



DesignSmart

Empowering VET and Women Entrepreneurs for Sustainable Fashion Innovation

WP2 - Sustainable Fashion and AI Curriculum

T2.1 - Research Framework & Needs Assessment

T2.2 - Desk & Field Research Analysis

NATIONAL REPORT TEMPLATE

Prepared by Politecnico Calzaturiero

February 2026

Country: Italy

Organizations: Politecnico Calzaturiero and Base3





CONTENTS

General Instructions for Partners	4
Introduction	5
1. Sustainable Fashion	6
2. AI-Driven Eco-Design	14
3. VET Digitalization	18
Conclusions.....	23
Bibliography and Annexes.....	29





Consortium

P1	Leather Cluster Barcelona (LCB), Spain - Coordinator
P2	Eurotraining, Greece
P3	People Forward (PF), Cyprus
P4	BASE3 Società Cooperativa (Base3), Italy
P5	Cámara de Comercio Italiana – Barcelona (CCIB), Spain
P6	PlanB, Greece
P7	Politecnico Calzaturiero (PC), Italy

Project Information

Project title	Empowering VET and Women Entrepreneurs for Sustainable Fashion Innovation
Project acronym:	Design-Smart
Project number:	2025-1-ES01-KA220-VET-000358027
Beneficiary organisation (Project Coordinator)	Leather Cluster Barcelona (LCB)
Project Partners	P1 – P7 listed above
Associate Partners	As listed above

Document Information

Document title:	National Report Template
Document author:	Politecnico Calzaturiero
Version:	1





General Instructions for Partners

Key Requirements:

- **Total length:** 10-15 pages (Arial 11pt, 1.15 line spacing, margins 2.5cm)
- **Sources priority:** Recent national data, EU frameworks (GreenComp, DigComp, EQAVET, ECVET), questionnaire/focus group quantitative results, National Committee validation
- **Visuals:** Include 3-5 charts/tables summarizing survey data (e.g., skills gap percentages, barrier rankings)
- **Language:** English
- **Deadline:** 15 March 2026 - Submit via shared drive
- **Purpose:** Identify VET training gaps, SME/women entrepreneur needs, AI adoption barriers to directly inform SO2.2 curriculum development





Introduction

(1 pages)

The DesignSmart project tackles the pressing need to modernise Vocational Education and Training (VET) in the fashion and footwear sectors by weaving together sustainability, circular economy principles, and Artificial Intelligence (AI). Perfectly aligned with the European Union's priorities for green and digital transitions, such as the European Green Deal and Digital Decade, it builds VET providers' capacity to empower small and medium-sized enterprises (SMEs), especially those led by women entrepreneurs, through innovative, sustainable, and digitally driven business models.

Within Work Package 2 (WP2), the focus is on creating an evidence-based Sustainable Fashion & AI Curriculum (covering specific objectives SO2.1 to SO2.3). This National Report brings together key insights across three core areas: sustainable fashion, with emphasis on low-impact materials, circular models, and supply chain traceability; AI-driven eco-design, featuring AI tools for design, prototyping, and environmental impact assessment; and VET digitalization, which covers digital skills development alongside strengthened collaboration between VET providers and SMEs.

To develop these insights, we applied a robust methodology: desk research drawing on standardized T2.1 templates to analyze policies, initiatives, and market data; distribution of 20 structured questionnaires per partner country to gauge training gaps and AI adoption barriers; focus groups engaging 5-10 participants from VET providers, SMEs, and sustainability experts; and validation through National Advisory Committees comprising 5-10 key stakeholders.

Ultimately, this report delivers comparable, national-level analysis of critical skills gaps, training needs, and implementation barriers. These findings will directly shape curriculum development under SO2.2 and VET capacity building via SO2.3, while ensuring full alignment with established EU frameworks including GreenComp, DigComp, EQAVET, and ECVET.





1. Sustainable Fashion

(2-3 pages)

1.1 National Context and Relevance of the Sector

Italy is one of the leading fashion producers in Europe and globally. The national fashion system includes textiles, apparel, footwear, leather goods, eyewear and jewellery, and is characterised by a dense network of SMEs and specialised districts. According to MAECI/CNMI figures, the sector counts around 62,000 firms, of which 79.1% are micro-enterprises and 17.3% are small enterprises, confirming that the Italian industry is largely SME-based. Key clusters include Lombardy (luxury fashion, design, trade fairs), Veneto (footwear, leather, eyewear), Tuscany (leather goods, tanning, luxury supply chains), Marche (footwear and accessories), Emilia-Romagna (knitwear, mechanics and fashion services), Campania and Puglia (apparel and tailoring).

The sector remains deeply export-oriented. MAECI's 2025 sector note reports fashion exports of €69.9 billion in 2023, with Europe absorbing 61% of exports in January–October 2024, followed by Asia (23%) and the Americas (13%). The main destination markets were France, the United States, Turkey, Germany, China, Switzerland and Spain. This international exposure raises both opportunity and vulnerability: Italian firms benefit from premium positioning and strong foreign demand, but they are also exposed to demand volatility, trade uncertainty and rising due-diligence requirements.

From an SME perspective, Italy remains a highly entrepreneurial economy. The European Commission's 2025 SME fact sheet estimates that SMEs account for 99.9% of firms, 75.0% of employment and 65.0% of value added in the non-financial business sector. Women-led firms are an important pillar of this landscape: Unioncamere reports that, at 31 December 2024, Italy had just over 1.3 million women-led enterprises, equal to 22.2% of all firms. While this figure is not specific to fashion alone, it is highly relevant for DesignSmart because the project targets women entrepreneurs, micro-firms and local value chains where women's entrepreneurship is structurally significant.





Indicator	Latest national figure	Source	Implication for DesignSmart
Fashion system firms	62,000	MAECI/CNMI, 2025 note (data 2022/2023)	Large SME-based ecosystem for training outreach
Employees in fashion system	565,500	MAECI/CNMI, 2025 note	Strong labour-market relevance
Fashion system turnover	€102.1 billion	MAECI/CNMI, 2025 note	High economic importance
Fashion exports	€69.9 billion in 2023	MAECI economic observatory on Istat data	Export-driven compliance and traceability needs
Women-led firms in Italy	1.307 million (22.2% of all firms)	Unioncamere, 2025 report	Supports targeted women-entrepreneur training
SME share of all firms	99.9%	European Commission SME Fact Sheet 2025	Training must fit micro and small enterprise realities

Table 1. National Fashion Sector Indicators and Relevance for DesignSmart

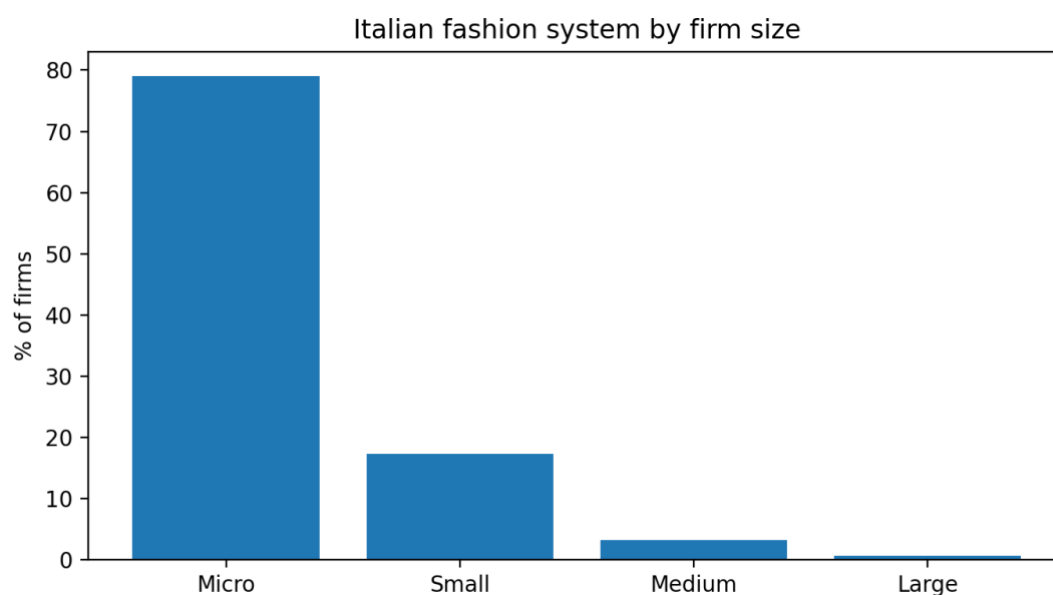


Figure 1. Italian fashion system by firm size (source: MAECI/CNMI note, 2025).



