META SKILLS 4TCLF

D 1.7 Annual Report on Skills Intelligence - Results and Findings

AVECAL

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1. INTRODUCTION

Building on Deliverable D1.7 "Annual Report on Skills Intelligence" which defined the methodology for updating and reviewing the findings of the Final Report of Work Package 3, this document presents the results of applying that methodology for the year 2025.

As on the first part of D1.7, it focuses on identifying the most relevant factors across EU countries that directly and indirectly influence skills in the TCLF sectors, with a special emphasis on monitoring the state of skills and the gap between these and business needs. Specifically, this document includes the outcomes of the targeted online survey conducted for this purpose and the updated SWOT analysis validated by the METASKILLS partners.

As a reminder, the aforementioned methodology includes the following steps:

Intermediate years (2025 and 2026)

- An **online survey** will be conducted via Google Forms or Microsoft Forms, targeting at least 25 responses per country. Partners will distribute it to relevant stakeholders to evaluate changes or stability in the issues addressed by April 2024, as outlined in the WP3 Final Report. → *A Microsoft Forms was elaborated.*

- The **SWOT revalidation process** will use the summarized drivers of change as well as the 2024 SWOT analysis results to identify updates. Partners may conduct the process internally or externally and should document changes using the template provided for this purpose.

- Partners must distribute the online survey among relevant stakeholders and submit the completed template by **31st March 2025**, ensuring the analysis occurs within one year of the WP3 Final Report. → *As of 31st March 2025, the target of 250 responses (based on 25 responses from each of 10 countries, excluding Belgium as it represents umbrella organisations – CEC, COTANCE and EURATEX – rather than a single country) had not been met. Additionally, the input received was not balanced, with some countries significantly overrepresented compared to others. Following an internal evaluation, the decision was made to extend the survey deadline to 22nd April to improve both the response rate and the balance across countries.*

It is important to highlight that the drivers of change identified in the WP3 Final Report were also considered in this analysis. For reference, they are summarised as follows:

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1. Employment and Demographics

The TCLF industries face an aging workforce and declining interest from younger generations.

- Generational Gap: Retirements are creating skill shortages in highly artisanal roles.
- Sector Attractiveness: TCLF jobs are perceived as less appealing, limiting new talent inflow.

2. Environment

Climate change, EU sustainability regulations, and rising resource costs are reshaping industry practices.

- Companies are under pressure to adopt more sustainable, transparent, and efficient processes.
- Consumers increasingly demand environmentally responsible products.

3. Technological and Digital Innovation

Digitalization is transforming every aspect of the industry—from design to production.

- Process Transformation: Technologies like AI and additive manufacturing are streamlining operations.
- Digital Skills: There is a growing need for training in digital tools and systems.

These factors reveal both challenges and opportunities, guiding the development of responsive strategies that foster sustainable growth and competitiveness in the TCLF sectors.

2. ONLINE SURVEY RESULTS

The online survey pretends to present the main conducted via Microsoft Forms to identify key factors impacting the Textile, Clothing, Leather, and Footwear (TCLF) sectors, with a specific focus on skills monitoring and the gap between current workforce capabilities and evolving business needs. As of 22 April 2025, a total of 256 responses had been received.

The survey targets companies, VET centres, universities, and other relevant stakeholders across partner countries. The results offer valuable insights into generational dynamics, technological adoption, sustainability readiness, and the alignment between education and industry demands.

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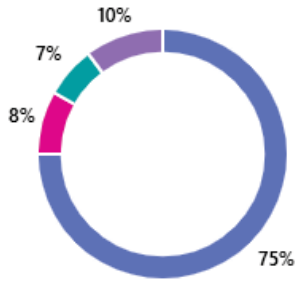
The distribution of responses across countries is presented below:

- Austria: 1
- Czech Republic: 2
- Finland: 1
- France: 13
- Germany: 32
- Greece: 27
- Italy: 39
- Poland: 35
- Portugal: 23
- Romania: 19
- Spain: 22
- Sweden: 21
- Ukraine: 21

Furthermore, the following pages present the survey results, illustrated through graphical representations.

2. Type of Entity

Company	192
VET centre	21
University	17
Otras	26



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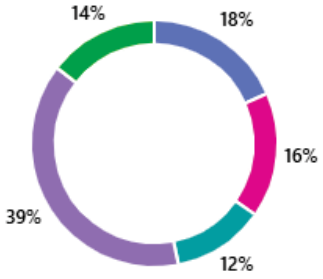
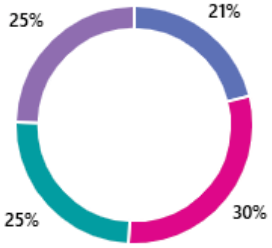
3. Please chose which sector(s) of the TCLF industries you are dealing with:

Textile	47
Clothing	42
Leather	31
Footwear	99
Otras	37



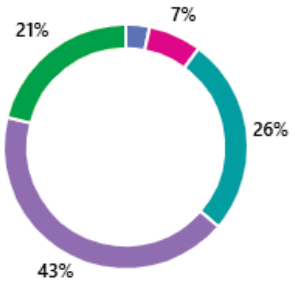
4. What is the approximate size of your company in terms of its workforce

1-10 employees	54
11-50 employees	76
51-200 employees	63
More than 200 employees	63



5. On a scale of 1 to 5, how would you assess the impact of an aging workforce in your sector?

1-No impact	8
2-Low impact	18
3-Moderate impact	67
4-High impact	109
5-Very high impact	54



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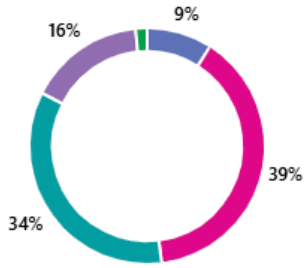
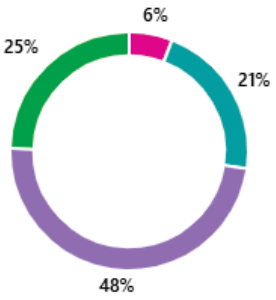
6. On a scale of 1 to 5, how would you evaluate young people´s perception of career opportunities in the TCLF (Textile, Clothing, Leather and Footwear) sector?

1-Very negative	23
2-Negative	100
3-Neutral	88
4-Positive	41
5-Very positive	4



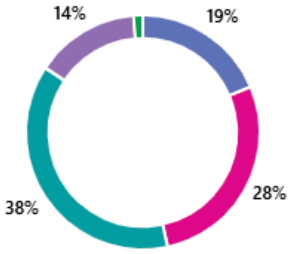
7. To what extent do you believe there is a significant gap in specialized skills due to insufficient generational renewal?

No gap	0
Minimal gap	15
Moderate gap	55
Significant gap	123
Critical gap	63



8. To what extent has your company adopted digital technologies such as AI, additive manufacturing, and digital design in the past year?

