrialized projects;

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, alliances and existing NGOs on the topic of waste management;
- 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 future of fashion is built through collaboration: extending product lifecycles, recycling pre and post-consumer waste resources, tracing supply chains and innovating with data and AI.

In a pre-competitive ecosystem, we turn regulation, technology, and skills into shared value, collectively leading the circular transition of fashion, today and tomorrow."

FRANCESCA ROMANA RINALDI
Director M4CF SDA Bocconi

Annex I

M4CF CIRCULAR PROJECTS 2022-2025


SDA Bocconi
SCHOOL OF MANAGEMENT
SUSTAINABILITY LAB
MONITOR FOR CIRCULAR FASHION
Circular
Fashion
MANIFESTO
2025
Best practices update

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.

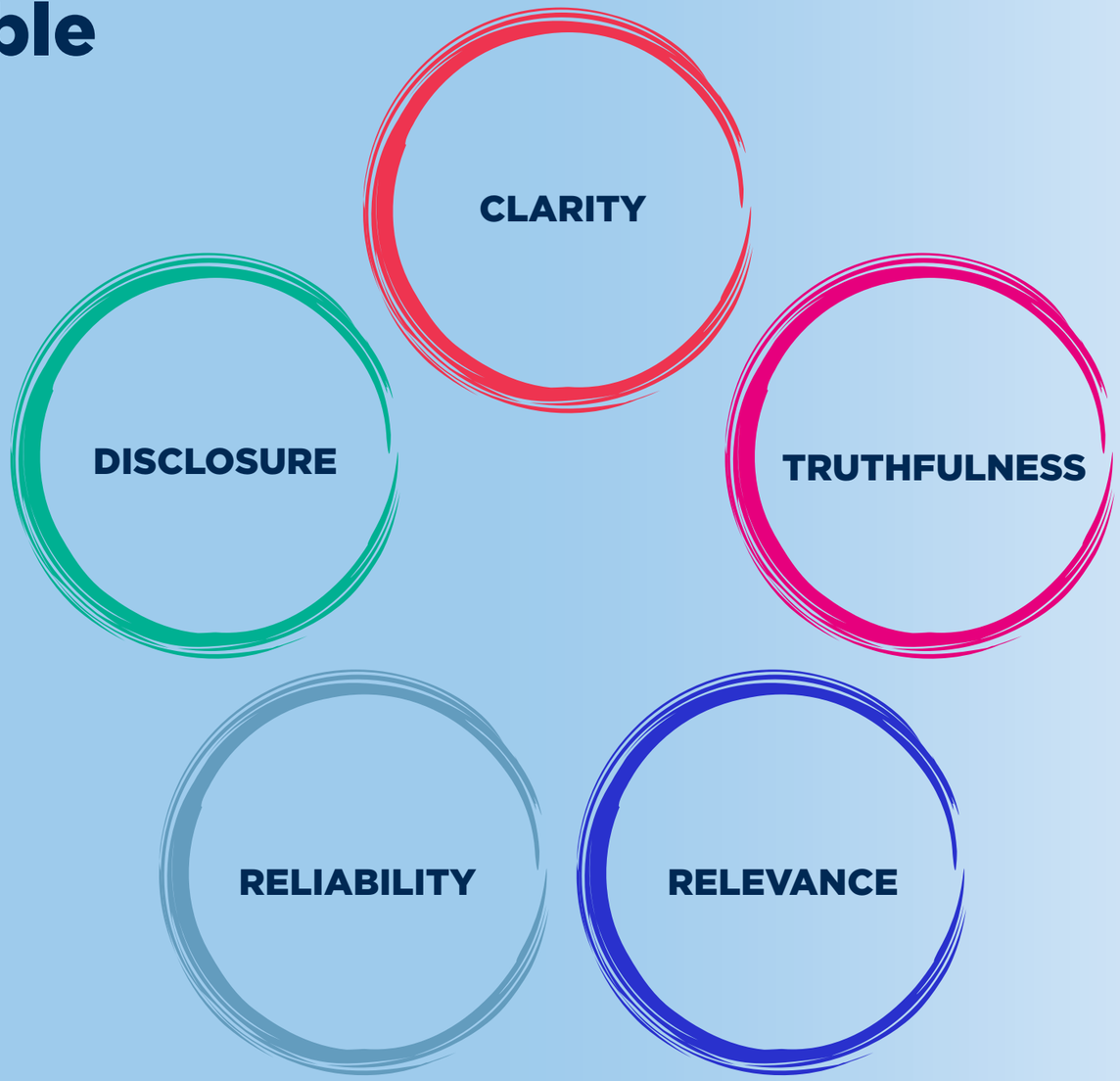
5. Enhancing circularity through services.