Sustainability adoption is progressing but unevenly. Larger luxury groups and export-ready SMEs have accelerated work on chemical management, traceability, supplier qualification, ESG reporting and material circularity. Smaller subcontractors and artisanal firms tend to be more advanced in product quality than in formal sustainability management. In practice, the transition challenge is not a lack of awareness; it is the difficulty of translating sustainability goals into affordable tools, measurable indicators, staff capabilities and shared supply-chain data systems.

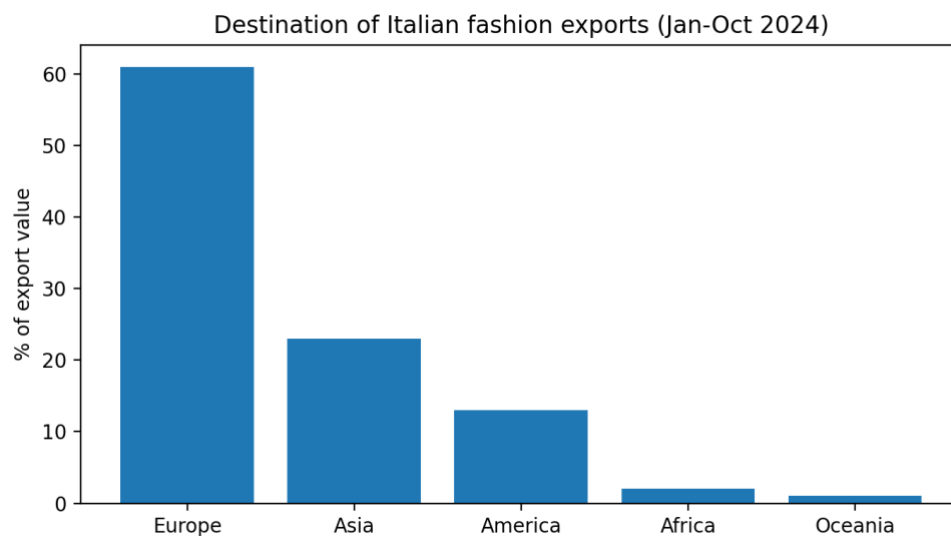


Figure 2. Destination of Italian fashion exports, January–October 2024 (source: MAECI economic observatory).

1.2 National Policies and Regulations

The Italian regulatory context is shaped by both national policy and direct EU obligations. At national level, the [National Strategy for the Circular Economy](#), approved by ministerial decree in 2022, provides the overarching policy framework for the transition to circular production and consumption up to 2035. It promotes eco-design, secondary raw materials markets, industrial symbiosis, traceability, waste prevention and skills development. For fashion and textiles, this strategy reinforces the need to reduce waste, increase reuse and recycling, and build circular business models across supply chains.

Waste and end-of-life obligations are also relevant. Italy transposed the revised EU waste rules through Legislative Decree 116/2020, which anticipated the separate collection of textile waste from 1 January 2022. This made Italy an early mover in textile collection and prepared the ecosystem for extended producer responsibility (EPR)-type systems in textiles. In parallel, firms are preparing for wider EU developments affecting textiles and footwear, including the Ecodesign for Sustainable Products agenda, the Corporate Sustainability Reporting Directive (CSRD), the European Sustainability Reporting Standards (ESRS), evolving product environmental footprint methods for apparel and footwear, and forthcoming due-diligence obligations.



For SMEs, financial and operational alignment with the twin transition is supported by industrial policies such as the [Piano Transizione 5.0](#). Updated by the 2025 Budget Law, the scheme broadened cumulation possibilities and simplified access rules, creating a stronger incentive for investments that combine digital transformation with energy and resource efficiency. Although not fashion-specific, the measure is relevant for firms investing in more efficient machinery, digital product development, data systems, smart monitoring and AI-enabled process optimisation.

1.3 Existing Initiatives and Projects (3-5 examples required)

Retex.Green

Organization: Confindustria Moda and Fondazione del Tessile Italiano

Description: National producer consortium for the management of textile, clothing, footwear and leather waste. It aims to operationalise circularity through collective systems for end-of-life management, recycling and EPR preparedness.

Status: Ongoing; Scale: National; [Link](#)

Consorzio Italiano Detox (CID)

Organization: Consorzio Italiano Implementazione Detox

Description: Industry consortium created to eliminate hazardous chemicals from textile and fashion supply chains. It supports transparency, traceability, testing and shared environmental improvement practices among member companies.

Status: Ongoing; Scale: National; [Link](#)

Made Green in Italy

Organization: Ministry of Environment and Energy Security

Description: National voluntary environmental labelling scheme based on Product Environmental Footprint logic. While not fashion-specific, it offers a recognised framework for credible environmental claims and product-impact communication.

Status: Ongoing; Scale: National; [Link](#)

Scarpa

Organization: Scarpa S.p.a.

Description: SCARPA is an Italian company based in Asolo (Veneto), active in footwear manufacturing. It specialises in high-performance outdoor and technical footwear. The company produces shoes for mountaineering, climbing, hiking and trekking, trail running, and ski touring. SCARPA is particularly recognised for its strong craftsmanship, rooted in Italian





shoemaking tradition, its technical innovation in performance footwear, and its increasing focus on sustainability practices, including materials, processes and product durability.

Status: Ongoing; Scale: International; [Link](#)

1.4 Required Competences in the Sector

The desk research and questionnaire responses highlight a growing need for new competences in the Italian fashion ecosystem as sustainability and digitalisation reshape production models. The Italian fashion sector is highly SME-based, with a large share of micro-enterprises and artisanal firms, which increases the importance of practical and accessible training solutions.

The research identified several key competence areas that are increasingly required by SMEs, VET providers, designers and entrepreneurs.

1. Eco-design competences

Professionals must understand how to design products with lower environmental impact, including durability, repairability, recyclability and the use of mono-materials or low-impact finishing processes. Eco-design principles are becoming essential as European policies and consumer expectations increasingly demand sustainable production practices.

2. Environmental assessment competences

Another major competence gap concerns the ability to assess environmental impacts through tools such as life cycle thinking, carbon footprint indicators and water-impact analysis. These skills enable companies to identify environmental hotspots across the value chain and support compliance with emerging EU reporting frameworks.

3. Traceability and supply-chain transparency skills

Respondents highlighted the importance of developing competences related to supplier mapping, documentation and chain-of-custody systems. These capabilities are necessary for responding to buyer requests, sustainability certifications and future digital product passport requirements.

4. Compliance and sustainability management skills

Fashion professionals increasingly need knowledge related to sustainability reporting, regulatory compliance and ESG communication. Understanding regulatory frameworks and avoiding greenwashing is becoming crucial for SMEs participating in international markets.

5. Communication and market competences

Companies also need skills to communicate sustainability effectively to customers and stakeholders, including responsible sourcing narratives and green marketing strategies.

The questionnaire results confirm the presence of significant competence gaps in sustainability-related areas. While sustainability topics are already included in several training programmes, the level of preparedness remains moderate. Approximately 70–75% of



respondents indicate a need for stronger competences in environmental impact assessment tools such as Life Cycle Assessment (LCA), carbon footprint calculation and sustainability metrics interpretation. In addition, around two thirds of respondents report only moderate alignment between current curricula and industry needs regarding circular business models, highlighting the need for more practical training in eco-design, traceability and circular economy approaches.

These findings reinforce the desk research results, which identify eco-design, environmental assessment, supply-chain traceability and sustainability reporting as key competence areas for SMEs and VET providers in the Italian fashion sector.