No adoption	44
Limited adoption	66
Moderate adoption	89
Extensive adoption	34
Fully digitalized	3



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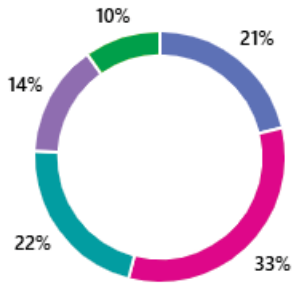
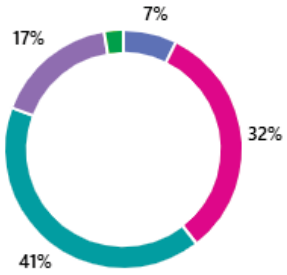
9. What proportion of your current workforce requires advanced digital skills to perform their job?

Less than 10%	50
10-30%	77
31-50%	51
51-70%	34
More than 70%	23



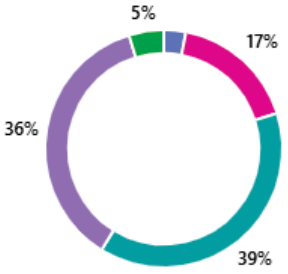
10. To what extent does your workforce face a digital skills gap?

No gap	17
Minor gap	75
Moderate gap	96
Significant gap	39
Critical gap	6



11. On a scale of 1 to 5, how effectively has your company integrated sustainability measures into its production processes (e.g, use of ecofriendly materials, adoption of green manufacturing methods)?

1- Not integrated at all	7
2- Limited integration	40
3- Moderate integration	90
4- Extensive integration	85
5- Fully integrated	11



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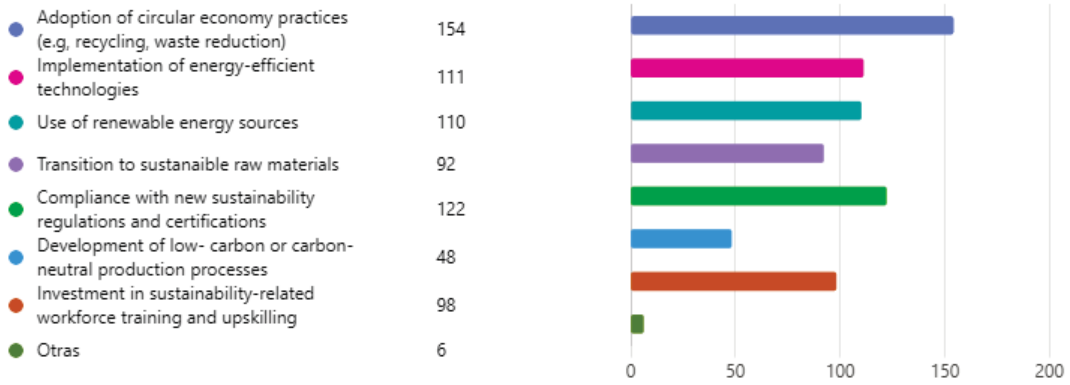
12. Which specific sustainability measures has your company prioritized for investment in the coming years? (Select all th at apply)



13. What proportion of your workforce requires training in sustainability-related skills (e.g., waste management, use of su stainable materials)?

14. What percentage of your workforce has received training in new technologies (e.g. digitalization, AI, additive manufa cturing) over the past few years?

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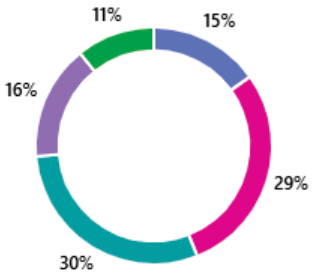
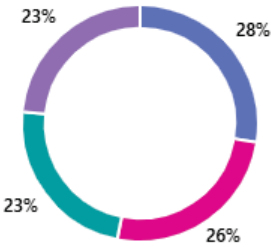
15. To what extent does your company collaborate with education institutions or training centres to enhance workers' skills?

No collaboration	24
Limited collaboration	46
Moderate collaboration	47
Extensive collaboration	25
Ongoing and close collaboration	17



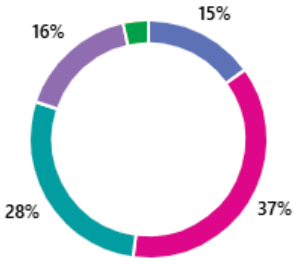
16. How frequently does your institution revise education programmes to align with the evolving needs of the TCLF sectors?

Every year	40
Every 2-3 years	37
Every 4-5 years	34
Less frequently than every 5 years	34



17. On scale of 1 to 5, to what extent do your institution´s current education programmes incorporate advanced digital skills?

1- Not included at all	22
2- Slightly included	54
3- Moderately included	41
4-Significantly included	24
5-Fully integrated	5



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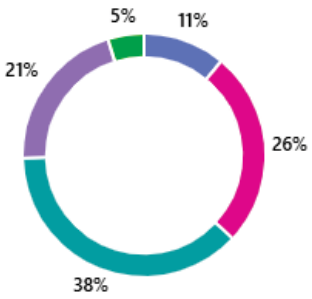
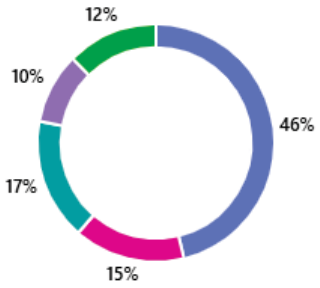
18. To what extent are sustainability-related competencies embedded in your institution´s education programmes?

Not integrated at all	16
Poorly integrated	38
Moderately integrated	55
Highly integrated	30
Fully integrated	7



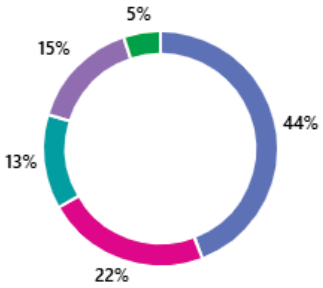
19. What percentage of your education programmes involve internships, practical projects, or direct collaborations with T CLF companies?

Less than 10%	67
10-30%	22
31-50%	24
51-70%	14
More than 70%	18



20. What percentage of your graduates secure employment in the TCLF sectors within 6 months of completing their educ ation?

Less than 10%	61
10-30%	31
31-50%	18
51-70%	21
More than 70%	7



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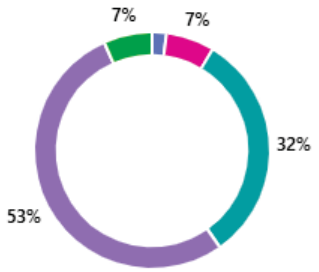
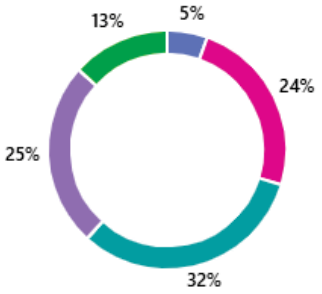
21. On scale of 1 to 5, how significant do you expect changes in the TCLF sectors to be over the next 5-10 years, particula rly in the areas of digitalization and sustainability?

