

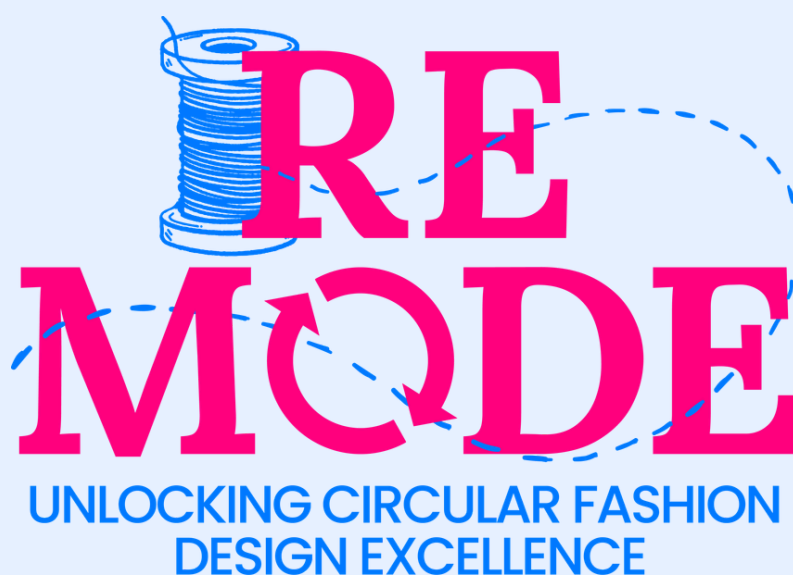
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COVE REMODE

Unlocking Circular Fashion Design Excellence



D2.7 – INTEGRATION FOR
THE
DEVELOPMENT OF THE
OCCUPATIONAL
TAXONOMY D2.2



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REMODE

Unlocking Circular Fashion Design Excellence

ERASMUS-EDU-2024-PEX-COVE

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D2.7 – Integration for the development of the Occupational Taxonomy D2.2

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1. Introduction

The textile and apparel sector is undergoing profound transformations driven by technological, socio-cultural and sustainability-related factors, which are reshaping how products are conceived, manufactured, distributed and valorised. These dynamics are also redefining professional profiles, supporting the emergence of transversal competencies and roles capable of operating at the intersection of design, production, governance and learning ecosystems.

Within this evolving landscape, skills become a central analytical focus, as they provide a lens through which to understand how creativity, culture, sustainability and digitalisation interact and recombine, generating new forms of professional practice.

The present deliverable builds on and complements Deliverable D2.2, Occupational Taxonomy Report on Professional Profiles, and provides an update and refinement of the existing occupational taxonomy. This is achieved through the systematic grouping of profiles into coherent professional families and the structured articulation of the associated domains of Skills, Knowledge, Responsibilities, Abilities and Experience Requirements.

The deliverable is organised into nine sections. Section 2 – Literature Review outlines the conceptual framework underpinning the analysis of changing skills and occupations, with particular attention to ecosystem-based perspectives, occupational taxonomies – including the ESCO taxonomy – and recent developments in education and training within the textile and apparel sector. Section 3 – Materials and Methods presents the research design, describing the sources used, the surveys conducted, and the analytical steps adopted to derive and validate the proposed update of the occupational taxonomy. Section 4 – Data Analysis reports the findings of the empirical analysis, offering a cross-country comparative perspective on SMEs' readiness for the principles of the circular economy and the related needs in terms of skills and professional roles. These results inform Section 5 – Occupational Taxonomy, which integrates and updates the taxonomy developed in Deliverable D2.2 by organising professional profiles into coherent job families that support the Twin Transition in the textile and apparel sector. Section 6 – Discussion interprets the results and explores their implications for the project. Section 7 – Study Limitations and Future Research addresses the main methodological limitations and outlines directions for future research, validation activities and further refinement of the taxonomy. Finally, Section 8 – Conclusions summarises the main findings and highlights their relevance for the next phases of the project, while Section 9 – References lists the bibliographic sources cited in the deliverable.

2. Literature Review

2.1 Introduction

Fashion education goes hand in hand with the development of fashion studies (Kawamura, 2004; Black et al., 2014; Jenss, 2016). To fully understand the evolving occupational needs in the 21st-century fashion and textile industry, it is essential to also consider the broader framework of fashion studies, whose interdisciplinary nature – spanning history, cultural studies, design, material culture and business studies – shapes both its theoretical foundations and its practical applications.

On one side, fashion education, as well as fashion studies, are firmly rooted in an interdisciplinary framework that draws from the humanities and social sciences, shaping both critical inquiry and creative practice. On the other, fashion education needs pedagogical frameworks that emphasise active and experiential learning. The 'engagement theory of learning' (Kearsley & Shneiderman, 1998) argues that meaningful learning occurs when students are actively involved in collaborative, technology-based tasks. This approach is particularly relevant to fashion education, where creativity, experimentation, social interaction, and industry-oriented practice are central. It also underscores the need for educators and institutional structures to evolve, becoming more adaptive, and expansive in their approaches. Highlights the urgency for the transformation of educators and institutional structures to be more knowledgeable and expansive (Quaye et al., 2020). This literature review highlights that professional profiles should not be understood solely in terms of technical skills, but also as roles that can support innovation, creativity and culture and promote inclusion by representing underserved and disadvantaged communities, thus acting as 'agents of change' (Adams, 2016). When applied to the ongoing sustainability transition within the fashion sector (Fletcher & Tham, 2019), this perspective becomes particularly relevant, as it positions fashion professionals not only as designers or practitioners, but also as actors responsible for driving ethical, environmental, and social transformation within the industry and culture. By doing so, it addresses the following questions: how will competences in the textile industry and fashion design and production endure in the 21st century? How can these competences be continuously developed and updated to remain relevant amid rapid technological and social changes?

To answer these questions, this work is organised around three major themes: 1) the role of ecosystems in shaping professional practices and opportunities; 2) the importance of an occupational taxonomy in identifying emerging skills and knowledge, and in sharing relevant concepts for sustainability transitions; and 3) the cultural and creative dynamics for continuous professional development in a fast-evolving industry.

By exploring the relationships between ecosystems, taxonomies, and skill development, this review provides a comprehensive understanding of how professionals can contribute to shape – rather than adapt themselves to – the demands of the 21st-century textile and clothing sector. Furthermore, it identifies conceptual tools that support lifelong learning, knowledge exchange, and the integration of sustainability principles in design, production, and management practices. Ultimately, this work contributes to mapping the critical skills and competencies necessary for the sector's resilience, competitiveness, and responsible growth in a rapidly changing technological and socio-cultural environment.

2.2 Ecosystems

The current socio-economic scenario of the EU, usually defined by the Twin Transition, postulates the convergence of ecological and digital transitions to redefine cultural, social and production parameters. In the context of the textile and clothing sector, there is a growing need for reconversion towards production models that integrate practices such as sharing, repairing, reusing, and recycling (Council of the European Union, 2025). In other words, production models that are based on extending the product life cycle, yet strongly influenced by the concept of care (The Care Collective, 2020), both for the product and for people. The implementation of this model is undergoing a complex transition phase, and new occupations find themselves operating in an environment that promotes circularity but still reasons with linear growth metrics (Manolchev et al., 2024). In this context, there is a redefinition of ecosystems—encompassing government, corporate networks, research, education, and civil society—and of their reciprocal relationships (Etzkowitz & Leydesdorff, 2000; D'Itria & Colombi, 2023). These dynamics favor collaboration aimed at resource sharing and the definition of common standards; this enables experimentation that, guided by feedback, refines processes while minimizing operational risks. Within this framework, technology acts as a strategic tool, creating functional bridges between the various actors involved (Konietzko et al., 2020). The world of education is often considered a guarantor of professional skills, although this assumption does not always hold true in practice, due to technological gaps between real life and education. However, it is commonly accepted that education plays a key role in incentivizing an approach increasingly oriented towards multidisciplinary teams that know how to adapt the general principles of sustainability to a specific reality, adapting to, and enhancing, the cultural aspect to ensure added value that arises directly from ideas (Sehnem et al., 2022; Tiippana-Usvasalo et al., 2023). The place where these ecosystems develop becomes a key factor in a systematic and collaborative vision, as it acts as an incubator of 'activities, knowledge, communities, products, cultures, and practices'. This process is grounded in localism (Fletcher, 2018). It involves 'the shaping of activity by a region's natural factors and by what is intriguing and dynamic in a place to ensure its long-term prosperity' and places society in a priority position relative to the economy' (Fletcher, 2018, p.140).

This in-depth analysis seeks to explore and understand the context and characteristics of ecosystems in the twin transition as places where new professions and skills emerge and develop to support the shift toward a circular economy.

2.3 Taxonomies

This research project proposes a taxonomy to structure and interpret the emergence of new professions and skills within the twin transition. Such an effort is grounded in the understanding that classification is a fundamental cognitive and social process, as 'humans are by nature animals who classify objects and events' (Christiansen, 1994, p. 3), and that 'we all spend large parts of our days doing classification work, often tacitly, and we make up and use a range of ad hoc classifications to do so' (Bowker & Star, 1999, p. 1-2).