1.5 Barriers and Opportunities

Primary Barriers (ranked by questionnaire responses):

Based on the questionnaires, the most frequently cited barrier is the **limited financial resources** available for implementing sustainability-related training and innovation. Several respondents explicitly identified a “lack of resources” as the main challenge in delivering sustainability education programmes.

Other relevant barriers include:

- **High cost of digital technologies and equipment:** The adoption of digital tools such as AI systems, simulation software, and virtual prototyping technologies requires significant investments. For many VET providers and SMEs, these costs represent a major obstacle to integrating digital and AI-based learning environments.
- **Insufficient staff expertise and training:** Respondents highlighted a lack of educators with hybrid competences combining sustainability, fashion design and digital technologies.
- **Limited digital infrastructure:** Some institutions reported insufficient digital infrastructure, including lack of specialised software, laboratories, or advanced digital tools.
- **Weak alignment between training programmes and industry needs:** Several respondents noted that curricula are not yet fully aligned with the rapidly evolving sustainability and circular economy requirements of the fashion industry.



Figure 3. Top barriers to implementing sustainability and digital training in fashion VET (questionnaire results).

Despite these challenges, the research also identifies several opportunities for the Italian fashion sector and the VET ecosystem:

- Growing consumer demand for sustainable products, encouraging companies to adopt circular and responsible business models.
- National and European policy support, including circular economy strategies and incentives for digital innovation.
- Expansion of innovation ecosystems, such as digital innovation hubs and research projects focused on sustainable fashion technologies.
- Strengthened collaboration between VET providers and industry, which can facilitate the development of practical training modules and applied learning experiences.

Overall, the results suggest that although barriers remain significant—particularly in terms of resources and skills—the sector is entering a phase of transformation. With appropriate training programmes, targeted support and stronger collaboration between education providers and enterprises, the Italian fashion ecosystem can successfully advance toward more sustainable and digitally enabled production models.

Participants from the focus groups have confirmed that the main challenges for SMEs and students in adopting sustainable practices are accessibility, particularly due to the high costs associated with sustainable tools and materials (for example, sustainably sourced leather, which can significantly increase production costs). In addition, there is an initial phase of research and development that entails further expenses, which need to be reduced over time to ensure scalability. At the same time, it emerged that while a basic knowledge of sustainability is certainly necessary, training should focus more on practical aspects: how sustainable a solution really is and whether it is needed. Without this concrete approach, sustainability risks remaining a theoretical concept rather than a viable practice.

The example of proposing a biodegradable product highlights this issue clearly: if such a product ends up costing €1,000, it becomes hardly practical and therefore inaccessible. Both students and companies aiming to adopt sustainable materials and products must carefully





balance profitability and margins, while also making these solutions economically accessible. This reinforces the need for more practical sustainability training, which would be beneficial for everyone and help bridge the gap between ambition and real-world application. Although there has been demand for sustainable products, it has declined due to these cost-related barriers. For instance, past attempts to produce sustainable socks resulted in prices being up to three times higher than conventional alternatives. Consequently, such projects often either fail or remain confined to a niche market.

1.6 National Best Practice

Title: Retex.Green

Organization: Confindustria Moda / Fondazione del Tessile Italiano

Description (150-200 words):

Retex.Green is a particularly relevant best practice for DesignSmart because it translates a broad policy requirement—textile circularity and producer responsibility—into an operational and collaborative mechanism for the Italian fashion system. Rather than treating waste management as a downstream compliance issue, the consortium frames circularity as a system challenge requiring coordination among producers, supply chains, logistics and recycling actors. The transferable value for DesignSmart lies in three aspects: first, it demonstrates that circularity training must address governance and collaboration, not only materials; second, it highlights the need for SMEs to understand end-of-life obligations early in product development; third, it offers a replicable example of how industry bodies can aggregate services and knowledge for smaller firms. A curriculum inspired by this model should therefore include collective solutions, reverse-logistics awareness, producer responsibility basics and circular product-design thinking.

Title: Sustainability report

Organization: Rifò

Description (150-200 words):

RIFO represents a best practice in circular fashion because it demonstrates how sustainability, local manufacturing, and innovation can be integrated into a viable business model in the textile sector. Founded in 2017 in the Prato textile district in Tuscany, the company produces garments using recycled fibres such as wool, cashmere, cotton, and denim, transforming textile waste into high-quality products. The RIFO model combines environmental sustainability with local economic development. Textile scraps and used garments are mechanically shredded into fibres, transformed into yarns, and manufactured into new clothing within a short supply chain concentrated in the Prato district. This approach reduces transport emissions while supporting local artisans and preserving traditional textile skills. As a certified B-Corporation since 2020, RIFO also integrates social impact by collaborating with local organisations and initiatives that promote inclusion and craftsmanship. The RIFO case provides transferable value for the DesignSmart project. It demonstrates circular design





principles using recyclable materials and durable product design. The company also integrates sustainability across the value chain, from material sourcing to product life-extension strategies. Finally, its collaboration with local suppliers highlights the role of regional innovation ecosystems in supporting sustainable production, offering a practical model that can inform vocational education and design training initiative.

2. AI-Driven Eco-Design

(2-3 pages)

2.1 Context and Level of Digital Maturity

Italy's fashion ecosystem shows a mixed level of digital maturity. International brands, structured suppliers and innovation-oriented SMEs already use PLM systems, CAD, 3D prototyping, e-commerce analytics and supply-chain management tools. However, adoption is much less systematic among micro-firms and subcontractors, where digitalisation often remains limited to office software, basic CAD, marketplace use or customer-driven compliance tools. The national challenge is therefore not only technological uptake but also diffusion across the long tail of SMEs that constitutes the core of the Italian fashion production model.

The broader SME environment also confirms this tension. The European Commission's 2025 SME fact sheet notes continued employment growth but weaker productivity in manufacturing SMEs, signalling the importance of higher-value digital transformation. For fashion, digital maturity increasingly depends on the ability to use technology not only for speed and sales, but for sustainability outcomes: fewer physical samples, better resource use, improved quality prediction, more accurate demand planning and stronger traceability.

Italy nonetheless has a strong enabling environment. [The Italian Strategy for Artificial Intelligence 2024–2026 explicitly](#) promotes AI adoption in business, education and public administration. It recognises the country's lag in basic digital skills and the need to strengthen education pathways preparing citizens and firms for AI adoption. This is highly relevant for fashion VET, where hybrid profiles are still scarce.

2.2 National Policies on AI and Digital Innovation

Italy's AI and digital innovation policy mix combines national strategy, industrial incentives and ecosystem-building. The Italian Strategy for Artificial Intelligence 2024–2026 provides the high-level direction for AI diffusion and skills. For enterprise investment, Transition 5.0 is the most important operational lever: it links digital innovation with energy efficiency and sustainability performance, making it especially relevant for fashion manufacturers seeking to modernise processes while reducing resource consumption. Additional support comes from competence centres, digital innovation hubs and PNRR-backed innovation infrastructures.





For the fashion sector, the policy implication is clear: AI adoption should not be framed only as a frontier innovation topic. It should be taught as part of practical industrial upgrading, especially where design, planning, material choices and waste reduction intersect.

2.3 Applications of AI in Fashion Eco-Design (2-3 national examples)

- [MICS digital-twin project for fashion products](#)

Organization: MICS partnership

Description: Uses a digital twin-centred approach to connect design, materials, logistics, waste information and prediction models across the lifecycle of fashion products. It demonstrates how AI and simulation can support both creative and industrial optimisation.

- [Digital Fashion Designer 4.0 / Fashion Developer 4.0 programmes](#)

Organization: ITS Academy Sistema Moda (Rome)

Description: Post-diploma programmes focused on digital fashion design, supporting the uptake of 3D tools, digital development and industry-ready workflows. While training-oriented, they are also a practical bridge for AI-enabled product development.

- [Emerging AI-factory and industrial AI ecosystem](#)

Organization: AI4I / IT4LIA and related national initiatives

Description: Cross-sector AI infrastructures are expanding the national capacity to help companies identify data, models and services for industrial use cases. Fashion can benefit especially in prediction, optimisation, quality and knowledge-management applications.