1. Estabilishing teamwork between ingredient brands, brands & retailers and service providers

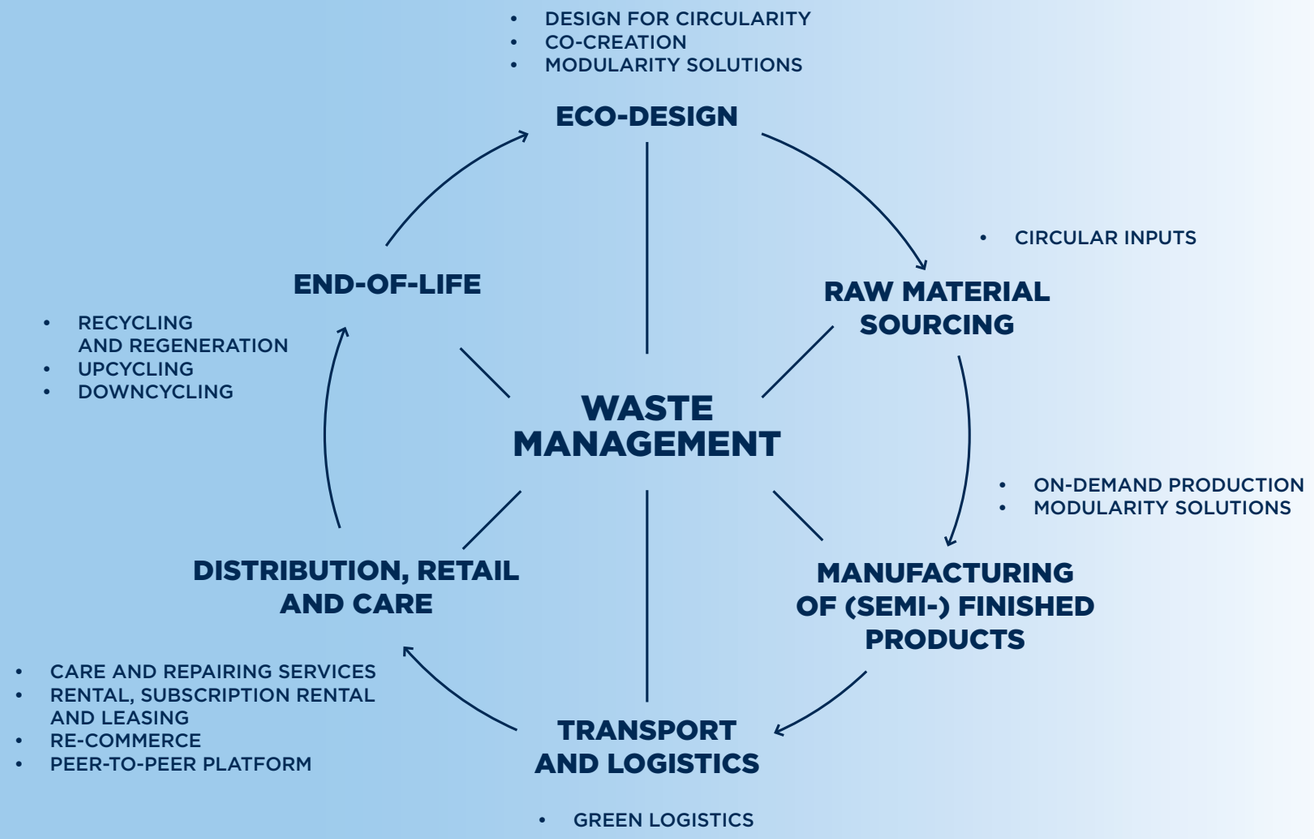
The companies have been working in collaboration (at least 2 partners of the Monitor for Circular Fashion) within each circularity project.

In some projects, M4CF partners engaged with small players, start-ups, external designers, and social enterprises, acknowledged as best practices in social inclusion and ethical fashion.

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



Source: SDA Bocconi Monitor for Circular Fashion Report 2024/2025.

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. Implementing the eco-design principles into a real life product

ECO-DESIGN FRAMEWORK

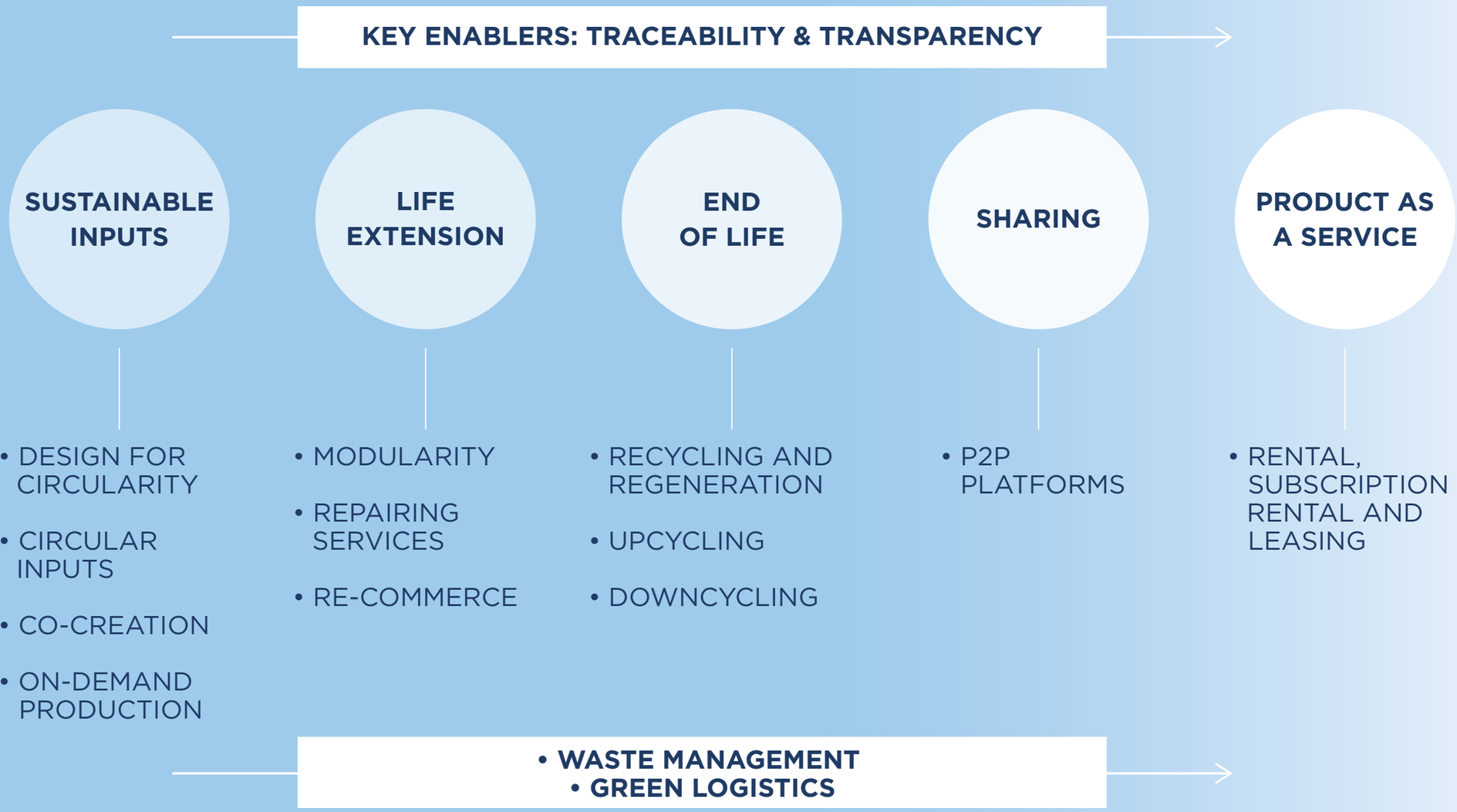
CIRCULAR LIFECYCLE	HEALTH & SAFETY	SUSTAINABLE INPUTS
Durability	Safe chemical substances	Renewable inputs
Reusability	Minimized microfiber releases	Recyclable inputs
Reparability		Recycled inputs
Recyclability		Resources reduction

Source: SDA Bocconi Monitor for Circular Fashion Report 2024/2025.

5. Enhancing circularity through services

M4CF projects can also relate to services, referencing one or more of the Circular Fashion Business Models (see next slide).