1- Minimal change	5
2- Slow changes	17
3- Moderate changes	81
4- Significant changes	136
5- Complete transformation	17



22. What percentage of jobs in the TCLF sectors do you believe will require new skills related to digitalization or sustaina bility within the next 5 years?

Less than 10%	14
10-30%	62
31-50%	82
51-70%	64
More than 70%	34



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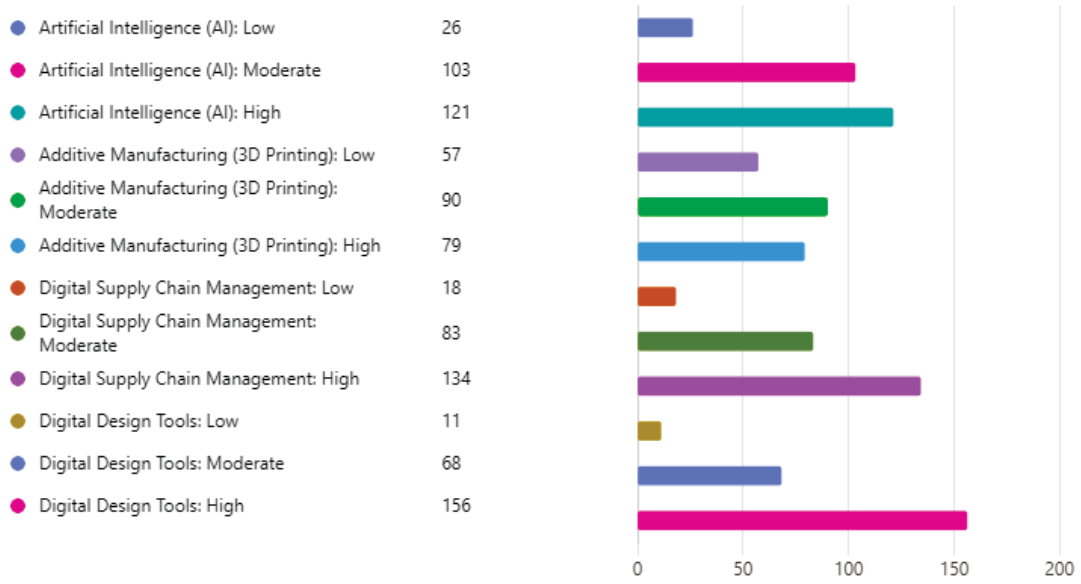
23. How significant do you believe the impact of the following technologies will be on the future of the TCLF sectors? (In dicate the impact level for each: Low, Moderate, High)



The dataset obtained with the online survey includes responses from 256 entities across Europe involved in the TCLF (Textile, Clothing, Leather, Footwear) sectors. The data captures a broad range of insights, such as:

- Sector involvement and size of organizations.
- Impacts of aging workforce and perception by youth.
- Gaps in specialized, digital, and sustainability-related skills.
- Adoption of digital technologies and sustainability measures.
- Training and collaboration with education providers.
- Expected changes and future skill demands.

The key findings have been systematically examined across four principal dimensions: (1) Overall trends in skills demand and supply; (2) Country-specific insights; (3) Sectoral perspectives; and (4) Organizational-level analyses based on the type of entity.

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1. Overall Trends in Skills Demand and Supply

1.1 Aging workforce and generational renewal

- A majority of respondents report a **high to very high impact** of an aging workforce.
- There is widespread concern about **insufficient generational renewal**, leading to a significant skills gap.

1.2 Perception of the sector among youth

- Youth perception of TCLF careers is generally **neutral to negative**, especially in Clothing and Footwear.
- This calls for strategic efforts to **rebrand the sector** and attract younger talent.

1.3 Digital skills and technology adoption

- Digital adoption is **moderate**, with more advanced uptake in research-focused entities.
- Between **31% and 50%** of the workforce requires advanced digital skills.
- Many organizations identify a **moderate digital skills gap** among their employees.

1.4 Sustainability skills and practices

- Sustainability is **moderately to extensively integrated** in production practices.
- Training in sustainability-related skills is needed for up to **50%** of employees in most sectors.

1.5 Future outlook on skills transformation

- Respondents anticipate **significant to transformative changes** in the next 5 - 10 years.
- Over **50% of jobs** are expected to require **new digital or sustainability skills** within 5 years.

2. Insights by Country

Southern Europe (e.g., Spain, Portugal, Italy):

- Higher concern about aging workforce.
- Moderate digital adoption but **stronger future skill needs**.

Northern Europe (e.g., Sweden, Germany):

- Better youth perception and skills collaboration.
- Less severe gaps due to **robust vocational education systems**.

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3. Insights by Sector

3.1 Textile Sector

- **Skill Gap Observations:**
  - **Digital Skills:** Most responses are in the moderate-to-slight range; only 1 respondent reports full integration.
  - **Sustainability:** Fair integration overall, with a leaning toward moderate and high levels.
- **Workplace Alignment:**
  - **Internships:** Low hands-on collaboration; 11 entities have less than 10% practical exposure.
  - **Employment Rate:** Predominantly low (10–30% range), pointing to a mismatch between training and job readiness.
- **Influencing Factors:**
  - **Future Changes:** 25 foresee *significant* transformation.
  - **Skills Demand:** Half (19) expect 31–50% of jobs will need new digital/sustainability skills.

3.2 Clothing Sector

- **Skill Gap Observations:**
  - **Digital Skills:** Broad distribution; majority moderately or slightly included. Still, 3 report no digital skills.
  - **Sustainability:** Mostly moderate and poor integration.
- **Workplace Alignment:**
  - **Internships:** Very low practical training (10 responses <10%).
  - **Employment Rate:** Polarized – high and low employability coexist.
- **Influencing Factors:**
  - **Future Changes:** Very high expectations – 24 see *significant* change, 4 expect *complete transformation*.
  - **Skills Demand:** Over 50% of jobs in the near future will need digital/sustainability skills (per 29 respondents).

3.3 Footwear Sector

- **Skill Gap Observations:**
  - **Digital Skills:** Generally weak; most responses in “slightly included” or “not included.”
  - **Sustainability:** Also underdeveloped; only 1 fully integrated program.
- **Workplace Alignment:**
  - **Internships:** Extremely low – 32 have <10% hands-on opportunities.
  - **Employment Rate:** 26 respondents report <10% graduate employment – a major skills mismatch.
- **Influencing Factors:**
  - **Future Changes:** High perceived transformation (52 report *significant* change).
  - **Skills Demand:** Expected to rise; 47 respondents say 31–70% of jobs will require new skills.