2.4 Required Competences

The transition toward AI-driven eco-design requires a combination of digital, technical and sustainability-related competences. Desk research and questionnaire results confirm that many SMEs and VET providers still lack the necessary hybrid skills to effectively integrate AI tools into sustainable fashion design processes.

The following competences emerge as particularly important:

- **Data literacy and data-driven design thinking**
Professionals must be able to collect, interpret and use data related to materials, environmental impacts and production processes. This includes understanding sustainability metrics and translating data insights into design decisions.
- **Entry-level AI platforms and tools proficiency**
Basic familiarity with AI-based design tools, digital prototyping software and decision-support systems is increasingly necessary for designers and product developers.
- **CAD, 3D modelling and virtual prototyping**
Digital design tools allow companies to reduce the number of physical prototypes,



optimise material use and accelerate the design process. These tools are becoming essential for sustainable product development workflows.

- Beyond **basic knowledge**, professionals need the ability **to critically evaluate the real sustainability and necessity of products and solutions**. This includes assessing trade-offs between environmental impact, cost and market feasibility. Training should therefore focus on practical application, enabling individuals to distinguish between theoretical sustainability claims and economically viable solutions. This competence is essential to avoid the development of products that, while labelled as sustainable, remain inaccessible or impractical due to high costs.

The questionnaire results confirm these competence gaps. Approximately 68% of respondents report insufficient training opportunities related to AI tools and digital eco-design technologies, while 62% indicate limited familiarity with AI-based tools for assessing environmental impacts, such as lifecycle assessment software or carbon footprint calculators.

These findings highlight the need for VET programmes that combine digital competences, sustainability knowledge and practical design applications, enabling professionals to effectively implement AI-supported eco-design strategies.

2.5 Challenges and Barriers to Adoption

The adoption of AI and digital technologies in sustainable fashion design faces several structural challenges identified through the questionnaire responses and focus-group discussions.

- **Investment costs**
The most significant barrier identified by respondents is the high cost of adopting digital and AI-based tools. Approximately 35% of respondents consider investment costs for software, hardware and infrastructure as a major obstacle to AI adoption in design and training activities.
- **Digital culture and resistance to change**
Some organisations still face cultural barriers when introducing AI technologies into traditional design processes. Around 22% of respondents highlight organisational resistance or limited digital culture as a challenge when implementing new digital tools.
- **Shortage of hybrid skills**
A key barrier is the lack of professionals who combine expertise in fashion design, sustainability and digital technologies. Approximately 25% of respondents identify the shortage of hybrid design–digital–sustainability profiles as a major limitation for AI adoption.
- **Limited targeted VET training availability**
Many respondents report that current training programmes do not yet provide sufficient opportunities to learn AI tools specifically applied to eco-design. About 18% of respondents highlight the lack of specialised VET programmes as a barrier to the adoption of digital innovation in the fashion sector.

Overall, these results indicate that while awareness of AI-driven eco-design is increasing, skills gaps, financial constraints and training limitations continue to slow its widespread adoption, particularly among SMEs and micro-enterprises that dominate the Italian fashion ecosystem.

The challenges identified in the questionnaires were consistent with those emerging from the focus groups. Focus group participants also highlighted the following additional points:

1. Main obstacles for SMEs in adopting AI:

“One of the key challenges is cultural resistance, which often varies depending on the size of the company. Larger organizations tend to face longer and more complex implementation processes due to established practices and structures. In smaller companies, the situation is more mixed: some business owners remain hesitant or sceptical, while others—especially those with a broader, long-term vision—are more open and interested in exploring the potential of AI.” (FG1’s participant).

2. How AI and digital tools are transforming the fashion industry:

“The main transformations concern speed and cost efficiency. AI and digital tools are not only streamlining processes but also reshaping the overall approach to fashion, including the creative phase. These technologies actively support creativity by providing rapid inspiration and new design possibilities. As a result, they significantly accelerate workflows, enabling faster idea generation and allowing for quicker, more informed decision-making.” (FG1’s participant).

“The fashion sector is changing because, on the one hand, everyone feels they can enter the industry even without technical skills: AI makes it easier to “set up” projects. On the other hand, however, AI has its limits: it will never be able to completely replace humans. It can reduce time and generate ideas, but the actual workflow still always requires human input. (FG2’s participant).

3. Key digital and AI competencies for VET (Vocational Education and Training) programmes:

“First and foremost, learners should develop a solid understanding of AI and how to use it effectively. This includes not only practical skills, but also awareness of the associated risks and the importance of using these tools with caution. It is essential to teach students how to interact with AI systems—such as how to formulate effective prompts and communicate clearly with these technologies. At the same time, they should be introduced to key topics like data privacy, responsible use, and risk mitigation (for example, avoiding the misuse of logos or sensitive client information). Training should be delivered at different levels, from basic to more advanced, and should include an overview of the main tools available, helping learners understand which ones are appropriate for different use cases.” (FG1’s participant).

“Our ITS plans to introduce AI into ITS courses by 2027. Currently, our institute is already experimenting with it separately, with the aim of integrating it into the curricula in the



future. I believe that AI can be more useful in the creative phase, such as rendering, rather than in the technical management of processes. It speeds up the workflow, but it still needs to be programmed and supervised by a person. However, I am concerned that our artisanal companies may struggle to adopt it as a central tool.” (FG2’s participant).

2.6 National Best Practice

Title: MICS – Digital services for Made in Italy: digital twins for predictive models and to support the lifecycle of fashion products

Organization: MICS

Description: The MICS fashion digital-twin project is the best current Italian example of AI-driven eco-design in a form that is relevant for VET replication. Its value lies in combining multiple layers of innovation: 2D-to-3D conversion, XR/GAN support for creative processes, materials data integration, and predictive methods for logistics and waste optimisation. The project shows that digitalisation can improve sustainability when design, material information and downstream operational data are linked. For DesignSmart, the transferable lesson is to move beyond generic ‘AI awareness’ and build modules around concrete use cases: virtual prototyping, data-supported material selection, lifecycle information handling and prediction-informed decision making. These topics can be taught with accessible tools and case-based exercises even when VET providers do not have advanced AI infrastructure on site.

3. VET Digitalization

(2-3 pages)

3.1 State of the Art of VET Digitalization

Italy’s VET system has accelerated digitalisation through a mix of reforms, PNRR investments and the growth of ITS Academies. Cedefop’s 2025 policy brief on Italy highlights policy developments up to the end of 2024 and the national priorities for VET implementation until 2030. In parallel, the national Scuola 4.0 investment under the PNRR supports innovative hybrid learning environments, connected classrooms and digital laboratories. These investments are significant because they expand the baseline infrastructure on which specialised VET programmes can build.

In fashion-specific VET, digitalisation is most visible in ITS Academies and specialised post-diploma routes, where 3D design, digital marketing, product development, prototyping and sustainability management are increasingly offered. INDIRE reports 10 ITS Academies in the ‘Sistema moda’ technological area, confirming the presence of a national post-secondary training network linked to the Made in Italy system. The overall direction is positive, but integration remains uneven across regions and institutional levels.



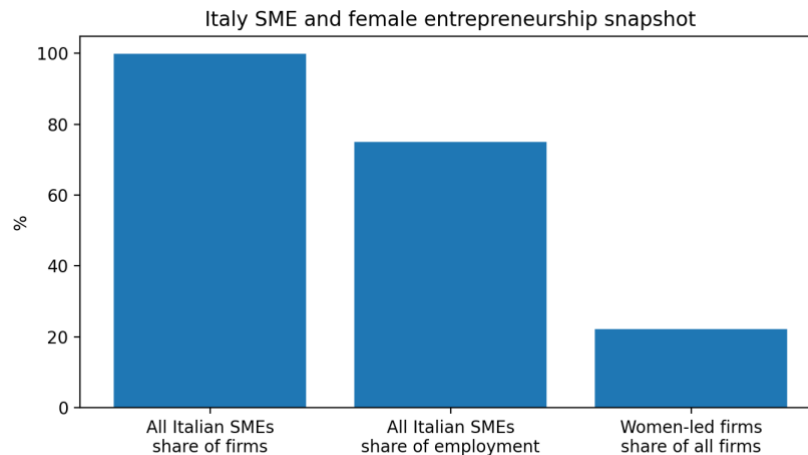


Figure 3. Italy SME and female entrepreneurship snapshot (sources: European Commission SME Fact Sheet 2025; Unioncamere 2025).