Bowker and Star (1999) also emphasize that classifications are not neutral devices, as they select and highlight certain perspectives while simultaneously contributing to the obscuring of others. In this way, classificatory schemes intervene in the shaping of social reality, impacting the processes of defining identities, aspirations, and the conditions of recognition and dignity for individuals within society. For the authors, it follows that an effective classificatory system cannot be conceived as definitive but must be understood as a "living" artifact (Bowker & Star, 1999, p. 326), subject to revision and adaptation over time in response to shifting social contexts and the subjects involved.

Christiansen (1994) links the human capacity to classify to the conception of the individual as an occupational being. Occupations are considered complex dynamics of a person's intention within a context that changes over time. From this perspective, the act of classifying sets of actions – even ordinary and everyday ones – contributes to bringing them back into the category of socially recognized occupations, making them interpretable and evaluable, and attributing to them a dimension of meaning that goes beyond the functional or physiological component. Within this framework, the ESCO (European Skills, Competences, Qualifications and

Occupations) taxonomy is employed as a tool for bridging theoretical and practical dimensions, while also serving as a lens through which to understand the broader characteristics of classification systems in the current European context.

ESCO is the multilingual classification developed by the European Commission with the contribution of market experts, aimed at the description, identification, and classification of occupations, skills, competences, and qualifications (ESCO, 2025). It is constructed and updated primarily through manual processes and provides standardized descriptions of skills; it is intended for multiple users, including individuals, employers, universities, and training institutions (Chiarello et al., 2021). While serving as a common reference language at the European level – thereby promoting transparency, comparability, translation, and the analysis of qualification content (ESCO, 2025) – taxonomies like ESCO face a structural challenge: the intrinsically dynamic nature of professions requires continuous updates, for which traditional manual management models are becoming increasingly burdensome and difficult to sustain, especially in the face of the rapid emergence of new skills (Butt et al., 2025).

In addition to the real-time mapping of skills, the literature highlights a growing focus on forecasting skill demand, with the aim of supporting the alignment between the workforce and the needs of a rapidly evolving market (Xi Chen et al., 2024). This orientation entails a methodological rethinking of the tools employed: traditional approaches, such as questionnaires, are in fact limited in guaranteeing the level of granularity necessary for the construction and updating of taxonomies (Chiarello et al., 2021). In contexts characterized by accelerated change, the alignment between skills, people, and processes becomes increasingly complex (Rikala et al., 2024), reinforcing the role of taxonomies in giving shape and structure to knowledge in continuously evolving environments (Butt et al., 2025), including sectors such as textiles and clothing. In this perspective, dynamic taxonomy models require continuous updates and the interception of emerging trends, offering support to workforce planning processes (Gonzalez Gomez et al., 2025). Through the integration of data mining techniques, learning analytics, and artificial intelligence, these approaches claim to enable the analysis of heterogeneous data and the development of frameworks capable of identifying and representing skill gaps in real time (Rikala et al., 2024).

2.4 New approaches on fashion competencies

Recent scholarship in fashion and design education has increasingly emphasised the need to decolonise curricula, challenging eurocentric narratives and dominant aesthetic paradigms that have historically marginalised non-Western perspectives (Fletcher & Tham, 2019; Niessen, 2020). Decolonising the curriculum involves critically examining whose knowledge, values, and histories are represented in teaching materials, and restructuring learning experiences to value diverse cultural perspectives (Shahjahan, 2020). Co-design has emerged as a critical pedagogical strategy in this context. By involving students, communities, and practitioners from diverse cultural backgrounds in the design of educational content, co-design fosters collaborative learning environments that acknowledge and respect multiple forms of knowledge (Sanders & Stappers, 2008; Manzini, 2015). This approach not only democratizes curriculum development but also cultivates empathy, cultural sensitivity, and ethical engagement with global fashion systems. Diversifying fashion education goes hand-in-hand with inclusivity and cultural respect. Scholars have argued that fashion curricula must move beyond the replication of Western design norms and incorporate textile practices, design philosophies, and aesthetics from historically underrepresented cultures (Craik, 2018; Steele, 2020). Such inclusion promotes a richer understanding of global fashion and challenges students to critically interrogate issues of appropriation, authorship, and representation. Moreover, contemporary debates in fashion education increasingly foreground environmental and social sustainability. Integrating ecological considerations into curricula—ranging from material sourcing to waste reduction—aligns with calls for a more responsible and socially accountable fashion industry (Fletcher, 2014; Black, 2021). An inclusive curriculum thus simultaneously addresses cultural and environmental justice, encouraging students to develop design solutions that are both ethically and ecologically informed. In sum, literature suggests that a decolonized, co-designed, and diversified fashion curriculum can cultivate cultural literacy, ethical awareness, and sustainability consciousness among students. By centering multiple knowledge systems, engaging communities in co-creation, and embedding environmental considerations, fashion education can move toward greater inclusivity and social responsibility. Future research should continue to explore practical models of curriculum co-design, evaluating their impact on student learning outcomes, cultural sensitivity, and sustainability practices.

3. Materials and Methods

The methodology used in the research was applied to define an occupational taxonomy of professions in the textile and apparel sector, conceived as a tool to support training design and the development of teaching

materials. The taxonomy was structured according to criteria such as skills, abilities, experience requirements, and career trajectories, with the aim of making explicit the relationships, hierarchies, and potential evolutions of professional profiles.

Existing literature was initially explored to define the theoretical basis of the research. The review included various sources, including academic articles, essays, and book chapters found in databases such as Scopus, Web of Science, and Google Scholar. To ensure comprehensive and up-to-date coverage of the topic, material from recent publications, including 2025, was analyzed. The adoption of targeted keywords, including taxonomy development, skill taxonomy, ecosystems, sustainability, circular economy, and fashion education, allowed the skills mapping to be framed within a broader and more systemic perspective, going beyond the simple identification of sectoral skills. Through terms such as capabilities, co-design, and decolonizing the curricula, the research also broadened the scope of investigation towards an interdisciplinary approach. The integration of references to the Twin Transition and Innovation Ecosystems finally helped interpret the topic of skills and professional profiles within an evolutionary framework, connected to the cultural, technological, and sustainability transformations of the sector.

The selected articles were grouped according to three general themes, which defined the structure of the literature review and supported the contextualization of the occupational taxonomy. The first area, dedicated to ecosystems, focused on the interaction between government, business networks, research, and civil society in the context of the Twin Transition: where ecosystems emerge as incubators of circular practices and where technology acts as a strategic bridge between different actors. The second area, dedicated to taxonomies, explores different aspects of this tool, from its nature as an artifact to the importance of its dynamism, using ESCO (European Skills, Competences, Qualifications, and Occupations) as a case study. The analysis also highlights the need to move beyond traditional mapping methods, integrating artificial intelligence and data mining to identify skill gaps in real time. Finally, the third area, on fashion skills (New approaches on fashion competencies), focuses on the evolution of training, emphasizing the decolonization of curricula and the questioning of Eurocentric paradigms. Through co-design between students and professionals, the aim is to integrate cultural sensitivity, inclusiveness, and environmental justice into design, with the goal of training professionals to act as ethically and environmentally conscious "agents of change."

Data collection was divided into two phases: an initial quantitative survey conducted in August 2025, followed by a second between December 2025 and January 2026. The questionnaire design required particular attention to balancing the questions, ensuring data comparability and clarity, also considering the administration period (August).

The dissemination of the questionnaires was handled directly by each ReMODE consortium partner, who engaged their key stakeholders in their respective local contexts. Data was collected via the Google Forms platform, through three separate questionnaires (Annexes A, B, and C), addressed respectively to: companies/HR/organizations, managers and educators (VETs and HEIs), and graduates. This initial phase allowed us to build a preliminary information base and verify the consistency of the survey instruments with the research objectives.

At the end of the first collection, which had seen limited participation due to seasonality, the results then gathered offered useful insights for optimizing the survey instrument in both content and dissemination methods. Based on this evidence, an optimized questionnaire administration strategy was adopted for the second collection (conducted between December 2025 and January 2026). This strategy, aimed primarily at educators (VETs and HEIs, already analyzed in Deliverable D2.3) and SMEs, resulted in a significantly higher response rate, strengthening the information base for subsequent analyses and project outputs.

Each ReMODE consortium partner managed the distribution of the questionnaire, involving their respective local stakeholders. A total of 104 responses were received from SMEs. Digital platforms, Google Forms, were used for the collection, as in the first survey, but EUsurvey, recommended by the consortium partners for its flexibility in linguistic translation, was also used.

This approach improved the quality and consistency of the data collected, allowing for in-depth analysis of aspects related to professional profiles, required skills, sustainability practices, and training needs in the sector. The data underwent a cleaning and validation process (checking the consistency and completeness of responses, removing duplicates, and normalizing variables affected by translation). Subsequently, a descriptive analysis of the responses was conducted to identify recurring patterns and priorities, considering all participating countries jointly. This approach made it possible to systematize the evidence supporting the occupational taxonomy.