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3.4 Leather Sector

- **Skill Gap Observations:**
  - **Digital Skills:** Weak – 10 say "slightly included," 3 say "not included at all."
  - **Sustainability:** Moderately integrated overall, with a few "highly integrated" responses.
- **Workplace Alignment:**
  - **Internships:** Again, very low – 10 respondents below 10%.
  - **Employment Rate:** 11 entities have <10% job placement; the gap is clear.
- **Influencing Factors:**
  - **Future Changes:** 15 predict *significant* change; the urgency is acknowledged.
  - **Skills Demand:** 15 expect 31-50% of roles will need upskilling.

Key takeaways across TCLF sectors

- **Common Gaps:**
  - Insufficient integration of digital and sustainability competencies.
  - Low levels of practical training (internships, projects).
  - Poor employment outcomes post-training in many areas.
- **Top Influencing Factors:**
  - Digitalization and sustainability are expected to transform 30-70% of jobs across all sectors.
  - Most institutions are not yet aligned with this shift.

4. Insights by Organization Type

Companies:

- **Concerned about aging workforce** and report a **significant skills gap**.
- Show **moderate adoption** of digital technologies.
- 50% of companies report that **10 - 50%** of their workforce requires digital skills development.
- Most have **less than 10%** of staff needing sustainability training.
- Expect **significant changes** in the next 5 - 10 years, with **31 - 50%** of jobs needing new skills.

Universities

- Report **extensive digital adoption** and lead in tech integration.
- Over **70%** of the workforce requires digital skills.
- Sustainability training needs are also high (**more than 70%**).
- Skill gaps are **minor**, showing strong internal capacity.
- Also anticipate **significant change**, with **31 - 50%** of jobs evolving.

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VET Centres

- Face a **significant skills gap** and moderate digital adoption.
- Indicate **51 - 70%** of workforce requires digital skills.
- Report a **significant digital skills gap**.
- Sustainability training needs are moderate (**10 - 30%**).
- Prepare for **significant sectoral shifts**, with **31 - 50%** of jobs requiring new skills.

Others (NGOs, Associations, Public Administration, etc.)

- Reflect **limited digital adoption** and moderate sustainability integration.
- Digital and sustainability training needs are low (**10 - 30%** and less than 10% respectively).
- Still expect **significant changes** ahead, with **51 - 70%** of jobs requiring new skills.

3. SWOT REVALIDATION FINDINGS

3.1. France

NOT SUBMITTED

3.2. Germany

LEATHER SECTOR

Strengths – ***Reinforced sustainability integration***

- **2024**: Strong tradition in leather craft, solid environmental standards, high machinery safety, and qualified workforce.
- **2025**: Same core strengths, with added emphasis on regular training in sustainability and circular economy, plus widespread integration of sustainability in production processes.

Opportunities – ***Structured shift toward circular economy and renewables***

- **2024**: Growing attention to energy efficiency and sustainability; evolving consumer preferences.
- **2025**: More concrete moves toward circular economy (recycling, waste reduction), renewable energy adoption, and anticipation of major sectoral shifts in digitalization and sustainability within 5–10 years.

Weaknesses – ***Deepening digital skill gaps and uneven training***

- **2024**: Lack of specialized training programs, insufficient digital adoption.
- **2025**: Wide disparity in digital technology adoption (AI, additive manufacturing), major retraining needs (up to 70% of the workforce), and inconsistent digital skills training across companies.

Threats – ***Talent shortages and perception issues***

- **2024**: Aging workforce, weak attractiveness for younger generations, negative perceptions of leather.

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- **2025**: Same concerns reinforced, with additional note on public misperception of leather's environmental role and critical need for generational renewal and skill transition.

FOOTWEAR SECTOR

Strengths – ***Enhanced sustainability and innovation awareness***

- **2024**: Flexible SMEs, high product quality, strong tradition, and initial moves towards green practices.
- **2025**: Continued strengths, with reinforced sustainability orientation (e.g., eco-design), and growing awareness of circular economy and digital opportunities.

Opportunities – ***Green transformation and export potential***

- **2024**: New markets via e-commerce, sustainability trends, and demand for eco-friendly footwear.
- **2025**: Clearer push for digital upskilling, circular production models, and sustainability-oriented product innovation, including international expansion based on green values.

Weaknesses – ***Persistent skills mismatch and limited cooperation***

- **2024**: Shortage of young skilled workers, poor cross-sector collaboration.
- **2025**: Same issues persist, now with heightened concern about lack of cooperation between education and business, and need for dual training systems adapted to sustainability and digitalization.

Threats – ***Shrinking workforce and lack of vision***

- **2024**: Aging workforce, rising costs, low visibility of career opportunities.
- **2025**: Added emphasis on the lack of strategic foresight and long-term workforce planning, plus barriers in aligning education with industry needs.

3.3. Greece

CLOTHING SECTOR

Strengths – ***Mostly unchanged, but with slight emphasis***

- **2024**: Competitive pricing, export experience, strong domestic cotton, flexible production.
- **2025**: Same strengths, but with added emphasis on the rise of domestic brands and the sector's role within regional creative industries.

Opportunities – ***Same core areas, new additions in 2025***

- **2024**: Sustainability trends, creative industry growth, expansion through tourism, favourable EU regulations.
- **2025**: More focus on the shift toward slow fashion, stronger link to tourism growth, and increased importance of regulatory compliance checks.

Weaknesses – ***Mostly unchanged***

- **2024: Liquidity issues, poor sector image, high production costs, aging workforce.**
- **2025**: Same core weaknesses; stronger emphasis on difficulty attracting and retaining young talent.

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Threats – *Mostly unchanged but expanded*

- **2024**: Global competition, inflation, illegal imports, weak regulatory enforcement.
- **2025**: Threats reinforced; more detailed attention to challenges with compliance monitoring and external geopolitical risks.

FOOTWEAR & LEATHER SECTORS

Strengths – *Very similar in 2025*

- **2024**: Strong export experience, specialization in leather footwear (sandals), flexibility in small orders.
- **2025**: Strengths remain consistent, with added stress on dynamic local ecosystems and human capital specialization.

Opportunities – *More future-oriented in 2025*

- **2024**: Growth from tourism, potential in sustainable and ecological footwear markets, creative industry links.
- **2025**: Expanded focus on tightening EU import controls and greater consumer demand for sustainable products.

Weaknesses – *Largely the same*

- **2024**: Lack of skilled labour, no connection between production and education, outdated retail infrastructure.
- **2025**: Continued issues in digital modernization, serious business succession problems, and poor attractiveness for young workers.

Threats – *Unchanged core but broader scope*

- **2024**: Rising raw material costs, competition from third countries, youth unemployment, unstable demand.
- **2025**: Same risks, with increased concern over the broader geopolitical environment and labour cost pressures.

TEXTILE SECTOR

Strengths – *Similar in both years*

- 2024: Strong exports, high-quality cotton, historical manufacturing expertise, R&I collaboration.
- 2025: Maintains these strengths, adding the presence of support infrastructures like incubators and technology parks.