Traceability and circularity technologies are considered as key enablers for a sustainable transition.



Source: SDA Bocconi Monitor for Circular Fashion Report 2024/2025.

M4CF 2022-2024 Projects: Typologies

Business models

B2B

Business to Business

B2C

Business to Consumer

B2C2B

Focus on Post Consumer Waste Resources

P2P

Peer to Peer

PRODUCT

vs

SERVICE

Scale

PILOT PROJECTS

1 or few SKUs

INDUSTRIALIZED PROJECTS

100% of the collection or close

M4CF Circular Projects 2022-2025

2022

- Think leather
- Eco-designed jeans
- Trace me
- Repairing T-shirt
- Component shoe
- Anima
- M-Pocket

2023

- Re-Gen H
- Ela Sweatshirt
- Traced Leather Varina ballet flat

2024

- One Next Step
- Traceable Fiamma Bag
- Kintsugi
- Digital Product Passport

2025

- Nova: the evolution of a “Star”
- Closing the T2T recycling loop
- DuckCare
- Easy Zip
- Furoshiki Wool
- SecondFlow

Digital Product Passport

The commitment to traceability

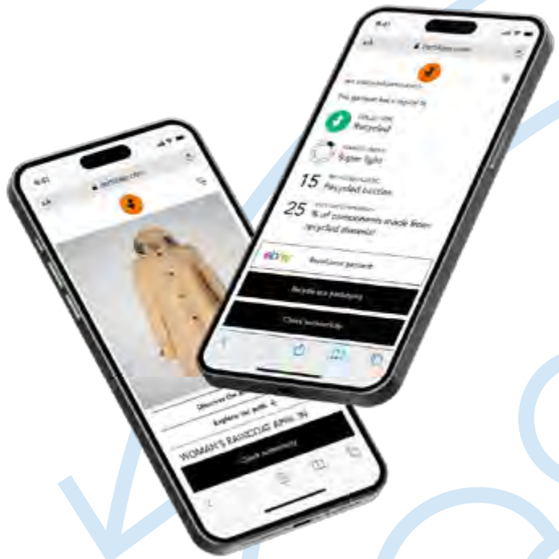
Updated from 2024

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 or donated to Humana People to People directly.



Try the digital experience at this **LINK**

PARTNERS

SAVE THE DUCK

CERTILOGO

ebay

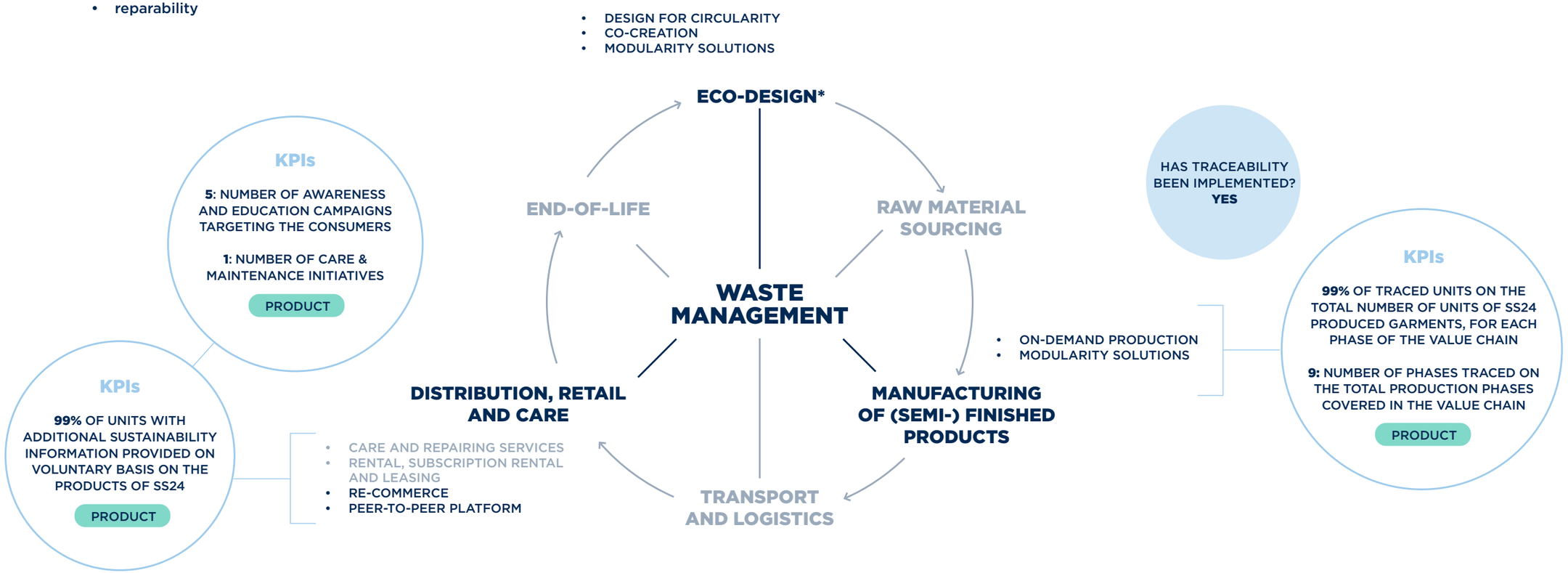
HUMANA
PICCOLI GESTI CHE TRASFORMANO IL MONDO

Digital Product Passport

Circular fashion activities and KPIs

*** Eco-design principles applied:**

- durability
- reusability
- reparability



Nova: the evolution of a “Star”

Redesigning our "Tote bag STAR-shaped" by driving innovation in material and processes

B2C

The Nova bag is the result of an eco-design process focused on maximizing the use of renewable, bio-based materials while ensuring full traceability and chemical safety. Its bio-based carbon content—defined as the portion of carbon in the material derived from renewable biological sources, as measured through C14 radiocarbon testing—is verified at 84.3% on the total weight. The textile body is made with 100% Bio-based Biofeel® Eleven (PA 11 yarn) from RadiciGroup, derived from castor oil, while the leather parts use vegetable-tanned leather from Conceria Antiba, containing 76.7% bio-based carbon carried out in accordance with UNI EN 16640:2017. Antiba ensures traceability of the leather according to ICEC TS_410, operates under ISO 14001:2015 environmental management systems, and complies with ZDHC MRSL v3.1. The bag is assembled without metal hardware or glue, with a 60% packaging volume reduction.