4. Data analysis - Cross-country Report on SMEs Readiness for Circular Economy

4.1 Introduction

This cross-country report describes the current state of professional roles in SMEs within the textile and clothing sector. In particular, it analyses the hardest-to-find skills, the expected demand for new professional profiles, and the missing/under-represented roles. The results, collected within the ReMODE project, provide an evidence base to develop and implement an occupational taxonomy/classification aimed at improving both the visibility of profiles within the employment system and support for CV drafting and updating.

The analysis is based on 104 respondents across five countries: Italy (n=26), Greece (n=23), Türkiye (n=20), Finland (n=18), and Germany (n=17).

4.2 Overall

1. Job Position

Answer	Count	Ratio
(Co-)Founder	46	44%
Manager	13	13%
Designer	9	9%
Senior Executive	6	6%
Head Designer/Creative Director	6	6%
Blank	5	5%
Officer	4	4%
Coordinator	4	4%
Senior Manager	3	3%
Accounting	3	3%
Owner	1	1%
Head of production	1	1%
Purchasing and Import	1	1%
Innovation Manager	1	1%
Entrepreneur	1	1%

Table 1 – Job Position (n=104; % of total respondents). (Co-)Founder accounts for 44% and Manager for 13% (57% combined); 5% of responses are Blank.

2. What type of organization do you represent?

Answer	Count	Ratio
Brands, Designers & Creative Services (Fashion brands, designers, creative studios — NACE M73–M74)	31	30%
Manufacturing & Craft (Apparel, footwear, accessories, artisans — NACE C14–C15)	29	28%
Raw Materials and Primary Processing (Agriculture, fibers, spinning, weaving — NACE A / C13)	17	17%
Circular & Repair Services (Resale, rental, repair, recycling — NACE E38 / S95)	6	6%
Digital & Technology Services (AI, IoT, platforms, virtual design — NACE J62–J63)	6	6%
Wholesale & Retail (Multibrand stores, sales agencies, sourcing, retail — NACE G46–G47)	3	3%
(Blank)	3	3%
NACE 13.20 MANUFACTURING OF WOVEN FABRICS FROM ARTIFICIAL AND SYNTHETIC FILAMENTS AND STATIC FIBERS + Weaving of textiles	2	2%
Beauty fashion and Beauty salon	2	2%
We are moving from NACE G46–G47 to NACE M73–M74 and will do both simultaneously	1	1%
Public, Non-profit & Financial Organisations (Authorities, NGOs, associations, banks — NACE O84 / S94 / K64–K66)	1	1%

Institutions, Education & Research (Universities, VET centres, R&D labs — NACE P85 / M72)	1	1%
Workwear brand	1	1%
Contract Printing [Home Textiles]	1	1%

Table 2 – What type of organization do you represent? (n=104; % of total respondents). Brands, Designers & Creative Services 30% and Manufacturing & Craft 28% account for 58% combined; Raw Materials and Primary Processing 17%. Remaining categories are ≤6% each; (Blank) is 3%.

3. How many employees are involved in the activities of your organisation?

Answer	Count	Ratio
<10 (Micro)	57	55%
<50 (Small)	33	32%
<250 (Medium)	9	9%
>=250 (Large)	5	5%

Table 3 – How many employees are involved in the activities of your organisation? (n=104; % of total respondents). <10 (Micro) is 55% and <50 (Small) is 32% (87% combined); <250 (Medium) is 9% and >=250 (Large) is 5%.

4. Which of the following roles are relevant in your company? (Select all that apply)

Answer	Count	Ratio
Eco-Designer / Sustainable Product Designer (Eco-designer + Materials Researcher)	41	15%
Circularity & Sustainability Manager (Combines Circularity Manager, Sustainability Innovation Lead, Recycling/Upcycling Manager)	35	12%
Digital Product Designer / 3D Fashion Designer (Digital Product Designer + 3D Fashion Designer)	20	7%
Trend Forecasting Analyst	20	7%
Digital Product Passport (DPP) & Traceability Specialist (DPP Specialist + Supply Chain Traceability Expert)	19	7%
Ethical Trade & Supply Chain Auditor (Ethical Trade/Supply Chain Auditor)	19	7%
Circular Supply Chain & Reverse Logistics Manager (Circular Supply Chain Manager + Reverse Logistics Specialist + Lifecycle/Take-back roles)	17	6%
Inventory & Demand Optimization Manager	17	6%
ESG & Sustainability Data Analyst (ESG Data Analyst + Sustainability Reporting Officer + Data Analyst roles)	15	5%
Sustainability Educator & Trainer (Sustainability Educator + Digital Skills Trainer + L&D Manager)	15	5%
Digital Transformation & Innovation Leader (Digital Transformation Lead + Innovation Director + Change Management Specialist + Sustainability Transformation Manager)	13	5%
None of the above	13	5%
Curriculum Designer for Digital & Sustainable Fashion (Curriculum Designer for Fashion/Digital Innovation)	12	4%
AI Personalization & Customer Insights Manager	11	4%
Digital Production & PLM Systems Manager (Digital Production Specialist + PLM Manager)	7	2%
Digital Showroom & Virtual Experience Coordinator (Digital Showroom Coordinator)	7	2%

Table 4 – Which of the following roles are relevant in your company? (Select all that apply) (multiple answers; n=104; % of total respondents; percentages may not sum to 100%). Top selections are Eco-Designer / Sustainable Product Designer 15% and Circularity & Sustainability Manager 12%; followed by Digital Product Designer / 3D Fashion Designer, Trend Forecasting Analyst, Digital Product Passport (DPP) & Traceability Specialist, and Ethical Trade & Supply Chain Auditor (7% each).

5. What are the main challenges your company faces when filling new sustainability-related roles?

Answer	Count	Ratio
Budget constraints	67	39%
Lack of qualified candidates	43	25%
Lack of awareness about these roles	32	18%
Limited internal training opportunities	17	10%
No need for these roles	14	8%

Table 5 – What are the main challenges your company faces when filling new sustainability-related roles? (multiple answers; n=104; % of total respondents; percentages may not sum to 100%). Budget constraints (39%) and Lack of qualified candidates (25%) are the top selections; followed by Lack of awareness about these roles (18%) and Limited internal training opportunities (10%).

6. Which skills are hardest to find in the labor market?

Answer	Count	Ratio
Technical specialization	54	24%
Craftsmanship	50	22%
Sustainability management	38	17%
Circular economy / recycling skills	34	15%
Soft skills (communication, teamwork)	33	14%
Digital / automation skills	20	9%

Table 6 – Which skills are hardest to find in the labor market? (multiple answers; n=104; % of total respondents; percentages may not sum to 100%). Technical specialization (24%) and Craftsmanship (22%) are selected most often, followed by Sustainability management (17%) and Circular economy / recycling skills (15%).

7. How has digitalization changed your company's operations?

Answer	Count	Ratio
Better tracking of materials or shipments	50	25%
More decisions supported by digital data	43	21%
More automated tasks	40	20%
Use of AI tools in design or product development	37	18%
No major changes so far	20	10%
Use of PLM or other digital product systems	14	7%

Table 7 – How has digitalization changed your company's operations? (multiple answers; n=104; % of total respondents; percentages may not sum to 100%). Better tracking of materials or shipments (25%), More decisions supported by digital data (21%), and More automated tasks (20%) are the top selections; 10% report No major changes so far.

8. Which training formats would be most effective for your staff?

Answer	Count	Ratio
Hands-on practical labs (e.g., software, PLM, DPP creation)	45	12%
Case-study learning (industry examples, best practices)	45	12%
Workshops and design sprints (collaborative problem-solving)	40	11%
Internal mentoring / workshops	39	11%
Partnerships with universities	33	9%
On-site bootcamps	28	8%
Micro-learning modules (short, focused content)	26	7%
Peer-to-peer or team-based learning sessions	25	7%
Live expert-led webinars	25	7%
Self-paced e-learning courses	20	5%

Scenario-based simulations (e.g., supply chain audits, lifecycle assessments)	16	4%
Micro-credentials (online)	15	4%
Role-play exercises (e.g., supplier interviews, client demos)	11	3%
Virtual / 3D environment training (digital showrooms, 3D design tools)	2	1%

Table 8 – Training formats considered most effective (multiple answers; n=104; % of total respondents; percentages may not sum to 100%). The most selected options are hands-on practical labs and case-study learning (12% each), followed by workshops/design sprints and internal mentoring (11%).

9. Which training areas are top priorities for the next two years?

Answer	Count	Ratio
Green skills / sustainability	57	26%
Digitalisation / Industry 4.0	53	24%
Project management / communication	50	23%
Technical & artisanal skills	36	16%
Distribution and logistics	26	12%

Table 9 – Top training priority areas for the next two years (multiple answers; n=104; % of total respondents; percentages may not sum to 100%). The most selected priorities are green skills/sustainability (26%), digitalisation/Industry 4.0 (24%), and project management/communication (23%).