Opportunities – *2025 more innovation and policy-oriented*

- 2024: Expansion in green markets, creative industry growth, availability of EU research funds.
- 2025: New emphasis on sustainability and digital transformation driven by EU strategic frameworks and smart specialization.

Weaknesses – *Deep structural issues persist*

- 2024: Structural cash-flow problems, lack of sectoral policies, difficulties in talent retention and R&D investments.
- 2025: Same weaknesses, but with reinforced concern over limited interconnection between education, innovation, and industry needs.

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Threats – *2025 expands external pressure context*

- 2024: Global competition, economic instability, raw material cost volatility, currency fluctuations.
- 2025: Threats remain but are expanded with detailed observations about geopolitical risks and regulatory challenges.

3.4. Italy

LEATHER SECTOR

Strengths – *Core qualities confirmed*

- **2024**: Circular economy, beauty from waste transformation, high-quality responsiveness, leather as a renewable/natural/biodegradable material, strong tradition, and sustainability commitment.
- **2025**: All 2024 strengths reaffirmed with no new additions.

Opportunities – *No major shifts, themes sustained*

- **2024**: Positive consumer view on sustainability, growing wellness concerns, and potential from generational turnover.
- **2025**: All opportunities confirmed; no new entries added.

Weaknesses – *Continued challenges with communication and workforce*

- **2024**: Traceability demands, difficulty attracting youth and STEM talent, poor consumer perception and communication, aging workforce, and negative sector image.
- **2025**: No change in listed weaknesses; all concerns reiterated as ongoing.

Threats – *Expanded in 2025 with geopolitical and regulatory concerns*

- **2024**: Rising energy and raw material costs (climate/geopolitics), legislative threats, transport cost increases.
- **2025**: Additional threats identified:
    - Duties threatened by the U.S. government
    - Renewal of sanctions against Russia
    - Implementation difficulties with new EU regulations (e.g., EUDR – Anti-Deforestation Regulation)

TEXTILE SECTOR

Strengths – *Consistency in core assets*

- **2024**: Strong in customization, high-end quality, sustainability heritage, and small-batch production.
- **2025**: Strengths reaffirmed; growing emphasis on traceability and the “Digital Product Passport” to protect Made in Italy.

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Opportunities – *Expanded on digitalization and policy support*

- **2024**: Sustainability regulations, consumer eco-awareness, and technological investments fuel innovation.
- **2025**: Adds potential of digital passports, greater policy alignment, and growing role of integrated and traceable supply chains.

Weaknesses – *Structural issues persist; new concerns added*

- **2024**: Aging workforce, unattractive work environments, low ROI from green investments.
- **2025**: Same weaknesses plus resistance to change, high energy costs, and need for protection from unfair imports.

Threats – *Broader, more geopolitical scope in 2025*

- **2024**: High production costs, greenwashing risks, youth disinterest, climate impact.
- **2025**: Additional threats include trade barriers, geopolitical uncertainty, declining luxury market, and tariff threats (e.g., U.S. policies).

CLOTHING SECTOR

Strengths – *No major changes*

- **2024**: Strong in small-batch and luxury production, supported by immigrant labour and creative graduates.
- **2025**: Strengths confirmed; continued emphasis on niche quality and responsiveness to luxury markets.

Opportunities – *More focus on digital tools and traceability*

- **2024**: Sustainability regulations, digital passport adoption, recycling trends, supply chain efficiency.
- **2025**: Same as 2024, with digital passports highlighted as strategic for export and traceability.

Weaknesses – *Persistent labour issues and skills mismatch*

- **2024**: Aging workforce, lack of career paths, need to rely on under-skilled immigrant labour.
- **2025**: Same core issues, with added stress on the lack of supply chain auditors and unfair import competition.

Threats – *Greater emphasis on market instability*

- **2024**: Regulatory pressure, low returns on green investments, dependency on external chemical R&D.
- **2025**: Same concerns plus risks from trade policy shifts (e.g., tariffs), and downturn in luxury fashion sales.

FOOTWEAR SECTOR

Strengths – *Reconfirmed with a focus on sustainability*

- **2024**: Well-established supply chain ecosystem, specialization in leather, and local networks.
- **2025**: Confirmed; new emphasis on consumer response to sustainability investments.

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Opportunities – *New potential in technology and workforce*

- **2024**: Room for growth in sustainability and digitalization, workforce needs, learning from other sectors.
- **2025**: Adds new opportunities through tech-driven appeal to youth and improved consumer response.

Weaknesses – *Talent gaps and aging workforce persist*

- **2024**: Resistance to innovation, lack of skilled labour, poor appeal to youth.
- **2025**: "Resistance" point dropped due to disagreement; talent shortages, retirement wave, and youth disinterest emphasized.

Threats – *Legislative confusion and digital upskilling challenges*

- **2024**: Not explicitly stated.
- **2025**: Confusion around EU legislation, lack of investment in upskilling, and inadequate use of digital tools highlighted as key threats.

3.5. Poland

TEXTILE SECTOR

Strengths – *Reinforced sustainability orientation*

- **2024**: Competitive pricing, flexible production, rising consumer interest in eco-design and durability.
- **2025**: Same key strengths, with growing emphasis on product longevity, reuse, and sustainability certifications.

Opportunities – *More structured support for green transition*

- **2024**: E-commerce skills demand, growth in ecological materials, and awareness of sustainable production.
- **2025**: New focus on product passports, export potential of eco-materials, and regulations for traceability.

Weaknesses – *Persistent branding and workforce challenges*

- **2024**: Weak international brand presence, shortage of skilled labour, and reorientation needs.
- **2025**: Same concerns continue, with added emphasis on greenwashing risks and lack of localized suppliers.

Threats – *Stronger environmental and education concerns*

- **2024**: Energy prices, low adoption of green tech, and skills mismatch.
- **2025**: Greater concern over youth disinterest, lack of tech demand, and climate policy gaps.

CLOTHING SECTOR

Strengths – *Stronger design culture and workforce inflow*

- **2024**: Local brands growing, creative workforce, and inflow of foreign labour (e.g. Philippines, Colombia).
- **2025**: Continued rise of youth in design, greater sustainability awareness, and more luxury product ventures.

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Opportunities – *Focus on modernization and regulation*

- **2024**: Tech development, national raw materials, and ecological methods.
- **2025**: Added focus on automation, product passports, and premium product education.

Weaknesses – *Aging workforce and outdated equipment*

- **2024**: Shrinking skilled labour pool, limited modernization, low funding for circular models.
- **2025**: Same, with sharper concern on declining appeal of physical jobs and insufficient training systems.

Threats – *Regulatory pressure and cost burdens grow*

- **2024**: EU regulations strain small firms, weak forecasting, energy prices.
- **2025**: Higher raw material costs, limited access to education and training, low prestige of production jobs.

LEATHER Sector

Strengths – *Niche quality, local research maintained*

- **2024**: High-grade leather production, local applications, exports to EU.
- **2025**: Strengths reaffirmed; skilled craftsmanship and domestic focus continue.