PARTNERS

FERRAGAMO · RADICI GROUP · ANTIBA · ICEC · UNIC ITALIAN TANNERIES · Temera

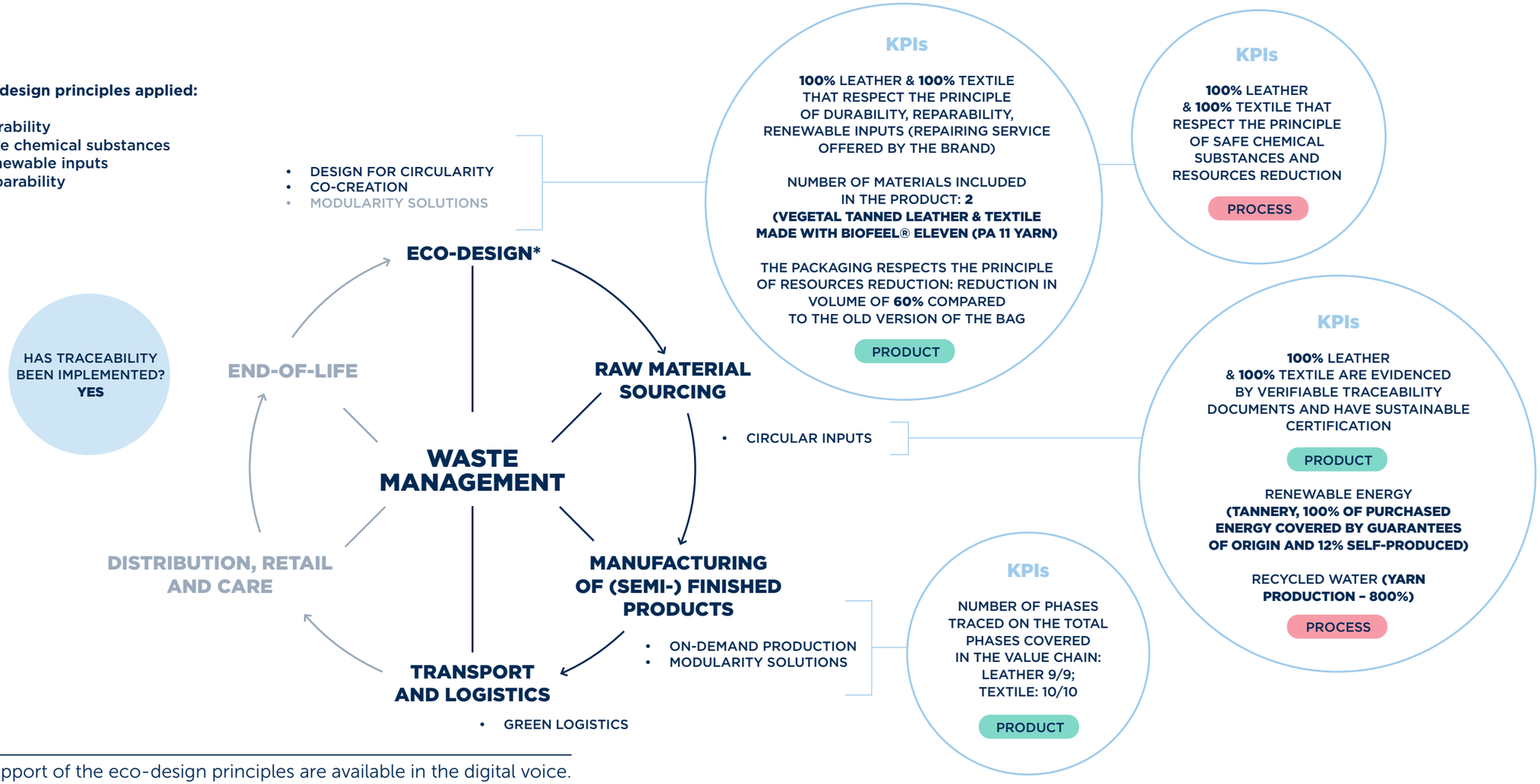
Discover more about this project at this **LINK**

Nova: the evolution of a “Star”

Circular fashion activities and KPIs

*** Eco-design principles applied:**

- durability
- safe chemical substances
- renewable inputs
- reparability



*More details in support of the eco-design principles are available in the digital voice.

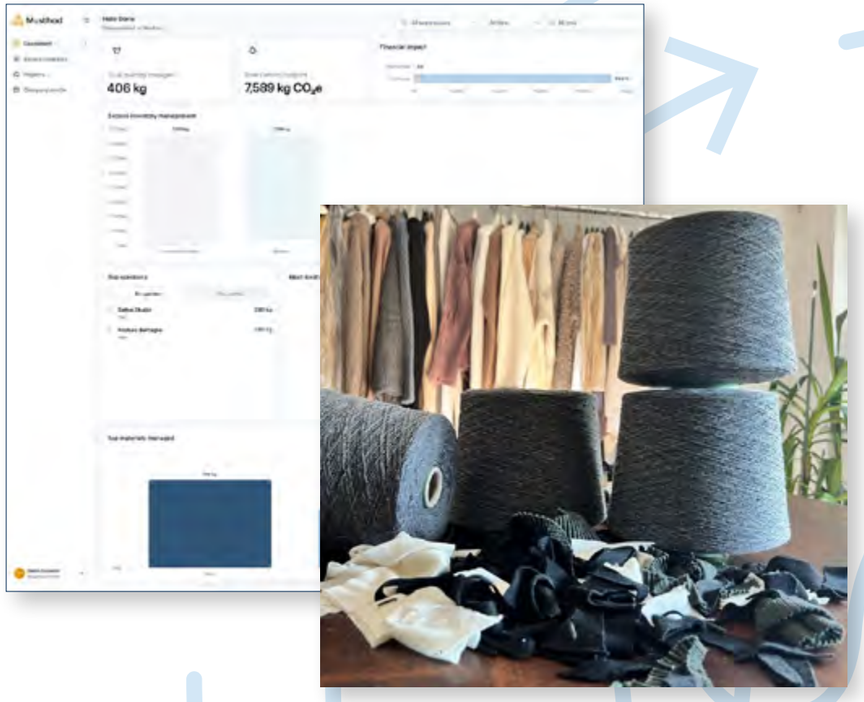
Closing the *T2T recycling loop

Oscalito partners with Musthad to optimize circular waste management

B2B

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

Musthad has supported Oscalito in establishing a pilot circular supply chain to recycle 100kg of wool and silk production scraps into 68kg of new yarn, set to be part of a brand's future collection. The recycling process follows a closed-loop model for production waste, with all processing — including shredding and spinning — conducted in Italy within a distance of less than 500 km. The output yarn consists of 42% recycled wool, 40% virgin wool, and 18% recycled silk and is 100% recyclable. The documents supporting the traceability of the circular supply chain on the Musthad platform include the by-product sheet, transport document, yarn specification sheet, and recycling declaration.