10. Which professions do you believe will be most in demand in the next 3–5 years?

Answer	Count	Ratio
Digital fashion specialist / 3D designer	45	25%
Textile innovation expert / biomaterials	33	19%
Artisan / craftsperson	27	15%
Eco-designer	26	15%
Fashion data analyst	22	12%
Multidisciplinary creative	22	12%
Someone in charge of legal compliance (Extended Producer Responsibility-EPR, digital passport etc.)	2	1%

Table 10 – Professions expected to be most in demand in the next 3–5 years (multiple answers; n=104; % of total respondents; percentages may not sum to 100%). The most selected options are Digital fashion specialist/3D designer (25%) and Textile innovation expert/biomaterials (19%); followed by Artisan/craftsperson and Eco-designer (15% each).

11. Does your organization have a dedicated sustainability team?

Answer	Count	Ratio
Yes, informal	39	38%
No, but planning to establish one	29	28%
No, and no plans	19	19%
Yes, structured	15	15%

Table 11 – Presence of a dedicated sustainability team (n=104; % of total respondents). Informal team: 38% and structured team: 15%; 28% plan to establish one and 19% have neither a team nor plans to create one.

12. Which sustainability-related roles are missing or under-represented?

Answer	Count	Ratio
Eco-design specialist	41	19%
ESG data analyst	40	19%
Circularity manager	37	17%
Sustainability trainer	35	16%

Human rights / ethical sourcing	31	14%
Supply chain traceability expert	30	14%

Table 12 – Missing or under-represented sustainability-related roles (multiple answers; n=104; % of total respondents; percentages may not sum to 100%). The most selected options are Eco-design specialist and ESG data analyst (19% each), followed by Circularity manager (17%) and Sustainability trainer (16%).

4.3 Data analysis

Introductory note: This section presents a labour market view based on the needs and priorities expressed by stakeholders.

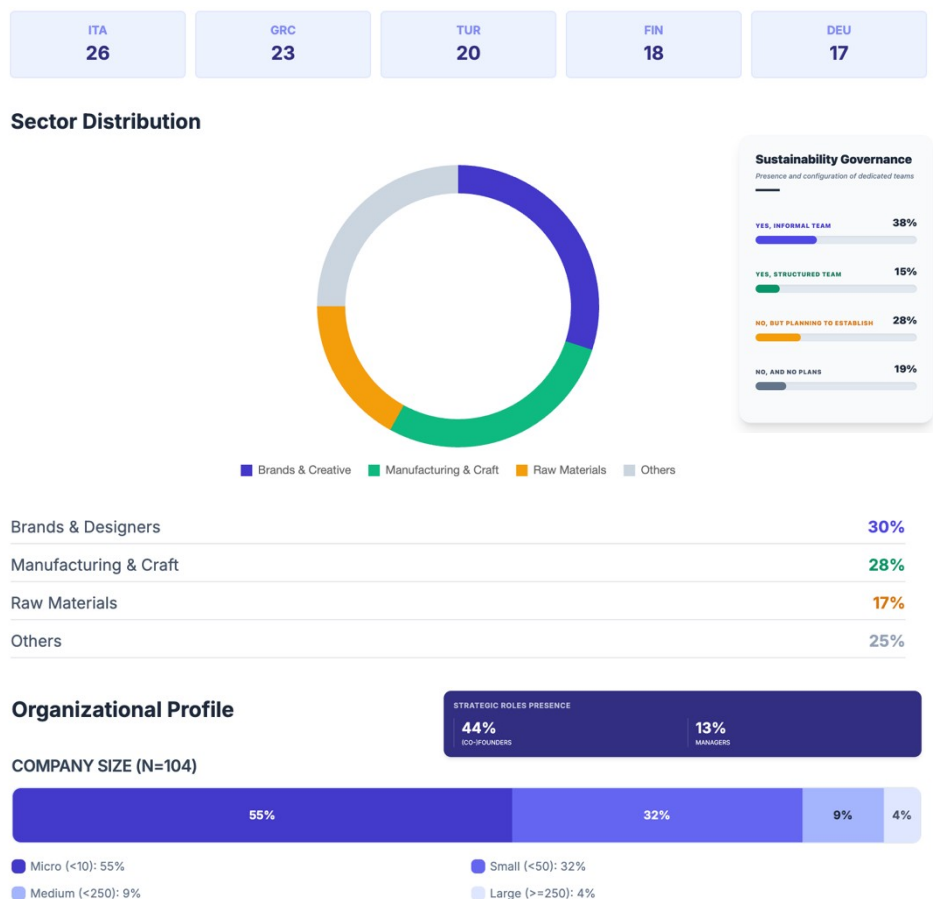
4.3.1 Context and sample profile

Within the ReMODE survey (n=104), the evidence below describes the sample composition and selected organisational context elements (company size, respondent profile, and presence of a dedicated sustainability team) that frame the indications on roles and skills.

The survey sample is strongly concentrated in three segments of the textile and clothing ecosystem: Brands, Designers & Creative Services (30%), Manufacturing & Craft (28%), and Raw Materials and Primary Processing (17%). Other organisation types (Circular & Repair Services, Digital & Technology Services, Wholesale & Retail, and, marginally, Public, Non-profit & Financial Organisations and Institutions, Education & Research) account overall for a residual share, with single categories not exceeding 6%.

The respondent profile is predominantly senior: (Co-)Founder accounts for 44% and Manager for 13% (57% combined), while the remaining roles range between 1% and 6% each (e.g., Designer, Senior Executive, Coordinator), indicating that responses largely reflect a decision-making/strategic perspective. The distribution by company size confirms the focus on SMEs: 55% operate in <10 (Micro) and a further 32% in <50 (Small).

Regarding governance, the presence of a dedicated sustainability team is relatively widespread, although with different configurations: 38% report “Yes, informal”, 15% “Yes, structured”, and 28% “No, but planning to establish one”; 19% report “No, and no plans”.



Brands & Designers	30%
Manufacturing & Craft	28%
Raw Materials	17%
Others	25%

4.3.2 Relevant roles and emerging profiles

For roles considered relevant in the company (Q4), responses focus on profiles connected to sustainable product design and circularity management: Eco-Designer / Sustainable Product Designer (15%) and

Circularity & Sustainability Manager (12%). This is followed (7% each) by: Digital Product Designer / 3D Fashion Designer; Trend Forecasting Analyst; Digital Product Passport (DPP) & Traceability Specialist; Ethical Trade & Supply Chain Auditor. More specialised profiles related to PLM systems and digital showrooms are mentioned less frequently (2% each). In addition, 5% select None of the above.

4.3.3 Hardest-to-find skills and digitalisation

Among the hardest-to-find skills in the labour market (Q6), the most selected are Technical specialization (24%) and Craftsmanship (22%), while Digital / automation skills are selected less frequently (9%). The question on how digitalisation has changed the company's operations (Q7) provides additional context, with responses highlighting: Better tracking of materials or shipments (25%), More decisions supported by digital data (21%), and More automated tasks (20%). Use of AI tools in design or product development is selected by 18%, while 10% report No major changes so far.

4.3.4 Enabling roles and support functions

It is also useful to note that some roles linked to training and skills management (e.g., Sustainability Educator & Trainer and Curriculum Designer for Digital & Sustainable Fashion) are marginal in the sample (5% and 4%, respectively). This may indicate that these profiles are not currently among the priorities most frequently recognised by respondent organisations. One possible interpretation is that, in SMEs, these functions are often covered in an unstructured way or through external support (trainers/consultants/partners), rather than through dedicated hires; in this perspective, they can be considered as support activities for upskilling and skills management, rather than “core” roles emerging strongly from the data.

4.3.5 Training needs: priority areas and formats

Comparing hardest-to-find skills (Q6) and top training priority areas for the next two years (Q9) shows a misalignment: Technical specialization (24%) and Craftsmanship (22%) are among the most selected hardest-to-find skills (Q6), while Technical & artisanal skills ranks after Green skills / sustainability, Digitalisation / Industry 4.0, and Project management / communication among training priorities (Q9: 16% vs 26%, 24%, and 23%). In terms of upskilling, training formats considered most effective (Q8) prioritise practical and contextualised approaches: Hands-on practical labs and Case-study learning (12% each), followed by Workshops and design sprints and Internal mentoring / workshops (11% each). Less selected options include Partnerships with universities (9%), Micro-credentials (online) (4%), Scenario-based simulations (4%), Role-play exercises (3%), and Virtual / 3D environment training (1%).

4.3.6 Future demand and missing/under-represented roles

Regarding professions expected to be most in demand in the next 3–5 years (Q10), SMEs most frequently select Digital fashion specialist / 3D designer (25%) and Textile innovation expert / biomaterials (19%). Artisan / craftsperson and Eco-designer are selected at 15% each. For missing or under-represented sustainability-related roles (Q12), the most selected are Eco-design specialist and ESG data analyst (19% each), followed by Circularity manager (17%), Sustainability trainer (16%), and Supply chain traceability expert (14%).