3.2 National Policies for Digital Education

Three policy references matter most. First, Scuola 4.0 under the PNRR, which finances innovative learning environments and laboratories for digital professions. The initiative is funded through Italy's Recovery and Resilience Plan and aims to transform around 100,000 classrooms into innovative digital learning environments and establish laboratories for digital professions. The measure promotes hybrid learning spaces that integrate physical and digital environments to support new teaching methodologies and digital skills development.

Second, the broader national and EU digital competence frameworks—especially DigComp and DigCompEdu—which provide a language for educator and learner capability building. DigComp defines the knowledge, skills, and attitudes required for digital competence in learning, work, and participation in society and is used to support digital skills policies across Europe. DigCompEdu provides a reference framework for educator digital competence, describing professional capabilities required to integrate digital technologies in teaching and learning.

Third, the development of the ITS Academies through Law No. 99/2022, which established the Tertiary System of Higher Technological Education. The reform renamed Higher Technical Institutes as ITS Academies, strengthening advanced technological training and integrating these institutions more firmly into the tertiary education system. It also introduced a strengthened governance and monitoring architecture aimed at reinforcing higher technological training and deepening its connections with enterprises and labour-market needs. Together, these instruments create a favourable environment for specialised VET projects that combine sustainability and digitalisation. The reform increases collaboration with enterprises, includes substantial workplace training (at least 35% of training hours), and enhances links between education and labour-market needs. ITS Academies provide vocational tertiary programmes aligned with industrial sectors and designed to improve employment outcomes.



For DesignSmart, the policy message is that curriculum design should align with European frameworks but remain concrete and sector specific. Trainers need not only generic digital competence, but also the capacity to use sector tools, facilitate project-based learning and collaborate with SMEs.

3.3 Initiatives and Projects (3-5 examples)

- Title: [ITS Academy Sistema Moda – Digital Fashion Designer 4.0](#)

Organization: ITS Academy Sistema Moda, Rome

Description: programme focused on digital product development and industry-ready fashion workflows.

- Title: [ITS MI.TI. Moda](#)

Organization: Fondazione ITS MI.TI. Moda

Description: higher technological training for textile, apparel and footwear, with a strong orientation to practical and innovative competences.

- Title: [ITS Sistema Moda Veneto](#)

Organization: ITS Academy Veneto

Description: it offers tracks such as Fashion Sustainability Manager, Digital Jewellery Design and product-management profiles, showing convergence between digital and green competences.

- Title: [ITS Cosmo Fashion Academy](#)

Organization: ITS Cosmo Fashion Academy

Description: it offers programs that combine AI with fashion design, marketing, and retail. Students learn to use generative AI, 3D design tools, and digital technologies to create collections, manage brands, and run e-commerce. Overall, it focuses on training modern fashion professionals who use AI and tech across the whole fashion industry.

3.4 Required Competences for Teachers and Learners

The digital transformation of the fashion sector requires VET providers to strengthen both basic and advanced digital competences among trainers and learners. The desk research and questionnaire results highlight three key categories of competences necessary to support the integration of sustainability, digitalisation and AI in vocational education.

General digital literacy (all VET staff)

All trainers and educational staff require a solid foundation in digital literacy to effectively deliver modern training programmes. This includes the ability to use digital communication





tools, online collaboration platforms, learning management systems (LMS), and basic digital resources for teaching and content delivery. Strengthening general digital skills ensures that trainers can support blended and hybrid learning models and respond to the increasing digitalisation of the fashion industry.

Specialised digital competences (CAD, 3D and AI tools, LMS management)

Beyond basic literacy, specialised technical skills are increasingly required in fashion-related VET programmes. These include the use of digital design software such as CAD and 3D modelling tools, digital prototyping platforms, and introductory AI tools supporting product development and sustainability analysis. Additionally, trainers need competences in managing digital learning environments, including LMS platforms, digital assessment tools and online course management systems.

At the same time, technical training should remain accessible: it is important to provide practical tools also to those without a strong technical background. AI and other digital tools can be used by technically skilled individuals who may not have in-depth knowledge of products and processes. Therefore, these topics must be taught carefully and presented in a clear and understandable way, enabling all learners to use them effectively and appropriately.

Digital collaboration and content creation skills

Another critical competence area concerns the ability to collaborate digitally and create engaging learning materials. Trainers and learners need skills in developing multimedia learning resources, using digital storytelling, managing shared workspaces, and collaborating through cloud-based platforms. These competences support project-based learning, virtual teamwork and cooperation between VET providers and companies.

Overall, the research highlights the need for a balanced development of foundational digital competences and sector-specific technological skills, combined with inclusive and practical training approaches, to ensure that VET programmes remain aligned with the evolving needs of the fashion industry.

3.5 Gaps and Emerging Needs

Identified gaps from primary data:

1. Trainer upskilling opportunities through cloud-based platforms.

Many VET trainers report limited access to structured professional development opportunities related to digital technologies and AI-supported design tools. Continuous training for educators is therefore necessary to enable them to effectively integrate emerging technologies into their teaching practices.



2. Digital pedagogy adoption

Another important gap concerns the adoption of innovative digital pedagogies. While many institutions have access to digital tools, their pedagogical integration into training programmes remains uneven. Trainers require support in implementing blended learning approaches, digital project-based learning, and online collaboration methods.

3. VET–industry digital collaboration platforms

Stronger collaboration mechanisms between training providers and companies are needed. Digital collaboration platforms could facilitate the exchange of knowledge, real industry challenges, case studies and project-based assignments, strengthening the link between education and labour market needs.

4. Digital pedagogy adoption

Another important gap concerns the adoption of innovative digital pedagogies. While many institutions have access to digital tools, their pedagogical integration into training programmes remains uneven. Trainers require support in implementing blended learning approaches, digital project-based learning, and online collaboration methods.

5. Emerging technology integration (VR, AI, simulation tools)

Finally, the integration of advanced technologies such as virtual reality, augmented reality, simulation tools and AI-based design platforms remains limited in many VET environments. These technologies can significantly enhance experiential learning and provide students with realistic simulations of industry processes.

Overall, the findings indicate that VET providers require **both infrastructure and competence development** to effectively integrate digital and AI technologies into fashion education.

Indicator	Low	Moderate	High
Trainers' digital competences	28%	44%	28%
Preparedness to integrate digital tools in training	25%	47%	28%
Integration of sustainability topics in curricula	22%	50%	28%
Alignment of curricula with industry needs	30%	45%	25%

Table 2. Questionnaire Results – VET Digitalization (36 respondents)

Key insights from the DesignSmart questionnaire:

- Nearly 72% of respondents identify the need for stronger digital skills among trainers and staff.
- Most institutions report moderate readiness for digital integration, suggesting ongoing but incomplete digital transformation.

- Respondents emphasise the importance of digital collaboration with industry partners and practical digital learning tools.
- Advanced technologies such as AI, VR and simulation platforms remain underutilised in many VET programmes.

3.6 National Best Practice

Title: ITS Academy Sistema Moda / ITS system for fashion

Organization: ITS Academy network in the ‘Sistema moda’ area

Description: Italy’s ITS fashion ecosystem is the strongest transferable practice for DesignSmart in the VET digitalisation area. It combines strong enterprise linkage, post-diploma applied learning, laboratories, internships and regional specialisation.

INDIRE’s [report](#) is part of the national monitoring system for ITS Academies carried out by INDIRE—Italy’s public research institute for educational innovation—on behalf of the Ministry of Education and Merit. The report analyses training programmes and outcomes across technological sectors, including the fashion system. The identification of 10 ITS Academies within the Sistema Moda area demonstrates the existence of a distributed national infrastructure supporting specialised technical training in this sector. The transferable elements are close employer involvement, project-based learning, attention to employability, and increasing integration of digital and sustainability themes. For DesignSmart, this suggests a curriculum model built around short modules, real company briefs, blended delivery, demonstrable outputs and progression from basic digital literacy to advanced circular and AI-enabled product-development tasks.