PARTNERS

Oscalito 1936 · Musthad · Temera

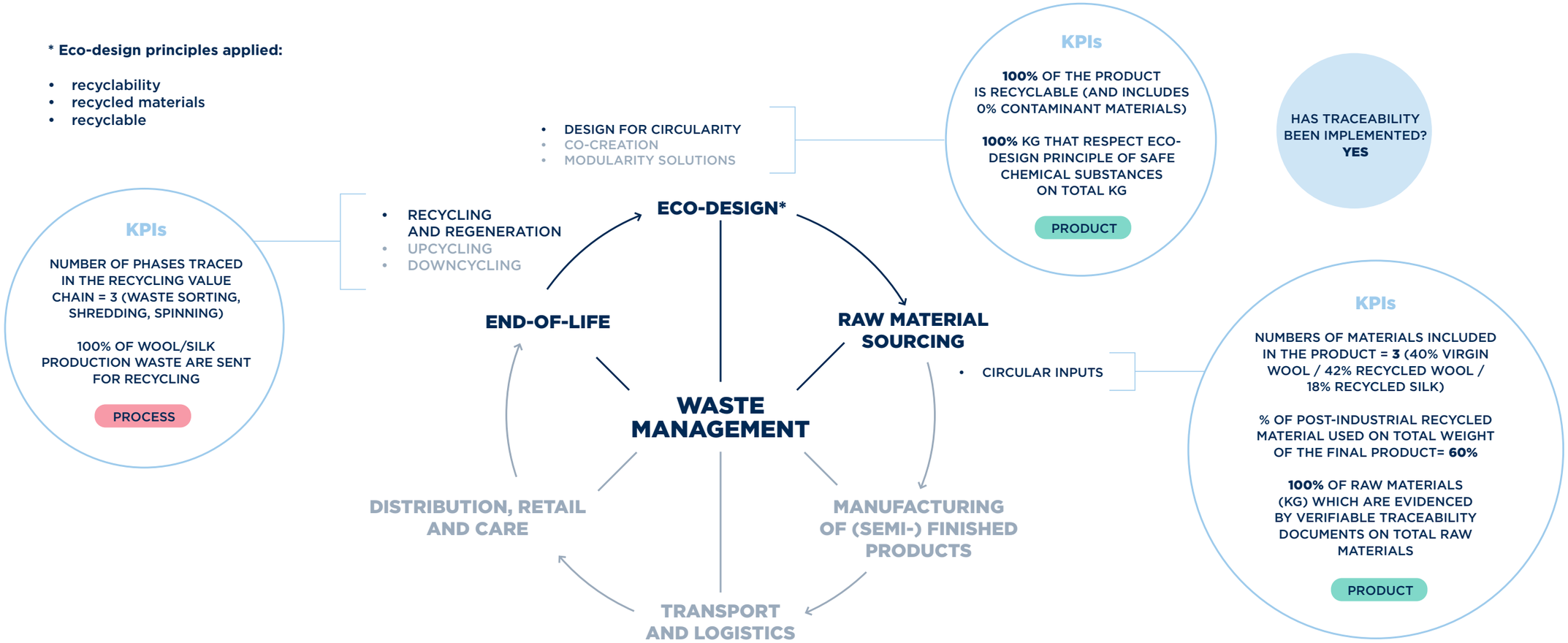
* T2T: also called Textile-to-Textile, refers to the process of recycling textile waste, like fabric scraps and used clothing, into new textile products.

Closing the T2T recycling loop

Circular fashion activities and KPIs

*** Eco-design principles applied:**

- recyclability
- recycled materials
- recyclable



DuckCare

Stitch happens

B2C

We offer a paid repair service that exceeds the legal warranty, including broken zippers, damaged pullers, and/or loose seams.