4.4 Conclusions

The data highlight four complementary directions: a strengthening of sustainability and circularity roles already recognised as relevant; increasing demand for profiles that integrate digitalisation and materials innovation; a continued need for technical and artisanal skills; and a cross-cutting dimension related to culture & learning and capacity-building, understood as SMEs' ability to read and value profiles (e.g., through clearer and more comparable CVs), identify needs, and activate upskilling pathways aligned with the gaps identified.

On this basis, an update of the taxonomy presented in deliverable D2.2 is proposed, confirming its structure in professional families. The taxonomy groups roles by business function and by the contribution they can make to circularity, digitalisation, and compliance, taking into account priorities, gaps, and trends emerging from the survey; at this stage it represents a first classification approach to be progressively refined and validated in the subsequent WPs. Specifically, the taxonomy is organised into four Job Family: (A) Strategy, Governance & Circular Transformation; (B) Creative Design & Digital Production; (C) Market Intelligence & Value Chain Operations; (D) Culture & Learning. The roles most frequently cited as “relevant” (Q5) are mainly concentrated in governance/strategy and design/creation (A and B). By contrast, many roles indicated as missing or under-represented (Q13)—in particular those related to data level (ESG), traceability/DPP, and verification along the

value chain—fall between governance and value chain operations (A and C). The fourth family (D) represents functions that facilitate the connection between training systems and SMEs’ needs, supporting role adoption over time and the updating of skills needed to address the gaps identified.

5. Integration and development of the occupational taxonomy (Deliverable 2.2)

5.1 Introduction

This chapter presents the integration and update to the occupational taxonomy introduced in Deliverable D2.2. It confirms the existing framework based on professional families, while revising its structure and contents in light of the evidence emerging from the second survey.

The proposed revision aims to harmonise the language and adopt shared labels already validated by questionnaire respondents for use throughout the project, and represents a first level of reorganisation, designed to be progressively refined and validated in subsequent Work Packages. This approach responds to the need to ensure consistency with the main existing reference frameworks, facilitating the integration of professional profiles within shared and recognisable schemes. Such alignment is essential to ensure the comparability, transferability and recognition of emerging professions, as well as to support the development of training and career pathways that are formally usable across different institutional and market contexts.

The current reading of professions develops along a pathway that spans the entire value chain, from the definition of strategic priorities and requirements (Job Family A), to activities related to design and digital industrialisation (Job Family B), up to the operational and data-driven management of market processes and the value chain (Job Family C). Job Family D completes the framework by highlighting the enabling role of organisational culture and lifelong learning, which are essential to bridge skills gaps and support the evolution of roles over time. In this context, the taxonomy is structured into four Job Families: (A) Strategy, Governance & Circular Transformation; (B) Creative Design & Digital Production; (C) Market Intelligence & Value Chain Operations; (D) Culture & Learning.

Family (D2.2)	Job Family (update)
Creativity and Digital Innovation	A – Strategy, Governance & Circular Transformation
Sustainability Strategy and Governance	B – Creative Design & Digital Production
Production and Technical Craftsmanship	C – Market Intelligence & Value Chain Operations
Operational and Cross-cutting Support	D – Culture & Learning

Figure/Diagram 1 – Evolution of the classification: from Families (D2.2) to Job Families (update)

Role (updated)	Type	D2.2 old profession
Circularity & Sustainability Manager (Combines Circularity Manager, Sustainability Innovation Lead, Recycling/Upcycling Manager)	Expansion	Sustainability Manager / CSR Specialist
Digital Transformation & Innovation Leader (Digital Transformation Lead + Innovation Director + Change Management Specialist + Sustainability Transformation Manager)	Expansion	Innovation Process Manager
ESG & Sustainability Data Analyst (ESG Data Analyst + Sustainability Reporting Officer + Data Analyst)	Renaming / expansion	ESG Data Analyst / Impact Strategist

Analyst roles)		
Digital Product Passport (DPP) & Traceability Specialist (DPP Specialist +Supply Chain Traceability Expert)	Expansion / strengthening	Supply Chain Expert / Traceability
Eco-Designer / Sustainable Product Designer (Eco-designer + MaterialsResearcher)	Merger	Eco-designer + Textile Innovation Expert / Biomaterials
Ethical Trade & Supply Chain Auditor Ethical Trade/Supply Chain Auditor)	Renaming	Human Rights and Ethical Work Expert
Sustainability Educator & Trainer (Sustainability Educator + Digital SkillsTrainer + L&D Manager)	Expansion	Sustainability Educator / Internal Trainer
Digital Product Designer / 3D Fashion Designer (Digital Product Designer +3D Fashion Designer)	Expansion	Digital Fashion Specialist / 3D Designer
Trend Forecasting Analyst	Renaming	Fashion Data Analyst / Trend Forecaster
Artisan / craftsperson	Renaming	Contemporary artisan
Multidisciplinary creative	Renaming	Multidisciplinary Freelance Creative
Digital Production & PLM Systems Manager (Digital Production Specialist +PLM Manager)	New	
Circular Supply Chain & Reverse Logistics Manager (Circular Supply ChainManager + Reverse Logistics Specialist + Lifecycle/Take-back roles)	New	
Digital Showroom & Virtual Experience Coordinator	New	
AI Personalization & Customer Insights Manager	New	
Inventory & Demand Optimization Manager	New	
Legal Compliance Expert (EPR, DPP, ecc.)	New	
Curriculum Designer for Digital & Sustainable Fashion	New	
HR Fashion Specialist (Green & Digital Talent Acquisition)	New / extension	HR Fashion Specialist (Green & Digital Talent Acquisition): profile supporting recruitment and alignment between skills needs and the labour market, particularly relevant in SME contexts.

Figure/Diagram 2 – Profile consolidation: mergers and new roles compared to the D2.2 taxonomy

5.2 New taxonomy configuration

Job Family A: Strategy, Governance & Circular Transformation

- Circularity & Sustainability Manager (combines Circularity Manager, Sustainability Innovation Lead, Recycling/Upcycling Manager)

- Digital Transformation & Innovation Leader (Digital Transformation Lead + Innovation Director + Change Management Specialist + Sustainability Transformation Manager)
- ESG & Sustainability Data Analyst (ESG Data Analyst + Sustainability Reporting Officer + Data Analyst roles)
- Legal Compliance Expert (Extended Producer Responsibility – EPR, digital passport, etc.)
- Ethical Trade & Supply Chain Auditor (Ethical Trade/Supply Chain Auditor)

Job Family B: Creative Design & Digital Production

- Eco-Designer / Sustainable Product Designer (Eco-designer + materials researcher)
- Digital Product Designer / 3D Fashion Designer (Digital Product Designer + 3D Fashion Designer)
- Digital Production & PLM Systems Manager (Digital Production Specialist + PLM Manager)
- Artisan
- Multidisciplinary creative

Job Family C: Market Intelligence & Value Chain Operations

- Circular Supply Chain & Reverse Logistics Manager (Circular Supply Chain Manager + Reverse Logistics Specialist + lifecycle/take-back roles)
- Digital Product Passport (DPP) & Traceability Specialist (DPP Specialist + Supply Chain Traceability Expert)
- Trend Forecasting Analyst
- AI Personalization & Customer Insights Manager
- Inventory & Demand Optimization Manager
- Digital Showroom & Virtual Experience Coordinator (Digital Showroom Coordinator)

Job Family D: Culture & Learning

- Sustainability Educator & Trainer (Sustainability Educator + Digital Skills Trainer + L&D Manager)
- Curriculum Designer for Digital & Sustainable Fashion (curriculum designer for fashion/digital innovation)
- HR Fashion Specialist

Job Family	Skills	Knowledge	Responsibilities	Abilities	Experience Requirements
A. Strategy, Governance & Circular Transformation	ESG strategy & KPIs; stakeholder management ; change management ; data literacy; translating requirements into controls	Circular economy; governance/r eporting; regulation; transparency & traceability; risk & compliance	Policies & roadmaps; ESG reporting; compliance/acc ountability; traceability controls; transformation programmes	Evidence-based decisions; trade-offs; align functions; manage complexity; inclusive stakeholder consultation	Master's-level pathways; 2–5+ yrs CSR/ESG/complian ce; executive programmes; Living Labs exposure (pilots)

<p>B. Creative Design & Digital Production</p>	<p>Eco-design/circularity; 3D prototyping; PLM workflows; process optimisation; artisanal upskilling; co-design</p>	<p>Materials & impacts; lifecycle strategies; sustainable design; production/quality; PLM; diverse textile cultures</p>	<p>Define product requirements; validate solutions; documentation/versing; reduce impacts; enable digital tool adoption</p>	<p>Iterate rapidly; manage aesthetic/performance/impact trade-offs; knowledge transfer; continuous learning; justice-informed design</p>	<p>Design/engineering pathways; academies/portfolio; 1–5 yrs dev/3D/PLM/R&D; Living Labs/prototyping</p>
<p>C. Market Intelligence & Value Chain Operations</p>	<p>Supply chain & logistics; reverse flows; traceability/DPP; analytics/forecasting; inventory optimisation; digital channels</p>	<p>Value chain processes; data quality; auditing/compliance; market trends; circular operations; DPP requirements</p>	<p>Ensure flow performance; implement traceability; provide reliable data; reduce waste/unsold stock; manage digital touchpoints</p>	<p>Turn signals into actions; integrate data; balance service/cost/impact; solve multi-system issues; due diligence via data</p>	<p>Logistics/engineering/data pathways; specialised programmes; 2–5 yrs operations/traceability/analytics; Living Labs pilots</p>
<p>D. Culture & Learning</p>	<p>Curriculum & learning design; up/reskilling; facilitation; assessment; partnerships; HR support; co-design</p>	<p>Lifelong learning; active methodologies; green/digital frameworks; change management; inclusivity; decolonising curricula</p>	<p>Design training pathways; define objectives/criteria; enable adoption at work; communities of practice; update competence language</p>	<p>Build engagement; adapt to contexts; make skills transferable; connect ecosystem; evaluate co-designed curricula impacts</p>	<p>Education/HR pathways; arts/design HEIs & conservatoires; 2–4 yrs L&D/HR; Living Labs learning pilots</p>

Table – Summary of Job Families across the five domains (Skills, Knowledge, Responsibilities, Abilities and Experience Requirements).