Conclusions

(1 page)

Synthesis of key findings for DesignSmart curriculum development:

Main critical issues identified across the three analysis areas

Across the three areas of analysis — sustainable fashion, AI-driven eco-design, and VET digitalisation — the research points to a common structural challenge: the Italian fashion ecosystem is moving toward green and digital transition, but this transition remains uneven, especially among SMEs, micro-enterprises and smaller training providers. The desk research shows that Italy has a strong fashion base, a high concentration of SMEs, and increasing policy pressure around circularity, traceability, digitalisation and sustainability compliance. At the same time, the national report stresses that many firms still struggle to translate sustainability goals into affordable tools, measurable indicators and operational workflows.

The questionnaire confirms this gap between awareness and implementation. Respondents generally recognise the strategic importance of sustainability skills and VET–industry



collaboration, but many also report only moderate preparedness in circular economy training, AI adoption and curriculum alignment with evolving sector needs. The forms repeatedly identify barriers such as lack of resources, high costs, insufficient infrastructure, and gaps in staff expertise. These issues appear both in sustainability education and in digital/AI integration for teaching and business practice.

A second critical issue is the shortage of hybrid profiles. The desk research explicitly identifies the growing need for competences that combine eco-design, life cycle thinking, traceability, compliance, digital tools and AI-supported decision-making. Yet questionnaire evidence suggests that familiarity with AI-based environmental tools and advanced digital teaching solutions is still limited or moderate among many respondents.

A third issue concerns the mismatch between curricula and real industry transformation. While sustainability is increasingly present in training provision, the national template makes clear that VET needs to go beyond awareness and provide practical, sector-specific, implementation-oriented learning. This is especially relevant in areas such as circular product development, traceability systems, environmental metrics, and digital product development.

National specificities

Italy's national context is marked by a combination of strengths and vulnerabilities. On the one hand, it is one of Europe's leading fashion producers, with around 62,000 firms, a strong export orientation, and a dense network of districts specialised in footwear, leather goods, textiles, apparel and design. The sector is overwhelmingly SME-based, with micro and small enterprises dominating the industrial structure. This gives Italy a strong entrepreneurial fabric, but it also means that many firms have limited internal capacity for sustainability management, AI investment and structured training.

Another Italian specificity is the coexistence of advanced excellence and widespread unevenness. Larger luxury groups and more structured suppliers are already moving on traceability, ESG reporting, circularity and digital tools, while smaller subcontractors and artisanal firms often remain strong in product quality but weaker in formal sustainability systems and data-based decision-making. This unevenness also appears in VET: some ITS Academies and specialised institutions are already integrating digital fashion design, sustainability management and applied innovation, but diffusion across the broader training ecosystem is still partial.

A further national specificity is the relevance of public policy and industrial transition frameworks. Italy has a supportive environment through the National Strategy for the Circular Economy, the AI Strategy 2024–2026, Transition 5.0, Scuola 4.0 and the strengthened ITS Academy system. These frameworks create favourable conditions for curriculum innovation, but the challenge is to ensure that small firms and local VET providers can access and operationalise these opportunities.



Priority training areas

The evidence suggests five priority training areas for the DesignSmart curriculum, further reinforced by qualitative insights from focus groups, which highlight the need for practical, accessible and industry-relevant training approaches.

1. **Sustainable fashion and eco-design.** This includes design for durability, repairability, recyclability, low-impact material selection, mono-material logic and circular product development. These competences emerge directly from the desk research as essential for Italian SMEs and VET providers. However, focus group findings underline that sustainability must be approached pragmatically: professionals need to critically assess whether solutions are truly sustainable and economically viable, avoiding approaches that remain theoretical or too costly to be applied in real market conditions.
2. **Environmental assessment and sustainability metrics.** Training should cover life cycle thinking, carbon and water impact awareness, footprint interpretation and the use of accessible environmental assessment tools. This responds both to desk research on required competences and to questionnaire evidence showing limited familiarity with digital or AI-based environmental tools. At the same time, learners must develop the ability to interpret these metrics in a practical way, linking environmental performance with cost, feasibility and real production constraints.
3. **Traceability, transparency and compliance.** This includes supplier mapping, digital documentation, chain-of-custody logic, responsible sourcing, sustainability claims and regulatory preparedness. The national report identifies these as increasingly central due to export pressures, due diligence expectations and future product passport requirements. The integration of digital systems that “communicate with each other” is also essential, requiring solid foundational knowledge to ensure effective implementation across the value chain.
4. **Digital and AI-enabled product development.** Priority topics include CAD/3D, virtual prototyping, digital simulation, introductory AI tools, digital twins and data-supported design decisions. The desk research makes clear that AI in fashion should be taught through practical industrial use cases, not abstract theory. Focus group results confirm that AI is particularly valuable in creative phases (e.g. rendering) and for speeding up workflows but still requires human supervision and cannot replace technical expertise. Training should therefore emphasise both the opportunities and limitations of AI, as well as its accessibility for users with different levels of technical background.
5. **Digital pedagogy and trainer upskilling.** VET staff need stronger capabilities in the use of LMS platforms, immersive tools, project-based delivery, company-linked assignments and blended learning. The national template explicitly identifies trainer upskilling, digital pedagogy and emerging technology integration as key gaps. In addition, training approaches should prioritise clarity and inclusiveness, ensuring that

complex topics such as AI and sustainability are presented in a way that is understandable and usable even for learners without a strong technical background.

Strategic opportunities for VET-SME collaboration

The research highlights several strong opportunities for collaboration between VET providers and SMEs.

1. One opportunity lies in **co-designing short, practical modules** built around real company challenges. Because Italian firms are predominantly micro and small enterprises, training needs to be flexible, problem-oriented and directly applicable to product development, sourcing, compliance and digitalisation. The questionnaire responses also show that collaboration with VET is widely considered important for future skills development.
2. A second opportunity is the use of **best-practice ecosystems** already present in Italy. Examples such as Retex.Green, Rifò, the MICS digital-twin project and the ITS Academy network show that collaboration can connect sustainability, innovation, local supply chains and applied learning. These cases provide strong models for replicable curriculum components and SME-facing training activities.
3. A third opportunity is to develop **work-based and project-based learning pathways**. The ITS Academy model demonstrates the value of close employer involvement, practical laboratories, internships and demonstrable outputs. This approach is especially suitable for DesignSmart because it allows sustainability and digitalisation to be learned through applied briefs rather than isolated theory.
4. A fourth opportunity concerns **women entrepreneurs and micro-enterprises**, which are especially relevant in the Italian context. Since women-led businesses and very small firms often need “translation skills” more than advanced reporting expertise, VET–SME collaboration can add value by turning regulatory and sustainability concepts into manageable, business-relevant practices.

Operational recommendations for curriculum design and deliver

The curriculum should be designed as **a modular, practice-oriented programme** that progressively integrates sustainability, circularity, and digital innovation. Learning pathways should move from foundational concepts to applied tasks, enabling learners with different starting points to build competencies gradually. Continuous updating on artificial intelligence should be a core component of the curriculum, reflecting its rapidly evolving nature and relevance to the fashion sector.

Delivery should prioritise **real use cases, company briefs, and demonstrable outputs**. Rather than treating sustainability, AI, and circularity as separate abstract topics, the curriculum should integrate them within product development decisions, sourcing scenarios,

design challenges, and traceability tasks. This approach directly addresses the need to translate theory and policy into practical workflows.

Teaching methods should emphasise hands-on interaction with AI tools. Learners should be guided in understanding how to effectively “dialogue” with AI systems, including prompt creation and tool selection. Importantly, training should focus on identifying the most appropriate tools for specific needs—mastering two or three relevant tools is more effective than superficial exposure to many.

Training should also encourage the **adoption of new ways of working**, even when they are not yet fully sustainable but are clearly oriented towards improving sustainability. For example:

- developing increasingly realistic digital renderings to reduce the need for physical samples.
- using 3D printing for prototyping to avoid the production of molds.
- adopting a design approach focused on minimizing material use.