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

PARTNERS

SAVE THE DUCK

PRISM

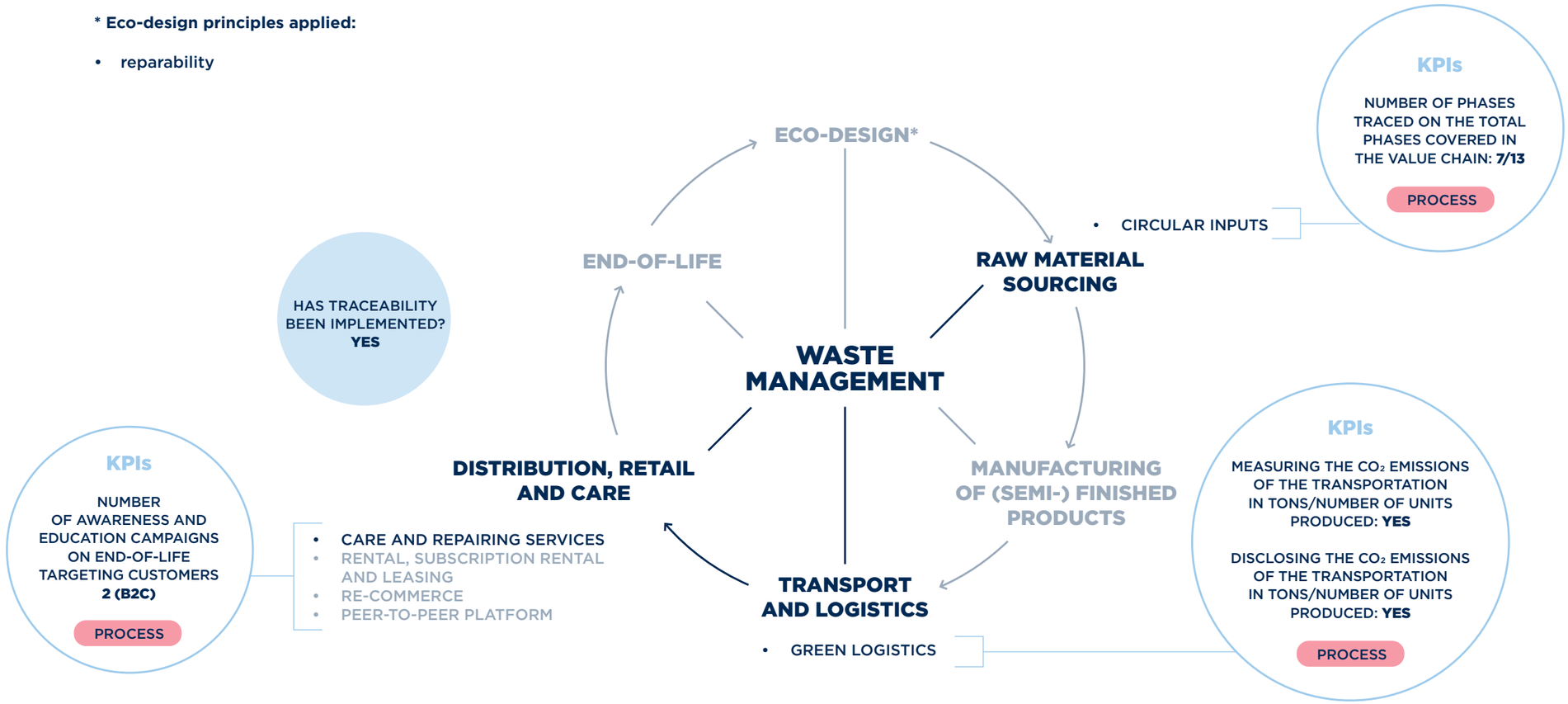
CERTILOGO

DuckCare

Circular fashion activities and KPIs

*** Eco-design principles applied:**

- reparability



Easy Zip

Repairing broken puller on jackets

B2C

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

To increase the repairability of garments, Save The Duck and YKK® have co-developed a modular zipper puller that enables targeted maintenance interventions. In cases where a malfunction or damage occurs to the zipper puller on a Save The Duck jacket, consumers can access a specialised repair service that replaces only the damaged component rather than the entire zipper system. This repair approach extends garment longevity by up to five years, aiming an average annual reduction of 27% in Global Warming Potential impact per year of use (GWP- $KgCO_2eq$/unit per year), as demonstrated by a Life Cycle Assessment (LCA) comparing a repaired versus an unrepaired jacket. From an internal analysis, the replacing of only the zipper puller leads to a 89% decrease in raw material usage, compared to the production of a 60 cm VISLON® open-end zipper with standard slider and a single replaceable puller.

PARTNERS

SAVE THE DUCK

YKK™ Little Parts. Big Difference.

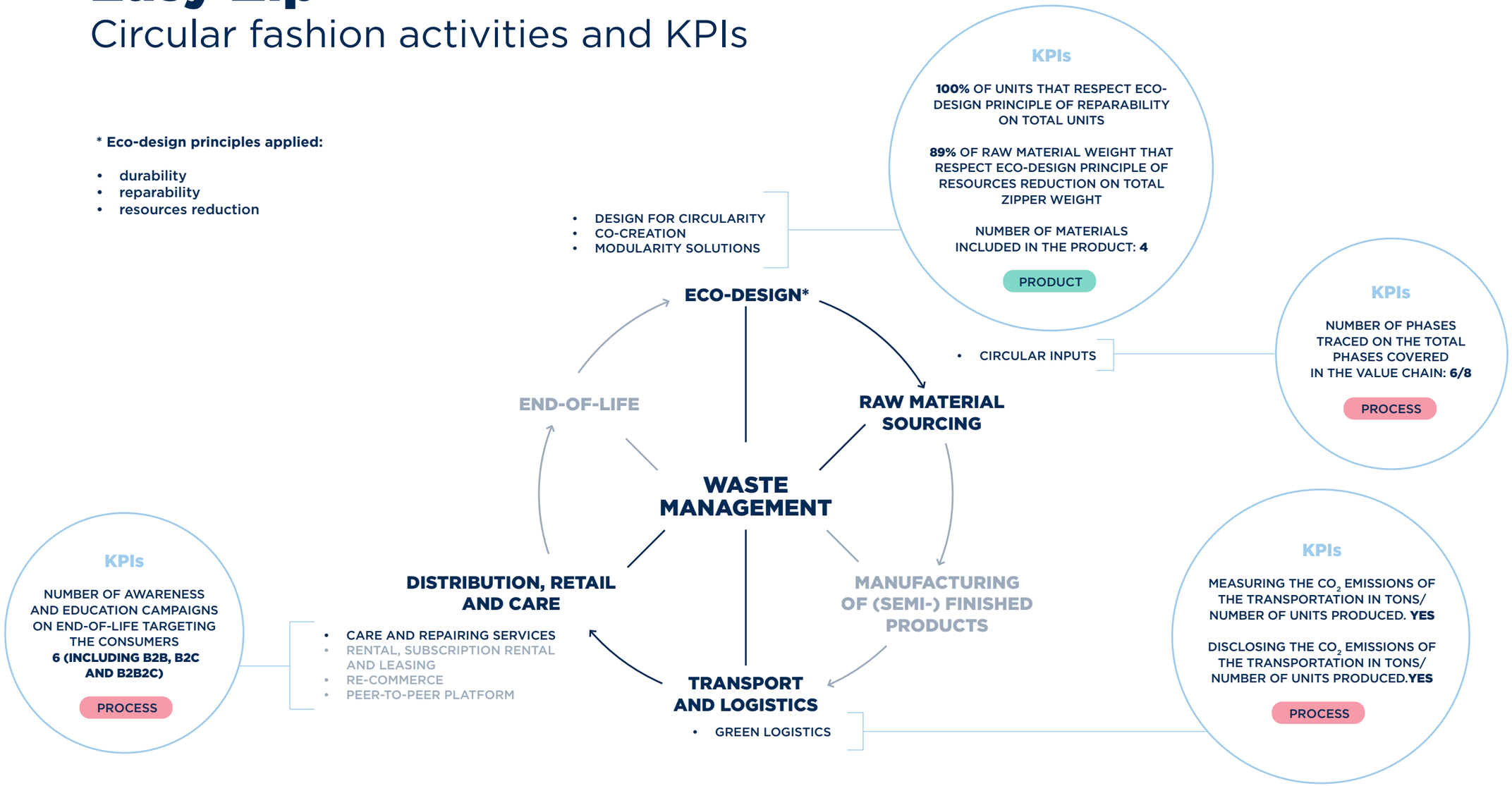
Temera

Easy Zip

Circular fashion activities and KPIs

*** Eco-design principles applied:**

- durability
- reparability
- resources reduction



Furoshiki Wool

B2C

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

A flexible upper accommodates every foot shape and, thanks to the sole that wraps around the foot, we can cover several sizes with one model - reducing size variants in warehouses and distribution channels by up to 50%. As with all Vibram soles, the environmental impact of the Furoshiki model is assessed through Life Cycle Analysis (LCA*). The upper fabric contains 46% MWool recycled wool, which is composed of 14% pre-consumer recycled raw material, 30% post-consumer recycled raw material, and 2% internally recovered waste. According to LCA* studies carried out, MWool shows reductions of up to 99.2% in certain environmental impact categories compared to generic virgin wool. The colours are achieved through the RECYPE® process, which blends pre-dyed MWool fibres.