Opportunities – *EU funds and modernization potential*

- **2024**: Opportunities in EU-funded modernization and closed-loop models.
- **2025**: Focus remains on plant upgrades, software adoption, and raising competitiveness.

Weaknesses – *Decline in demand and sustainability resistance*

- **2024**: Poor digitalization, aging staff, declining domestic market interest.
- **2025**: Same, with added challenges around bio-based alternatives and low circular economy interest.

Threats – *Materials shortage and climate pressure*

- **2024**: Supply issues, rising competition from Turkey, water intensity.
- **2025**: More focus on environmental regulation costs, strategy gaps in waste and energy management.

FOOTWEAR Sector

Strengths – *Agility and skilled staff reinforced*

- **2024**: Custom production, skilled technical workforce, adaptability.
- **2025**: Same strengths, with emphasis on durability and growing digital awareness.

Opportunities – *New niches and design interest grow*

- **2024**: Growth in orthopaedic and non-manual roles; potential in education.
- **2025**: Emphasis on IT integration, niche markets, and improved training for youth in design.

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Weaknesses – *Low margins and talent retention persist*

- **2024**: Low wages, lack of digital skills, absence of vocational schools.
- **2025**: Persistent issues, especially around youth disinterest and inability to compete with low-cost producers.

Threats – *Imports and digital lag deepening*

- **2024**: Green Deal bias, uncontrolled imports, shifting EU priorities.
- **2025**: Emphasizes same threats plus cost of digitalization and shrinking market access for small brands.

3.6. Portugal

TEXTILE SECTOR

Strengths – *Cluster maturity and innovation resilience reinforced*

- **2024**: Strength in export capacity, industrial know-how, and adaptability.
- **2025**: Expanded focus on integrated clusters, collaborative networks, and global appreciation of "Made in Portugal".

Opportunities – *Digital and green potential further recognized*

- **2024**: Focus on circular economy, upskilling, eco-innovation, and exports.
- **2025**: New emphasis on AI, AR/VR, machine learning, and industry-academia collaboration.

Weaknesses – *Persistent gaps in talent and internal communication*

- **2024**: Weak environmental culture, aging workforce, lack of digital and sustainability skills.
- **2025**: Same concerns, with new emphasis on internal communication, low wages, and expectations of new generations.

Threats – *Geopolitical and digital disruption added*

- **2024**: Economic instability, skills loss, climate risk.
- **2025**: Added concerns around job loss from AI, excessive regulation, and weak SME investment in new tech.

CLOTHING Sector

Strengths – *High-value services and flexible production maintained*

- **2024**: Strong local cluster, innovation in quality and design, high personalization capacity.
- **2025**: Reinforced strengths with better integration across the value chain and education systems.

Opportunities – *Sustainability and personalization trends grow*

- **2024**: Demand for eco-friendly products and ethical sourcing.
- **2025**: Continued focus on sustainable fashion, new skills-based training models, and closer academia-industry ties.

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Weaknesses – *Production labour shortages and skill mismatch continue*

- **2024**: High retirement rates, low appeal to youth, digital skills lacking.
- **2025**: Reinforces 2024 gaps and highlights poor consumer communication and legislative awareness.

Threats – *Fast fashion and legislation risks expanded*

- **2024**: Speed of fashion cycles, climate change, competitiveness.
- **2025**: Now includes concerns over fast-fashion dominance, AI job threats, and weak regulation enforcement.

FOOTWEAR Sector

Strengths – *Technological excellence and training systems highlighted*

- **2024**: Strong industry expertise, export strength, centralized clusters.
- **2025**: Added focus on advanced equipment, VET partnerships, and proximity between companies and education.

Opportunities – *Youth engagement and digital attraction strategies*

- **2024**: Focused on digital tools, new marketing channels, internationalization.
- **2025**: Emphasizes alliances for youth engagement, national training catalogue updates, and technology as an attraction strategy.

Weaknesses – *Reputation and digital gaps persist*

- **2024**: Negative sector image, low attractiveness for young workers.
- **2025**: Reiterated issues plus leadership gaps, lack of tech-savvy trainers, and resistance to added responsibilities.

Threats – *Climate change and education system overlap noted*

- **2024**: Digitalization delay and skilled labour shortages.
- **2025**: Adds climate change, trainer shortages, and competition from academic programs for learners.

LEATHER Sector

Strengths – *Modern training and material innovation support continuity*

- **2024**: Industrial expertise, quality leather production, export experience.
- **2025**: New focus on durable alternatives, awareness campaigns, and school-level engagement.

Opportunities – *Image rebranding and awareness campaigns expanded*

- **2024**: Circular models and innovation in materials.
- **2025**: Clarification campaigns to reposition leather as a sustainable, long-lasting material.

Weaknesses – *Youth engagement and technological adoption gaps persist*

- **2024**: Skills shortages and resistance to innovation.
- **2025**: Added challenges include tech training deficits and persistent myths about the origin of leather.

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Threats – *Environmental and social awareness gaps highlighted*

- **2024**: Raw material sourcing, water use, lack of modernization.
- **2025**: Focus on trainer shortages and misinformation about leather production.

3.7. Romania

TEXTILE SECTOR

Strengths – *Skilled workforce and tradition reinforced*

- **2024**: Strong export reputation, EU group affiliations, and highly qualified workforce.
- **2025**: Emphasizes consistency in quality, international partnerships, and national engineering programs in footwear/textiles.

Opportunities – *E-commerce and sustainability strategies emphasized*

- **2024**: Growth through digital skills, sustainability practices, and closer ties with HEI/VET.
- **2025**: Opportunities now include export diversification, waste collaboration, and circular economy innovation.

Weaknesses – *Technology gaps and waste management still a concern*

- **2024**: Difficulty attracting youth, outdated equipment, and low digitalization.
- **2025**: Adds issues around technological waste processing and over-reliance on certain imports.

Threats – *Intensified market pressures and policy instability*

- **2024**: Competition from low-cost countries, aging workforce, and regulatory burdens.
- **2025**: Expanded concerns about greenwashing risks, supply unpredictability, and sustainability certification legitimacy.

CLOTHING SECTOR

Strengths – *Legacy and quality remain central*

- **2024**: Technical capabilities, tradition, EU brand collaborations.
- **2025**: Same foundations reaffirmed, especially in terms of skilled labour and strategic location for exports.

Opportunities – *Training and digital expansion remain key*

- **2024**: Sustainability-driven product innovation, export flexibility.
- **2025**: Stronger push for brand visibility, e-commerce platforms, and digital-enabled customization.

Weaknesses – *Human capital crisis remains urgent*

- **2024**: Disinterest among youth, difficult working conditions, low salary appeal.
- **2025**: Continues as a central issue; now includes lack of digital literacy and modern career pathways.

Threats – *Sector image and fake products are worsening risks*

- **2024**: Low prestige, aging workforce, volatile energy costs.
- **2025**: Concerns now include counterfeit market growth, certification opacity, and market saturation.