The programme should include **accessible digital tools and low-threshold methods**. Given that high costs and uneven infrastructure remain significant barriers, the curriculum should not rely exclusively on advanced technologies. Instead, it should promote scalable solutions that can be adopted by smaller VET centres and SMEs with limited resources, as strongly supported by questionnaire findings.

Key content areas should include not only the use of **AI** but also its **risks and limitations**. Learners should develop a foundational understanding of technologies to improve performance while being aware of potential risks. While zero risk does not exist, increased awareness and informed use can significantly mitigate them.

A dedicated strand for **trainer development** is recommended. Trainers should be supported not only in subject knowledge but also in digital pedagogy, blended learning approaches, project-based assessment, and collaboration with enterprises. This is essential for ensuring the long-term sustainability and effectiveness of the curriculum.

Finally, the curriculum should align with **European and national frameworks** while remaining highly applicable to the Italian fashion system. Alignment with DigComp, DigCompEdu, circular economy priorities, and sector-specific VET needs will enhance transferability and policy relevance. At the same time, the curriculum must remain relevant to the realities of Italian SMEs, specialised districts, and local innovation ecosystems.

Quantitative indicators achieved

Overall, 72% of questionnaire respondents identified significant skills gaps related to sustainability, digitalisation and AI-enabled eco-design, particularly in areas such as lifecycle thinking, environmental impact assessment tools, digital product development and



traceability systems. This confirms the need for targeted training programmes capable of integrating sustainability competences with digital innovation skills in the fashion sector.

In addition, the preliminary findings were discussed and validated during two focus groups involving representatives from VET providers, SMEs and sector experts. Participants confirmed that the identified priority training needs reflect the real challenges faced by organisations in the Italian fashion ecosystem. The focus groups further enriched these findings by emphasising practical constraints and opportunities. Participants highlighted cost-related barriers to sustainable materials and technologies, the need to balance sustainability with business margins, and the risk that sustainable products remain confined to niche markets. In this context, sustainability was often perceived as a concept that risks remaining theoretical or used as a marketing claim if not supported by economically viable solutions.

Participants also stressed that, while basic knowledge of sustainability is necessary, training should focus on practical application—helping learners critically assess how sustainable a solution really is and whether it is truly needed. This pragmatic approach is essential to avoid the development of solutions that are environmentally sound in theory but inaccessible in practice due to high costs. They further emphasised the importance of adopting new working methods oriented towards sustainability, such as reducing physical sampling through digital rendering, using 3D printing for prototyping, and minimising material use already at the design stage. Moreover, participants underlined the growing role of AI and digital tools in accelerating processes, supporting creativity, and enabling faster decision-making, while also pointing to cultural resistance—especially among SMEs—as a key barrier to adoption. In particular, the integration of AI is seen as an opportunity, but one that requires human supervision, solid technical understanding, and a cultural shift, as companies may struggle to adopt it without perceiving it as a threat to their identity. The need for practical AI skills, including prompt design, tool selection, and awareness of risks (e.g. data use, intellectual property), was also strongly emphasised. At the same time, participants highlighted that training should be inclusive and accessible, providing practical tools also to those without a strong technical background and presenting complex topics in a clear and understandable way. Finally, the focus groups highlighted the importance of practice-oriented, modular training approaches, the use of accessible tools, and stronger collaboration between training providers and industry to ensure relevance and impact.

The National Committee was not formally convened at this stage of the research, as the validation process was conducted through direct consultation with sector stakeholders and experts participating in the focus group and questionnaire activities. Nevertheless, the results reflect the perspectives of organisations actively involved in vocational education, training and the fashion industry, ensuring the relevance and reliability of the identified priorities for curriculum development.





Bibliography

Cassa Depositi e Prestiti (CDP). (2024). *Il settore moda italiano: sfide e opportunità*. <https://www.cdp.it/resources/cms/documents/CDP-Brief-Il-settore-moda-italiano-ITA.pdf>

Cedefop. (2023). Italy: Reform of higher technical institutes (ITS Academy). <https://www.cedefop.europa.eu/en/news/italy-reform-higher-technical-institutes-its-academy>

Eurispes. (2023). *Moda sostenibile: stato e prospettive del comparto italiano*. <https://www.leurispes.it/moda-sostenibile-comparto-italiano/>

European Commission, Joint Research Centre. (2025). *DigComp 3.0: European digital competence framework*. <https://publications.jrc.ec.europa.eu/repository/handle/JRC144121>

Federazione Moda Italia. (2025). *Fashion retail report*. <https://federazionemodaitalia.it/wp-content/uploads/2025/01/FASHION-REPORT-2025.pdf>

INDIRE – Istituto Nazionale di Documentazione, Innovazione e Ricerca Educativa. (2024). *ITS Academy monitoraggio nazionale 2024: Focus sistema moda*. https://www.indire.it/wp-content/uploads/2024/07/ITS_ACADEMY_MONITORAGGIO_2024_FOCUS_SISTEMA_MODA.pdf

Ken Research. (2024). *Italy sustainable fashion market*. <https://www.kenresearch.com/italy-sustainable-fashion-marketplaces-market>

Marketing Trends Congress. (2025). *Integrating sustainability and country image in Italian fashion*. <https://archives.marketing-trends-congress.com/2025/pages/PDF/080.pdf>

Ministero degli Affari Esteri e della Cooperazione Internazionale (MAECI). (2025). *Il sistema moda italiano e le strategie di internazionalizzazione*. https://www.esteri.it/wp-content/uploads/2025/01/WP_moda_6.pdf

Ministero dell'Istruzione e del Merito. (2022). Piano Scuola 4.0 (Decreto ministeriale n. 161 del 14 giugno 2022). https://pnrr.istruzione.it/wp-content/uploads/2022/07/m_pi.AOOGABMI.Registro-DecretiR.0000161.14-06-2022.pdf

Ministero dell'Istruzione. (2022). *Piano Scuola 4.0: Scuole innovative, nuovi ambienti di apprendimento e laboratori* (Versione grafica). https://pnrr.istruzione.it/wp-content/uploads/2022/07/PIANO_SCUOLA_4.0_VERSIONE_GRAFICA.pdf

Parlamento Italiano. (2022). Legge 15 luglio 2022, n. 99: *Istituzione del sistema terziario di istruzione tecnologica superiore (ITS Academy)*. <https://www.gazzettaufficiale.it/eli/id/2022/07/26/22G00108/SG>





Rawshot. (2026). *Italian fashion industry statistics.*
<https://rawshot.ai/statistic/italian-fashion-industry>

Redecker, C. (2017). *European framework for the digital competence of educators (DigCompEdu)*. Publications Office of the European Union. https://joint-research-centre.ec.europa.eu/digcompedu_en

Rifò. (n.d.). *Circular economy and fashion classes.*
<https://rifo-lab.com/en/pages/circular-economy-and-fashion-classes>

SACE. (2024). *Sector kit: Fashion industry.*
https://www.sace.it/docs/default-source/sector-kit-2024/sace_sector-kit-2024_fashion.pdf

WorldMetrics. (2023–2026). *Italy fashion industry statistics and trends.*
<https://worldmetrics.org/italy-fashion-industry-statistics/>





Annexes

Annex 1 - Questionnaire Results Summary

The questionnaire was distributed to organizations active in the fashion ecosystem, including SMEs and Vocational Education and Training (VET) providers. The survey explored sustainability practices, circular economy readiness, digitalisation, AI adoption and training needs in the fashion sector.

A total of 36 responses were collected and analysed by Politecnico Calzaturiero and Base3.

1. Profile of respondents

Organization Type	Number	%
SMEs in the fashion industry	22	61
VET providers	14	39
Tot.	36	100%

Key insight: many respondents represent SMEs operating in the fashion value chain, while a significant share consists of VET providers responsible for delivering training programmes aligned with industry needs.

2. Sustainability practices in fashion SMEs

Use of sustainable materials:

Level of adoption	Respondents	%
Low (1–2)	9	25
Moderate (3)	13	36
High (4–5)	14	39

Key insight: approximately 75% of respondents report moderate or high use of sustainable materials, such as recycled fabrics or eco-friendly dyes.