PARTNERS

MANTECO®

Vibram

Temera

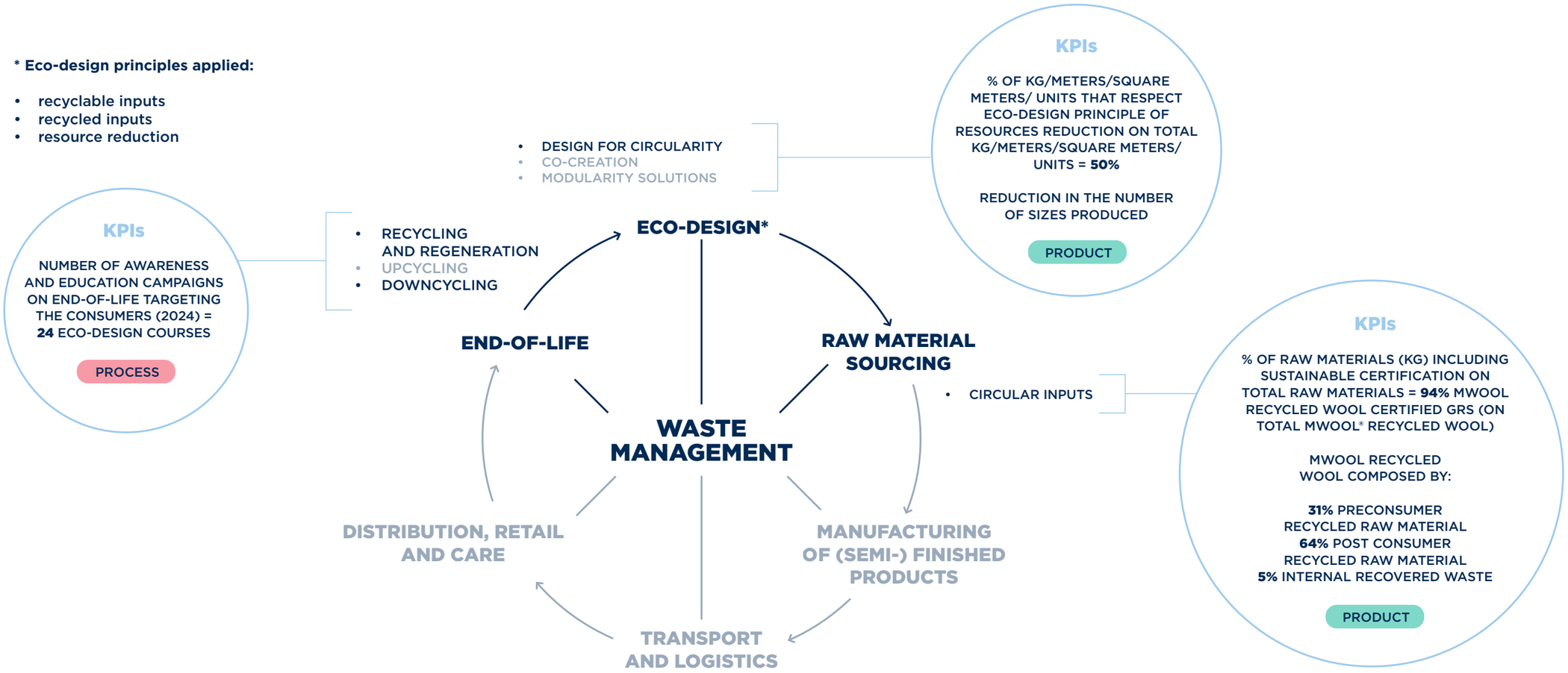
*LCA studies available in the digital voice.

Furoshiki Wool

Circular fashion activities and KPIs

*** Eco-design principles applied:**

- recyclable inputs
- recycled inputs
- resource reduction



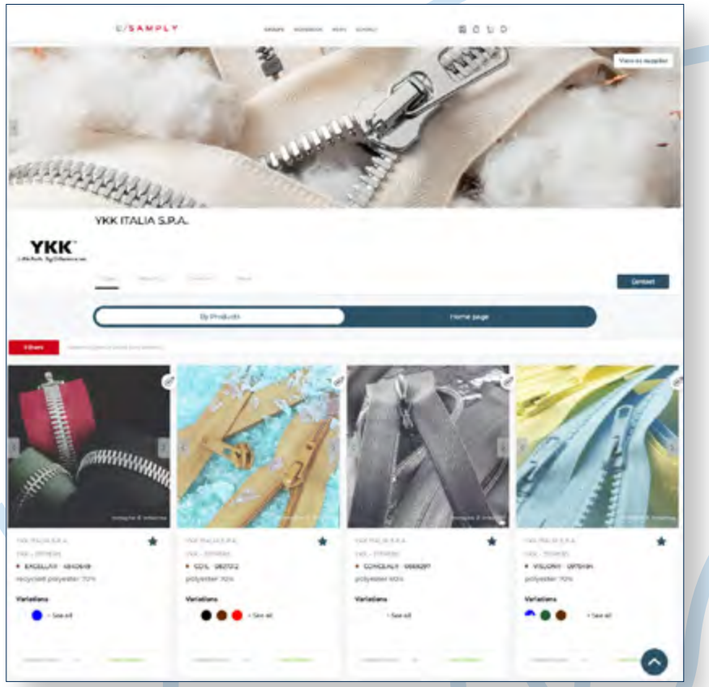
SecondFlow

Supporting circular sourcing through B2B recommerce of unused stock

B2B

Multi-Year Project: Ongoing

By integrating deadstock YKK® zipper and button inventories into the B/Samply B2B online platform, powered by Deda Stealth, this initiative actively diverts surplus materials from disposal. It also offers an alternative sourcing channel for raw materials by reusing existing deadstock instead of relying on the production of new materials. Access is granted exclusively to educational institutions, non-profit organizations, and other fashion associations. Currently there are 2,820 SKUs uploaded on the platform, belonging to two product categories: zippers and buttons.