JOB FAMILY PROFILE A

Strategy, Governance & Circular Transformation

SKILLS

- ESG strategy & KPIs
- Stakeholder management
- Change management
- Data literacy
- Translating requirements into controls

KNOWLEDGE DOMAINS

- Circular economy
- Governance & Reporting
- Regulation
- Transparency & Traceability
- Risk & Compliance

KEY RESPONSIBILITIES

- Policies & roadmaps definition
- ESG reporting oversight
- Accountability frameworks
- Traceability controls
- Transformation programmes

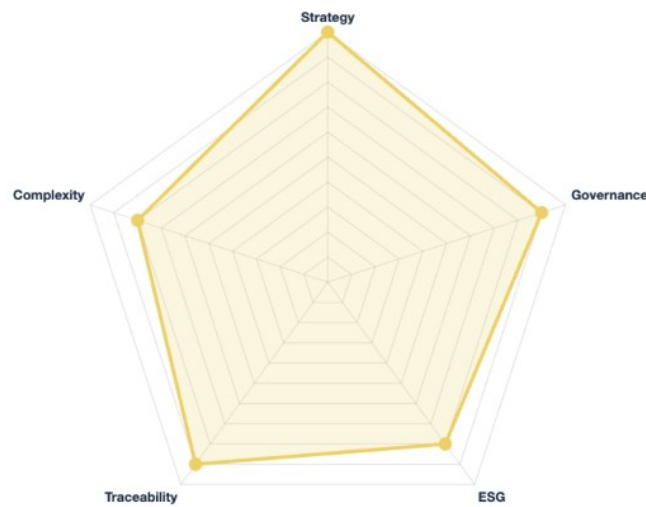
ABILITIES & MINDSET

"Evidence-based decisions, Trade-offs management, Functional alignment, Inclusive stakeholder consultation, Complexity management."

EXPERIENCE & EDUCATION REQUIREMENTS

Master's-level pathways; 2-5+ yrs CSR/ESG/compliance; executive programmes; Living Labs exposure (pilots)

TARGET COMPETENCY PROFILE



JOB FAMILY PROFILE B

Creative Design & Digital Production

SKILLS

- Eco-design/Circularity
- 3D Prototyping
- PLM workflows
- Process optimisation
- Artisanal upskilling
- Co-design

KNOWLEDGE DOMAINS

- Materials & Impacts
- Lifecycle strategies
- Sustainable design
- Production/Quality
- Diverse textile cultures
- Digital tool adoption

KEY RESPONSIBILITIES

- Define product requirements
- Validate performance/impact
- Documentation & Versioning
- Reduce impacts
- Enable digital tool adoption

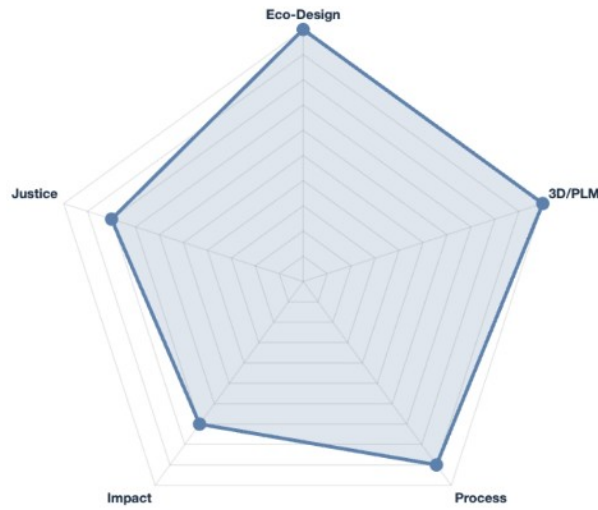
ABILITIES & MINDSET

"Iterate rapidly, Manage aesthetic/impact trade-offs, Knowledge transfer, Continuous learning, Justice-informed design."

EXPERIENCE & EDUCATION REQUIREMENTS

Design/engineering pathways; academies/portfolio; 1-5 yrs dev/3D/PLM/R&D; Living Labs/prototyping

TARGET COMPETENCY PROFILE



JOB FAMILY PROFILE D

Culture & Learning

SKILLS

- Curriculum & learning design
- Up/Reskilling
- Facilitation
- Assessment
- Partnerships
- HR support
- Co-design

KNOWLEDGE DOMAINS

- Lifelong learning
- Active methodologies
- Green/Digital frameworks
- Change management
- Inclusivity
- Decolonising

KEY RESPONSIBILITIES

- Design training pathways
- Define objectives/criteria
- Enable adoption at work
- Communities of practice
- Update competence curricula

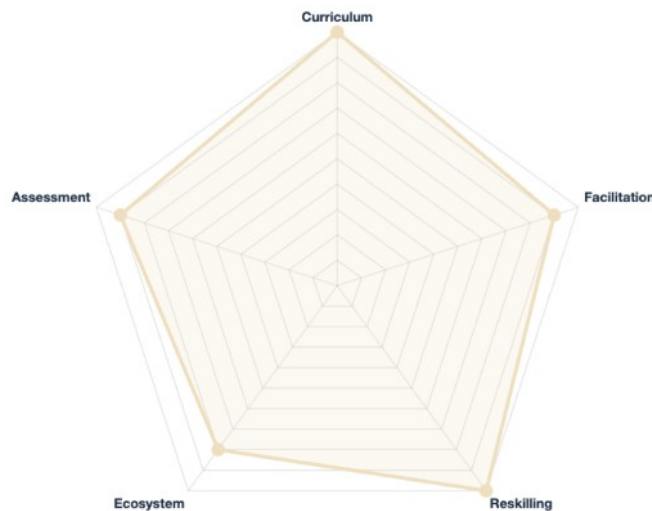
ABILITIES & MINDSET

"Build engagement, Adapt to contexts, Make skills transferable, Connect ecosystem, Evaluate co-designed curricula impacts."

EXPERIENCE & EDUCATION REQUIREMENTS

Education/HR pathways; arts/design HEIs & conservatoires; 2-4 yrs L&D/HR; Living Labs learning pilots

TARGET COMPETENCY PROFILE



5.3 Description of the Job Families

5.3.1 Job Family A. Strategy, Governance & Circular Transformation

Job Family A brings together the profiles that steer the Twin Transition at the strategic level, ensuring governance and compliance. In the textile and apparel sector, sustainability is increasingly configured as a cross-cutting responsibility: it requires professionals able to connect vision, rules and performance measurement, translating the principles of circularity and responsibility into business choices, processes and operational control mechanisms.

Skills: definition of sustainability strategies and KPIs; project and change management; stakeholder management and communication; data literacy applied to governance and reporting; ability to translate requirements into processes and operational controls; coordination of different actors around shared standards and objectives; reading and use of data to support KPIs and improvement plans.

Knowledge: principles of circular economy and lifecycle thinking; governance and reporting frameworks; regulatory requirements and transparency/traceability standards; supply chain fundamentals and impacts; risk & compliance concepts; logics and limits of classification systems (roles/skills) as tools to be updated over time.

Responsibilities: set roadmaps and priorities; define policies and procedures; integrate circularity into product and supply-chain choices; ensure compliance and accountability; ensure transparency and traceability controls; monitor performance, including ESG monitoring and reporting, and ensure continuous improvement; coordinate transformation programmes and change management; ensure consistency and updating of internal references on roles and skills to support comparability and transferability.

Abilities: make evidence-informed decisions; align different functions around shared goals; negotiate trade-offs between impact, time and costs; lead internal adoption and continuity over time; manage complexity in multi-actor contexts. Ability to ensure inclusive stakeholder consultation when defining standards, KPIs and decision-making criteria.