3. Implementation of sustainable production practices

Level	Respondents	%
Low	7	19
Moderate	16	44
High	13	37

Key insight: Most companies have begun implementing sustainable production practices, although full integration across operations remains limited.



4. Circular economy readiness

Preparedness level	Respondents	%
Low	7	19
Moderate	17	47
High	12	34

Key insight: While awareness of circular economy approaches is growing, many companies still report only moderate readiness to integrate circular strategies into their business models.

5. AI and digital tools adoption

Familiarity with AI tools for environmental assessment

Familiarity level	Respondents	%
Low	6	44
Moderate	12	33
High	18	23

Key insight: Almost half of the respondents show low familiarity with AI-based environmental assessment tools such as lifecycle analysis software or carbon footprint calculators.

6. Key barriers to AI adoption

Barrier	Respondents	%
High cost of digital technologies	13	36
Lack of digital skills	11	31
Limited infrastructure	6	17
Limited training opportunities	4	11
Organizational resistance	2	5

Key insight: The most frequently reported barriers concern technology costs and lack of digital skills, highlighting the need for targeted training programmes and financial support mechanisms.

7. VET and skills development

Importance of new sustainability skills

Barrier	Respondents	%
Moderate	10	28
High	26	72



Importance of collaboration with VET providers

Level	Respondents	%
Moderate	9	25
High	27	75

Key insight: Most respondents recognise the importance of developing new sustainability and digital competences and highlight the strategic role of collaboration between industry and VET providers.



Annex 2 – Focus Group Documentation

Focus Group Protocol

Two focus groups were conducted (on March 16 and 19, 2026) to validate and deepen the findings emerging from the questionnaires.

The sessions followed a semi-structured format, combining guided questions with open discussion to encourage participants to share practical experiences and sector-specific insights.

The protocol focused on the following thematic areas:

- understanding of sustainable fashion in professional and educational contexts;
- main barriers to adopting sustainable practices and digital tools;
- impact of AI and digitalisation on the fashion sector;
- required sustainability and AI-related competences for future professionals;
- effective teaching methods and curriculum priorities for VET.

The discussions aimed to move beyond general perceptions and capture concrete examples, operational challenges, and emerging practices within the Italian fashion ecosystem.

Participants

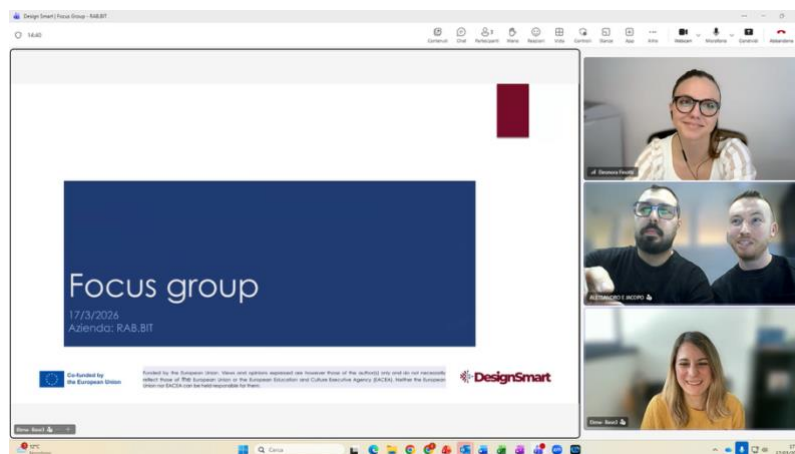


Figure 4. Participants in the First Focus Group (17 March 2026)

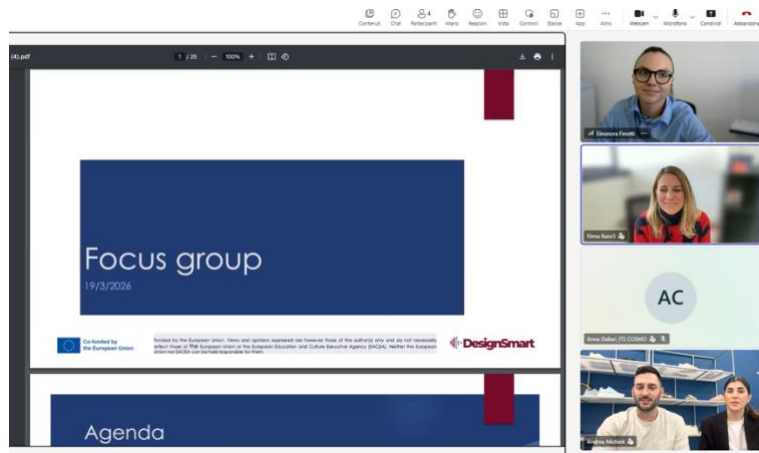


Figure 5. Participants in the Second Focus Group (19 March 2026)

The focus groups involved a diverse set of stakeholders, including:

- representatives from VET providers ([ITS Cosmo Academy](#));
- small and medium-sized enterprises (SMEs) in the fashion sector ([RAB.BIT studio](#), [Nice Footwear](#));
- industry professionals and technical experts.

Key Insights and Excerpts

The focus group discussions confirmed and enriched the questionnaire findings, providing practical evidence and contextual depth.

- On sustainability practices:

Participants consistently emphasised that *reduction* is a key principle of sustainable fashion. This includes reducing physical samples through digital tools and limiting material waste:

“Instead of producing 100 samples, you can produce 30 and develop the rest digitally, saving both costs and materials.” (FG1 participant).

They also highlighted the environmental impact of materials and processes, including waste and logistics:

“It’s not only about production, but also about shipping and the overall lifecycle.” (FG1 participant).

As one participant critically noted:
“For many, the term ‘sustainable’ is often used more as a marketing slogan than as a reality.” (FG2 participant).

- On barriers to sustainability:

Cost remains a major constraint, especially for SMEs:

“Sustainable materials can double costs, and companies must balance margins to remain competitive.” (FG1 participant).

Participants noted that while demand for sustainable products exists, high prices often limit scalability, confining such products to niche markets.

- On digitalisation and AI:

AI and digital tools were described as key drivers of change, particularly in terms of speed and creativity:

“These tools accelerate processes and support creativity, allowing faster idea generation and decision-making.” (FG1 participant).

However, adoption is uneven due to cultural factors:

“In smaller companies, some owners are hesitant, while others with a broader vision are more open to AI.” (FG1 participant).

As one participant observed:
“If companies do not understand that evolving does not mean losing their identity, they will struggle to integrate AI into their processes.” (FG2 participant).

- On required competences:

Participants stressed the importance of practical AI skills:

“It’s important to know how to interact with AI—how to write prompts and choose the right tools.” (FG1 participant).

They also highlighted the need for awareness of risks, including data use and intellectual property.

As participants further emphasised:

“It is increasingly difficult to find truly well-prepared professionals, as required skills evolve rapidly and demand continuous adaptation.” (FG2 participant).

“Technical training is essential: practical tools must be made accessible even to those without a formal technical background. AI and other digital tools can be used by technically skilled individuals who may not have a deep understanding of products and processes. Teaching these topics to non-technical profiles is delicate and requires clear and accessible communication to ensure effective use.” (FG2 participant).

“It is crucial to ensure that digital tools and technologies are interconnected, and that they are supported by solid skills and in-depth knowledge.” (FG2 participant).

- On teaching methods:

Effective training should focus on hands-on practice and tool selection:

“Choosing two or three tools well makes more difference than knowing ten superficially.” (FG1 participant).

Participants also recommended introducing accessible technologies such as digital rendering and 3D printing to reduce physical prototyping and material use.

- On curriculum priorities:

Continuous updating on AI and a foundational understanding of technologies was considered essential:

“A basic understanding of technologies helps improve performance and limit risks—zero risk does not exist, but awareness does.” (FG1 participant).

As another participant highlighted regarding sustainability education:
“Basic knowledge of sustainability is certainly necessary, but training needs to focus on practical aspects: how sustainable is it really? Do I actually need it? Today, anyone can say, ‘Let’s make a biodegradable shoe...,’ but if it ends up costing €1,000, it becomes hardly practical.” (FG2 participant).