PARTNERS

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deda.stealth POWERING YOUR FASHION JOURNEY

Next steps

Circular projects

1. Scaling-up the circular pilot projects.

2. Extending the test of KPIs to the companies products and processes.

3. Collaborating with new Partners in additional value chains, product categories and processes.

Annex II
C-FACTOR 2025

Annex II 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 2025, 13 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.
The startups that participated will be shown below in alphabetical order.

Startups

CLOOV
www.cloov.tech

Cloov is a B2B SaaS solution enabling fashion brands and retailers to launch white-label platforms for rental, trade-in and resale. Its software handles the front-end branding, order processing, reverse logistics (including cleaning and reconditioning), fulfilment, pricing, and analytics. The goal is to help brands extend product lifecycles, reduce waste, attract customers interested in circular and innovative offerings and build loyalty through "circular consumption" models.

Hyran Technologies
www.hyran.co

Hyran operates an AI-powered supply chain collaboration platform for fashion. It aims to help brands and their suppliers respond more rapidly to consumer demand, improve forecasting and planning, reduce excess inventory and production waste, and increase profitability. Its tools provide alignment across stakeholders in the upstream supply chain to enable more agile and flexible operations.

Innuance
www.innuance.eu

Innuance has developed a patented dyeing and finishing technology using high-purity edible colours (similar to those used in the food, beverage, and cosmetics industries). The method eliminates many hazardous substances typical of conventional dyeing, while preserving quality and performance. It can be applied from fibre stage to finished garment, offering a full colour palette including dark and vivid tones.

Iteratif
www.iteratif.com

Iteratif provides services in circularity for garments, footwear, and accessories. Key offerings include optimisation of design and manufacturing to increase recyclability and reuse potential, reverse logistics, separation, and recycling management, and proprietary traceability software that tracks goods from original production through to raw material stages. Its mission is to retain material value within the system by keeping materials usable and traceable.

MannyAI
www.manny-ai.com

MannyAI is an AI-powered platform that helps fashion brands and manufacturers build more agile and efficient supply chains. It automates tasks such as generating Bills of Materials and tech packs, optimizes production planning, and matches suppliers based on cost, capacity, and lead time. By improving visibility and enabling demand-led production, MannyAI helps reduce overproduction, shorten lead times, and boost profitability.

Menabòh
www.menaboh.com

Menabòh is a distributed, tech-enabled fashion house that transforms the clothes you already own. Customers upload photos and details of their garments; Italian designers propose creative transformations; and once approved, the pieces are re-made locally through a curated network of tailors. The company manages the full process: from creative direction to logistics and customer care, combining Italian design, local craftsmanship, and AI-powered workflows to make bespoke upcycling effortless. Menabòh's mission is to build the world's first global upcycling service: a borderless, inventory-free fashion house that helps people love what they already have.

Pulvera
www.pulvera.com

Pulvera offers a textile recycling model based on pulverization technology. It transforms textile waste into a versatile powder form that can be used for multiple purposes across industries. The company provides tailored consulting and manages projects from waste recovery to final product creation. Its process is mechanical, aims for low energy consumption, is scalable, and allows processing of mixed materials including those that are difficult for other recycling methods.

Reju
www.reju.com

Reju is a materials-regeneration company focused on textile-to-textile recycling, particularly polyester. Owned by Technip Energies, it uses technology originally developed at IBM. Reju has opened a first operating hub (Regeneration Hub Zero in Frankfurt) and is building Regeneration Hub One (in Chemelot, Netherlands) with a capacity to regenerate tens of thousands of tonnes of textile waste into regenerated polyester with considerably lower c carbon emissions than virgin material (around 50% less). The process ensures traceability and aims to establish circular systems for textile waste across Europe.

Renoon
www.renoon.com

Renoon provides end-to-end solutions for Digital Product Passports (DPPs) to help brands comply with emerging regulations, increase transparency and traceability, and engage with sustainability more effectively. Its platform offers tools such as product information widgets, QR codes, and interfaces to share material origins, certifications, manufacturing practices, environmental/social impacts, and more.

Revivo
www.revivo.com

Revivo is a B2B platform that offers fashion brands an end-to-end care and repair service. It manages the entire repair workflow on behalf of brands, from order to quality control, integrating certified artisans and proprietary technologies to extend product life and reduce waste.

Spazio 3R
www.spazio3r.org

Spazio 3R (*Recycle • Re-sew • Reuse*) is a Milan-based social enterprise offering hands-on tailoring training and social inclusion programs for women in vulnerable situations. Launched in 2016 as a project and formally established as an association in 2020, Spazio 3R became a social enterprise in 2023.

We operate from four sites (three in Milan and one in the Province of Monza and Brianza), offering tailoring training courses, hands-on workshop activities, manufacturing and retail of the Spazio 3R product line, and custom tailoring services for third parties — including branded, made-to-order promotional products and corporate merchandise.
Committed to sustainable fashion, we work exclusively with high-quality surplus materials donated by local businesses and individuals.
Through partnerships with over 21 local organizations, we also run tailoring workshops for adults and children to promote ethical, circular approaches to clothing.

Orange Fiber
www.orangefiber.it

Orange Fiber is an Italian company that patented and manufactures circular materials from the by-products of the citrus juice industry thus offering fibers, yarns and fabrics easily integrated into existing supply chains. The proprietary process enables the extraction of cellulose from citrus waste, which is then transformed into lyocell fibers thanks to the partnership with the Lenzing Group that are then spun into yarn and transformed into fabrics into a fully traceable supply chain. The result is a wide range of fabrics either woven or knitted, developed to interpret any product development requirements.

Visenleer
linkedin.com/visenleer

Visenleer is a regenerative initiative based in Egypt that transforms ocean waste (plastic debris, discarded fishing nets, fish skins) into sustainable textile materials using zero-carbon and low-impact methods. Its processing includes mechanical recycling of plastics into fibers and tanning of fish skins into a biodegradable leather alternative using plant-based agents (without chromium or synthetic dyes). The final materials are marketed as breathable, durable, and fully biodegradable, with traceability and community integration built into the system. Visenleer also works via micro-factory hubs in coastal communities, involving artisans, fishermen, and local labor in the material collection, processing, dyeing, and fabrication stages.

Results

The participants selected by the Monitor for Circular Fashion partners for the third edition of the C-Factor are Revivo, Reju and CLOOV. These three startups obtained the opportunity of pitching during the final multistakeholder event of the Monitor for Circular Fashion, which took place on February 26th, 2026, at SDA Bocconi in Milan.

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SDA Bocconi School of Management www.sdabocconi.it/circularfashion

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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