Experience Requirements: Education pathways may include Master's-level studies (or equivalent) in economics, management, law, industrial engineering, statistics, or related fields; relevant postgraduate courses may also be provided by specialised academies and executive programmes. Professional experience typically ranges from 2–5+ years in CSR/corporate sustainability, ESG reporting/auditing, compliance (including transparency/traceability requirements), and governance-related roles (depending on seniority). Core experience should include strategic ESG planning, stakeholder engagement, and the translation of regulatory/reporting requirements into procedures, KPIs and internal accountability mechanisms. Exposure to Living Labs or similar multi-stakeholder pilot settings can be relevant when policies, governance mechanisms or reporting processes are tested and refined iteratively with ecosystem actors.

5.3.2 Job Family B. Creative Design & Digital Production

Job Family B brings together the profiles involved in product design and development, through to production, with a systematic integration of sustainability criteria and digital tools across the full lifecycle. From an interdisciplinary perspective, this family connects creativity and design culture with materials knowledge and the ability to translate technological innovation into solutions that can be concretely applied in design and production processes.

Skills: eco-design and design for circularity (materials, durability, reparability, disassembly); digital development and prototyping (3D modelling and digital workflows); data and workflow management in PLM; industrialisation and optimisation of processes and production flows; integration of advanced tools to support design and development; valorisation of technical and artisanal know-how and its upskilling in an innovation perspective; collaboration in multidisciplinary teams; ability to translate cultural and identity values into product requirements consistent with sustainability and manufacturability. Co-design skills (working with students/communities/practitioners) and cultural sensitivity to avoid Eurocentric bias in design norms, with the ability to critically address appropriation, authorship and representation in the design process.

Knowledge: materials and their impacts (including alternatives and biomaterials); product lifecycle and extension strategies (durability, reparability, reuse); principles of sustainable design; production and quality fundamentals; standards and technical documentation; digital product development workflows; PLM systems and processes; elements of design culture and fashion languages useful to guide informed choices. Knowledge of diverse textile practices, design philosophies and aesthetics from historically underrepresented cultures, and of ethical frameworks linking cultural respect with environmental and social sustainability.

Responsibilities: define product and sustainability requirements; design and validate solutions (physical and digital); ensure consistency between design, materials and manufacturability; manage documentation and versioning; contribute to reducing waste and impacts across the lifecycle; facilitate integration between creative, technical and production skills; support industrialisation and optimisation of production flows; contribute to the adoption of digital and advanced tools in design and development processes; maintain and update technical-artisanal competences in line with innovation.

Abilities: turn constraints into design solutions; experiment and iterate quickly; assess trade-offs between aesthetics, performance and impact; transfer knowledge across creativity, technical functions and production; continuously learn and update tools and methods. Ability to develop ethically and ecologically informed design solutions by embedding cultural and environmental justice considerations throughout the product lifecycle.

Experience Requirements: Education pathways may include a degree or vocational training certificate in fashion design, product/industrial design, materials/chemical/textile engineering, or related fields; specialist fashion and design academies may provide equivalent pathways, particularly when supported by a portfolio. Professional experience typically ranges from 1–5 years in pattern making and product development, eco-design and LCA-informed design, digital prototyping/3D modelling (e.g., CAD/CLO3D), PLM-supported

product data management, and/or textile/materials R&D (including biomaterials), depending on the specific role. Experience gained through Living Labs and other hands-on innovation settings (e.g., pilots, co-design workshops, prototyping sprints) can be relevant to demonstrate applied problem-solving and iterative validation.

5.3.3 Job Family C. Market Intelligence & Value Chain Operations

Job Family C includes the roles that operationalise value-chain activities and market processes through a data-driven approach, strengthening transparency and performance across the value chain. In an ecosystem characterised by heterogeneous actors (companies, suppliers, research, education) and the need to cooperate on shared standards and data, these profiles oversee flow management and traceability, up to the interpretation of market signals to support decisions and optimisation.

Skills: management of logistics and supply-chain flows (including reverse flows and recovery processes); design and management of traceability systems and the Digital Product Passport; data management and analysis (data collection, quality and use for market analysis, forecasting and planning; demand planning; insights); optimisation of demand, inventory and unsold stock through analytics and digital solutions; use of digital tools for touchpoints and channels (e.g., showrooms and virtual experiences); operational coordination with suppliers and partners around shared data and standards.

Knowledge: end-to-end value chain processes; traceability models and data quality; compliance and auditing fundamentals along the supply chain; market dynamics and trends; circularity principles applied to operations (take-back, reuse, repair, recirculation) and “care” logics across the product lifecycle; architectures and information requirements of the Digital Product Passport.

Responsibilities: ensure continuity and performance of flows; implement and manage transparency and verifiability controls, including traceability systems and DPP; make reliable data available for operational and commercial decisions; reduce inefficiencies, unsold stock and waste; coordinate internal/external actors on processes and standards; support integration between impact objectives and operational constraints; manage digitally enabled touchpoints and channels (including virtual experiences) in support of market processes.

Abilities: read weak signals and translate them into actions; integrate heterogeneous data; balance service, cost and impact; solve complex problems in multi-actor and multi-system contexts; adapt processes to rapid market and technology changes. Ability to operationalise transparency and due diligence through shared data practices with suppliers and partners.

Experience Requirements: Education pathways may include a degree (or equivalent) in logistics/supply chain management, industrial engineering, statistics/data science, marketing, or related fields; specialised academies and professional programmes can provide complementary training on traceability standards, digital systems and analytics tools, and—where roles involve digital touchpoints/experience design—higher education institutions in arts and design may also offer relevant pathways (e.g., academies of fine arts). Professional experience typically ranges from 2–5 years in operations and supply chain management, traceability implementation (including digital systems and standards, potentially blockchain-enabled solutions), auditing/compliance along the value chain, and/or data-driven market analysis (forecasting, demand planning, consumer insights and data visualisation). Experience in Living Labs (or comparable multi-actor pilot environments) can be relevant for testing traceability/DPP solutions, data-sharing practices and operational process changes with suppliers and partners.

5.3.4 Job Family D. Culture & Learning

Job Family D groups the roles that enable the Twin Transition through training, skills development and cultural change. Evidence from the literature highlights the effectiveness of participatory and engagement-oriented pathways that accompany change by combining technical competences, cultural awareness and sustainability. In less structured organisational contexts, these functions may be distributed or activated through networks and partnerships; however, they remain crucial to translate needs into continuous upskilling/reskilling plans and to make skills and profiles more legible and transferable.

Skills: learning design and curriculum design (on green and digital competences); definition of upskilling/reskilling plans for roles and functions; production of learning contents and assessment tools; facilitation and delivery of labs/workshops; coaching/mentoring and knowledge transfer; communication and change facilitation; facilitation of communities of practice; partnership management between companies, training providers and territories; co-design of pathways with stakeholders and professional communities; support to HR in reading needs and in attracting/managing talent with emerging skills. Co-design facilitation skills to involve students, communities and practitioners from diverse cultural backgrounds in curriculum development and learning activities.

Knowledge: lifelong learning and upskilling/reskilling approaches; active and participatory learning methodologies; green and digital competences frameworks; organisational dynamics and change management; tools to map roles and skills (taxonomies and frameworks) intended as dynamic references;

principles of inclusivity and valorisation of diverse knowledge in education and training. Knowledge of decolonising and diversifying curriculum approaches (critical reflection on representation, Eurocentric narratives, authorship and appropriation) and how to embed cultural respect, inclusivity and environmental/social sustainability (justice) as cross-cutting learning outcomes.

Responsibilities: translate needs into training pathways; define objectives, contents and evaluation criteria; design curricula and training pathways; enable adoption of competences in daily work; produce contents and assessment tools; support HR and management in skills planning and in talent management/attraction; promote communities of practice and internal communication initiatives; promote a culture of continuous learning; keep language and references on competences updated to make them comparable and usable.

Abilities: create engagement and motivation; adapt pathways to different contexts and levels; make competences and profiles “readable” and transferable; connect resources and ecosystem actors to support change over time; facilitate collaboration and learning in multicultural and interdisciplinary contexts. Ability to design inclusive learning experiences that cultivate cultural literacy, ethical awareness and sustainability consciousness, and to evaluate the impact of co-designed curricula on learning outcomes and practice.

Experience Requirements: Education pathways may include a degree (or equivalent) in education sciences, psychology, human resources, communication, or related fields; specialised academies and professional qualifications in training, coaching, facilitation and HR can also be relevant, especially when combined with sector-specific exposure. In addition, higher education institutions in arts, design and performing arts (e.g., academies of fine arts and conservatoires) may provide relevant pathways for roles connected to creative pedagogy, curriculum design and cultural facilitation. Professional experience typically ranges from 2–4 years in corporate training and facilitation, curriculum design and learning & development, skills assessment, and/or HR talent acquisition and career-path management, ideally with exposure to sustainability and digital-skills topics. Experience in Living Labs (or similar participatory learning and innovation settings) can be relevant to co-design, pilot and evaluate training pathways with companies, learners and ecosystem partners.