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LEATHER SECTOR

Strengths – *Tradition and quality-focused craft persist*

- **2024**: Specialization in high-end segments, strong supplier base.
- **2025**: Revalidated as strong, especially in ethical supply chain integration and workforce skill.

Opportunities – *Eco-transparency and local collaborations grow*

- **2024**: Recyclable materials, upcycling, and digital tools.
- **2025**: Highlights opportunities in product storytelling, material sourcing clarity, and value chain transparency.

Weaknesses – *Sustainability resistance and skills mismatch endure*

- **2024**: Struggles with digital uptake and lack of modern marketing approaches.
- **2025**: Now emphasizes low VET coverage for new technologies and slow mindset shift on environmental topics.

Threats – *Global competition and consumer perception worsening*

- **2024**: Competition from synthetic leather and sustainability stigma.
- **2025**: New threats include eco-labelling standards and loss of market access due to perception biases.

FOOTWEAR SECTOR

Strengths – *Geographical and educational advantages maintained*

- **2024**: Competitive labour costs, local production networks, and custom capabilities.
- **2025**: Strong national education programs for footwear reaffirmed, with improved access to leather and materials.

Opportunities – *Innovation-driven differentiation pushed further*

- **2024**: Digital design tools, VET cooperation, and new branding strategies.
- **2025**: Adds growth through export-ready product lines and deeper e-commerce participation.

Weaknesses – *Investment and generational renewal remain major gaps*

- **2024**: Low profit margins, unattractive jobs for youth, and brain drain.
- **2025**: Deepens concern over labour shortages, upskilling gaps, and reluctance to adopt lean production systems.

Threats – *Market unpredictability and regulatory overload deepen*

- **2024**: Trade changes, material price fluctuations, and aging workforce.
- **2025**: Reiterates economic unpredictability and adds risk from unregulated eco-certification bodies.

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3.8. Spain

CLOTHING SECTOR

NOT SUBMITTED

TEXTILE Sector

Strengths – *Tech readiness and training potential highlighted*

- **2024**: Focused on quality, tradition, and innovation capacity.
- **2025**: Emphasizes workforce adaptability, growing recognition of high-impact technologies (AI, automation), and the value of "Made in Spain".

Opportunities – *Upskilling and transformation in focus*

- **2024**: Sustainability adoption, digitalization needs, and growing training opportunities.
- **2025**: Stronger focus on collaboration with education institutions, workforce transformation, and embedding sustainability in upskilling strategies.

Weaknesses – *Talent retention and digital lag persist*

- **2024**: Skills shortage, outdated production systems, and insufficient collaboration with VET/HEI.
- **2025**: Reaffirms same issues, with clearer concern about poor integration of digital tools, weak talent retention, and limited appeal to youth.

Threats – *Generational renewal and regulatory gaps deepen*

- **2024**: Aging workforce, lack of sustainability education, economic uncertainty.
- **2025**: Same threats, with more concern about future job readiness, slow integration of green practices into education, and poor long-term workforce sustainability.

FOOTWEAR Sector

Strengths – *Craftsmanship and export position stable*

- **2024**: Recognized globally for craftsmanship, high-quality production, and niche strength.
- **2025**: Strengths unchanged; confirms global reputation and artisanal excellence.

Opportunities – *Sustainability and digital transition pick up*

- **2024**: Demand for green materials, investments in innovation, and VET engagement.
- **2025**: Highlights growth in circular economy practices, updated curricula in training centres, and increasing integration of AI and digital manufacturing.

Weaknesses – *Generational and digital gaps still critical*

- **2024**: Weak generational renewal limited digital adoption, low sector attractiveness.
- **2025**: Worsened perception of aging workforce, persistent digital and sustainability skill gaps, and weak cooperation with education providers.

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Threats – *Technological lag and workforce shortage accentuated*

- **2024**: Fast fashion competition, raw material costs, and low-tech adaptation in SMEs.
- **2025**: Reconfirms these threats, adding risks from failing to adapt within 5–10 years, especially for companies with minimal digital presence or training investments.

LEATHER Sector

Strengths – *Quality and specialization confirmed*

- **2024**: High-quality raw material (Spanish skins), strong brand names, industry expertise with cutting-edge technology, consolidated factories, skilled staff, innovative design, and market proximity.
- **2025**: Strengths remain stable, reaffirming Spain's leadership in quality leathers, specialization in craftsmanship, and proximity to luxury markets; increased emphasis on innovation and environmental certifications.

Opportunities – *Sustainability and circular economy increasingly central*

- **2024**: Proximity to major EU luxury brands, REACH-compliant suppliers, strong footwear and leather goods sectors, Industry 4.0 adoption, circular economy growth, VET and HEI collaboration on digital and sustainability training.
- **2025**: Opportunities confirmed with a stronger shift towards circular economy initiatives, eco-design, biodegradable leather alternatives, and AI-driven manufacturing processes; strategic partnerships with training centres evolving toward "green skills" curricula.

Weaknesses – *Aging workforce and low innovation urgency persist*

- **2024**: Small sector size limiting political interest, limited resources, progressive aging workforce, low young talent entry, lack of digitalization and sustainability skills, weak media visibility, poor environmental reputation (high water use, low processing innovation).
- **2025**: Weaknesses deepened — urgency on aging workforce more critical, difficulty attracting new talent continues, and low innovation adoption remains a barrier; also highlights slow adoption of environmental certifications across SMEs.

Threats – *Technological disruption and market shifts intensify*

- **2024**: Aging workforce, lack of attractiveness to youth, regulatory burdens, trade protectionism, lack of "leather" legal protection, competition from alternative materials, vegan trends, farming decline, water scarcity.
- **2025**: Threats reinforced — regulatory pressure increases (especially EUDR enforcement), competition from "vegan leather" alternatives intensifies, and risk of losing EU market shares if digital and green transitions are delayed; continued vulnerability to water scarcity and raw material supply instability.

3.9. Sweden

TCLF SECTORS

Strengths – *Innovation ecosystem and sustainability leadership reinforced*

- **2024**: Highlighted strength in innovation, early tech adoption (e.g., VR, digital co-pilots), and sustainability.

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- **2025**: Strengths further expanded to emphasize Borås as a key innovation hub, leadership in smart textiles, circular economy initiatives, and a strong triple-helix model (industry, academia, public sector collaboration).

Opportunities – *Circular economy and policy leadership opportunities increase*

- **2024**: Focused on mentorship programs, startup collaboration, and skill transfer.
- **2025**: Greater opportunities identified in circular fashion leadership, Digital Product Passport readiness, rental/repair/resale business models, and significant EU funding access for green and digital transformation.

Weaknesses – *Production skills and cost competitiveness become critical*

- **2024**: Main concerns were skill gaps in new technologies and an aging workforce.
- **2025**: Weaknesses deepen to include high production costs compared to Asia, growing shortages in manual/technical roles (sewing, textile finishing), deindustrialization effects, and poor national coordination on textile recycling.