At this stage, the taxonomy does not aim to provide an exhaustive analysis for each role, but rather to define an initial coherent set of categories and descriptors to be used as a shared working baseline. Validation and refinement will take place progressively in subsequent Work Packages, through further engagement with stakeholders and the application of the taxonomy to different cases and contexts. Within this iterative process, each individual profile can be calibrated against the framework of its Job Family, modulating the depth and combination of the five domains according to organisational specificities and to the evolution of technologies, standards and sector practices. The progressive enrichment of the information base with additional data and applied feedback will also strengthen the alignment and mapping of the proposed profiles against the taxonomies and repertoires most widely used today, facilitating their adoption and recognition in education and labour-market contexts. The proposed update consolidates the D2.2 taxonomy into a four–Job Family framework, offering a coherent reading of the value chain and of the main functions involved in the Twin Transition. The characteristics described for each family through the five domains Skills, Knowledge, Responsibilities, Abilities and Experience Requirements provide a transversal framework that is useful to make profiles comparable and to guide the subsequent operational translation.

6. Discussion: implications for the ReMODE project

This section discusses the implications of this deliverable for the ReMODE project. The update of the occupational taxonomy provides a shared baseline for the next phases, linking empirical evidence and training design and enabling the translation of needs, trends and skill gaps into learning objectives and contents. It also makes profiles more comparable in the labour market, facilitating their use in selection and HR management (job adverts, CVs, job descriptions) and alignment with existing repertoires/frameworks (e.g., ESCO). Operationally, structuring the taxonomy into job families and the five domains Skills, Knowledge, Responsibilities, Abilities and Experience Requirements provides ReMODE with a shared working grid to connect needs analysis, profile definition and curriculum development, enabling modular pathways and support tools (career guidance and guidance) to clarify role areas, transitions and development trajectories. This function is particularly useful for profiles with a strong cultural and learning component, where it is necessary to integrate the training dimension, transversal competences and professional specificities.

6.1 Classification, curricula and profile recognition

A key implication for ReMODE concerns the relationship between pedagogical design and profile recognition. Classifying and naming professions affects the visibility of roles and the usability of curricula: without a clear framing, profiles risk remaining marginal in selection, onboarding and valorisation practices. For this reason, within the project, work on curricula and the formalisation of profiles must progress together. In this direction, articulation into job families, and the five domains of Skills, Knowledge, Responsibilities, Abilities and

Experience Requirements, contributes to positioning roles in a readable way; a level of detail that is not excessively fragmented facilitates adoption and adaptation to different organisational contexts.

Based on questionnaire responses on roles considered relevant within companies, profiles such as Sustainability Educator & Trainer and Curriculum Designer for Digital and Sustainable Fashion rarely emerge as roles that are directly internal to the company. This does not imply low relevance: especially in SMEs, these functions may be located elsewhere or outsourced. In this sense, they can be framed as enabling profiles, useful for onboarding, curriculum analysis, and monitoring the evolution of skills, supporting internal mobility and skills governance. This suggests the opportunity to distinguish between functional relevance and the formal presence of a role: including these profiles in the taxonomy helps make their function explicit within transition processes. The proposed classification also facilitates dialogue between companies, education providers and stakeholders by offering shared categories.

6.2 Operational implications for the next phases of the project

Finally, this section highlights some operational implications for the next phases of ReMODE. The updated taxonomy should be consolidated through stakeholder validation, to strengthen its clarity and fit with use contexts. It can also guide the development of training pathways and support tools, ensuring internal coherence and improved external readability of profiles. In parallel, it will be important to qualify the type of gaps observed, distinguishing between actual shortages of competences/roles and misalignments between training categories and labour demand: difficulties in recruiting certain profiles may also depend on non-aligned labels and low readability of profiles and curricula (e.g., in CVs and job descriptions). Consequently, alongside strengthening sustainability-related competences, the project can also act on terminological clarity. Overall, ReMODE's added value lies in the integration of the training dimension and the occupational dimension; in this sense, the taxonomy represents an enabling condition to sustain the effectiveness of project actions over time and to make emerging roles effectively usable in the system.

7. Study Limitations and Future Research

This section outlines the main methodological limitations of the study and identifies directions for further research, validation activities and refinement of the occupational taxonomy developed within WP2. First, it should be noted that the empirical evidence derives from survey data and therefore reflects—to a significant extent—companies' perceptions and self-assessments, in particular those of respondents in senior roles. This approach may introduce elements of subjectivity linked to different interpretations of occupational categories and competences, as well as potential biases in the assessment of needs. In addition, cross-country comparability may be affected by linguistic and institutional differences, as well as by different levels of digital maturity and different degrees of preparedness regarding circular economy principles. Finally, the cross-sectional nature of the survey provides a snapshot at a given point in time and does not, in itself, allow for the observation of evolutionary trajectories over time.

Alongside these aspects, it is also important to consider limitations related to the taxonomy-building process itself. Defining job families and describing profiles through the five domains of Skills, Knowledge, Responsibilities, Abilities and Experience Requirements necessitates a balance between granularity and usability: an overly detailed taxonomy may be difficult to adopt and update, whereas an overly broad taxonomy risks losing descriptive capacity with respect to emerging roles and hybrid configurations. Moreover, the presence of transversal profiles may generate partial overlaps between domains and boundaries between roles that are not always clear-cut. This issue is particularly evident in SMEs contexts, where functions are often distributed across a small number of people, and positions tend to combine heterogeneous responsibilities.

In light of these limitations, the deliverable identifies stakeholder engagement as a key development line for the validation and progressive refinement of the taxonomy. In particular, structured moments of comparison (e.g., interviews and workshops) with SMEs, education and training actors, and other sector stakeholders are relevant to verify the clarity of role labels, the relevance of profiles to use contexts, and the internal coherence of the descriptive domains. Further research can strengthen the robustness of the evidence through triangulation across sources (e.g., complementing the survey with documentary analysis, company cases, or labour-demand data) and, where possible, through longitudinal data collection to monitor the evolution of needs over time. Consistently with ReMODE's four-year duration, the taxonomy should be understood as a dynamic artefact to be updated iteratively (terminology, level of detail, possible extensions), also starting from recurring difficulties in sourcing specific roles or competences, which should be analysed and qualified on a case-by-case basis.

In addition, a dedicated validation process should position the proposed job families and profiles within existing occupational classification systems by mapping them to ESCO (and, where relevant, to national classifications) and by identifying any gaps or misfits. Where the proposed profiles are not adequately covered, the process

should also support the development of a consolidated proposal to add or update entries in ESCO (or comparable taxonomies), based on iterative refinement of labels and descriptors through stakeholder feedback.

Overall, the limitations discussed here do not reduce the relevance of the deliverable's contribution, but rather delimit its interpretation. The findings should therefore be read as an exploratory and comparative baseline that supports the systematisation of profiles and alignment between education and occupational languages, while recognising that the adoption and transferability of the taxonomy will depend on subsequent verification steps in different contexts and on the evolution of sector practices.

8. Conclusions

This deliverable has explored the relationship between the transformations underway in the textile and apparel sector, emerging skills needs, and the updating of professional profiles, placing the occupational taxonomy at the centre of the analysis. Through the integration of empirical evidence and conceptual reflection, the work has refined the taxonomy presented in Deliverable D2.2 by organising profiles into job families and describing them through a shared grid based on the following five domains: Skills, Knowledge, Responsibilities, Abilities and Experience Requirements. This approach strengthens the internal coherence of the classification and enhances its comparability, in line with the logic of the Twin Transition. The findings show that digital and sustainable transformations do not translate solely into the emergence of new roles, but also into a reconfiguration of existing profiles and skill combinations, often characterised by a strong transversal dimension. In this context, the updated taxonomy helps make these processes more readable by offering a structured representation of professional profiles across design, production, governance and learning. Finally, the attention devoted to enabling profiles and to functions that may also operate outside formal company structures reinforces an ecosystem-based reading of competences, consistent with the objectives of the ReMODE project.

A further contribution of this deliverable concerns the way in which the taxonomy connects training design and the recognition of profiles within the occupational system. At this stage, rather than describing each individual role in full detail, the objective is to identify common characteristics for each job family, using the five domains Skills, Knowledge, Responsibilities, Abilities and Experience Requirements as a shared grid. A more granular articulation of the domains for individual profiles requires more specific evidence and will be developed progressively as the project advances, through additional data and validation moments. Looking ahead, the taxonomy can support curriculum alignment and career guidance activities, also helping to better qualify the observed gaps (actual shortages vs terminological misalignments) and to accompany the continuous updating of profiles in relation to standards, technologies and sector practices.

In conclusion, the overall value of this deliverable lies in its ability to integrate empirical analysis and conceptual reflection, offering a reference framework that supports the subsequent phases of the project. Through the update of the occupational taxonomy, ReMODE now has a tool that describes the transformations underway and supports their interpretation in terms of competences and profiles, laying the foundations for the progressive consolidation of professional profiles in the sector.

In this perspective, the updated job families and profile categories are intended not only for internal project use, but also to be mapped and proposed for inclusion in ESCO and other comparable occupational classification systems, to strengthen the visibility, portability and formal recognition of emerging and reconfigured roles across European labour-market and education contexts.

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