Threats – *Fast fashion competition and sustainability risks sharpen*

- **2024**: Threats included the risk of rapid tech changes outpacing workforce skills and tougher global regulations.
- **2025**: Threats expand: price pressure from fast fashion, slow recycling system development, uncertainty around EU regulation timelines, and possible consumer price-sensitivity shifts during economic downturns.

3.10. Ukraine

TCLF SECTORS – 2025 Overview

Strengths – *Resilience and production capacity despite war*

- Strong adaptability and continued operation during wartime.
- High-quality production for European brands.
- Competitive pricing and flexible manufacturing.
- Preserved industrial infrastructure and modernization in progress.
- Experience in producing military/specialized clothing.
- Active export capability and partnerships with EU actors.

Opportunities – *European integration and sustainability leadership*

- Creation of a national textile brand rooted in identity and quality.
- Nearshoring partnerships with EU brands (especially for defence/military wear).
- Implementation of sustainable and circular production models (e.g. textile waste recycling).
- Integration into European production chains and raw material self-sufficiency (e.g. hemp fibres).
- Cooperation for long-term job retention and market access via joint production agreements.

Weaknesses – *War-related constraints and skill shortages*

- Dependence on imported raw materials and lack of domestic machinery.
- Skilled labour shortage due to youth outflow and war conditions.
- High maintenance costs and lack of equipment servicing options.
- Shrinking domestic market and decreased purchasing power.
- Logistical and transportation challenges due to limited safe routes.

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Threats – *Hostilities, global competition, and demographic risk*

- Destruction risk from active hostilities and infrastructure damage.
- Limited young workforce and aging employee base.
- Rising second-hand imports competing with local goods.
- Escalating raw material prices and inflationary pressure.
- Competitive disadvantage against global low-cost brands.

4. MAIN UPDATES (2024 vs 2025), CONCLUSIONS AND RECOMMENDATIONS

4.1. Main Updates Identified in 2025 Compared to 2024

Stronger Focus on Sustainability and Compliance

- Increased emphasis on sustainability, circular economy practices, eco-certifications, and the implementation of **Digital Product Passports**.
- Greater attention to **regulatory compliance checks** and **EU strategic frameworks** in driving sector transformation.

Expansion of Geopolitical and Economic Threats

- Rising concerns about **geopolitical instability**, trade barriers, tariffs (e.g., U.S. policies), and inflationary pressures affecting raw materials and supply chains.
- **Market instability**, including luxury market decline and competition from low-cost countries, became more pronounced.

More Urgent Talent and Skills Gaps

- Deepening challenges in **attracting and retaining young workers**, with stronger emphasis on the **lack of digital, sustainability, and technical skills**.
- **Succession planning problems** and **aging workforce** issues became even more critical.

Acceleration of Digital and Green Transition Demands

- Need for **faster adoption of AI, AR/VR, automation, and digital traceability tools** is increasingly highlighted.
- **Lag in digital transformation** and **lack of tech-skilled trainers** seen as growing threats.

Sector Reputation and Career Attractiveness Issues Worsen

- **Poor image of TCLF sectors** (seen as outdated, low prestige, physically demanding) highlighted more sharply, especially in relation to youth disinterest.

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Increased Importance of Local and Regional Strengths

- Greater focus on **domestic brands**, **regional creative ecosystems**, **local supply chains**, and **nearshoring opportunities** (especially in light of geopolitical risks).

Heightened Environmental and Climate Risks

- Climate change, environmental regulation costs, and circular economy gaps cited more often as threats.
- Concerns about **slow recycling system development** and **greenwashing** risks grew.

Stronger Integration of Education, Innovation, and Industry (Emerging but uneven)

- More emphasis placed on **closer cooperation between VET/HEIs and businesses** to align curricula with future skill needs.

4.2. Conclusions and Recommendations

Based on the results and findings from the online survey and SWOT revalidations, a set of targeted recommendations has been developed to help stakeholders strengthen the future resilience and competitiveness of the TCLF sectors.

These recommendations also aim to support the annual monitoring of the evolution of skills demand and supply, using the "skills intelligence" methodology established in WP3. In particular, they will serve as a barometer to assess the relevance and coherence of the curricula and content developed in WP4 and WP5.

Generic Conclusions

1. **Persistent Succession Challenges and Skills Gaps**: Across all TCLF sectors and countries, there is a major issue attracting, training, and retaining young workers. Aging workforces, outdated training, succession challenges, and skills mismatches (especially digital, green, and technological skills) are widespread.

2. **Digitalization and Sustainability are Uneven**: While digital and green transitions are recognized as vital, many companies (especially SMEs) struggle to adopt new technologies, invest in sustainability, or comply with emerging EU regulations (like Digital Product Passports).

3. **Sector Image Problems**: TCLF sectors continue to suffer from a poor public image, with careers seen as low-prestige, poorly paid, and physically demanding — especially among youth.

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4. **Structural and Financial Fragility**: Many firms face structural weaknesses like liquidity issues, high production costs, succession planning problems, and lack of investment capacity, exacerbated by geopolitical instability, global market disruptions, and rising regulatory pressures.

5. **Regulatory Pressure and Opportunity**: New EU policies (green transition, circular economy, product traceability) create both opportunities and burdens: firms prepared for compliance and transparency can thrive, but many are lagging behind.

6. **Creative and Niche Opportunities Are Rising**: Trends like slow fashion, ethical production, nearshoring, and high-value craftsmanship offer significant growth potential, especially when linked with tourism, culture, and local identity.

Generic Recommendations for Stakeholders

1. Develop and Update Skills Ecosystems

- **Modernize VET / HE Curricula**: Embed sustainability, digitalization (AI, AR/VR, automation), and entrepreneurship into training programs.
- **Create Sector Skills Alliances**: Form local/regional partnerships between industry, education providers, and public authorities to forecast skill needs and co-develop curricula.
- **Accelerate Upskilling and Reskilling Programs**: Rapid short courses focused on digital manufacturing, sustainable design, circular economy practices, and supply chain management.

2. Promote the Attractiveness of TCLF Careers

- **Sector Rebranding Campaigns**: Launch campaigns targeting youth and career changers, showcasing modern, tech-driven, creative, and sustainable aspects of the industry.
- **Enhance Working Conditions**: Improve wages, career progression pathways, and work-life balance to make jobs more attractive.
- **Highlight Purpose and Innovation**: Leverage the social value (e.g., sustainability, heritage preservation) of TCLF work.

3. Accelerate Digital and Sustainable Transformation

- **Support SME Digitalization**: Offer financial incentives, technical assistance, and easy-to-access digital tools for small firms.
- **Prepare for Compliance**: Help companies (especially SMEs) adopt Digital Product Passports, traceability systems, and sustainability certifications.

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- **Invest in Circular Economy Models**: Prioritize business models around reuse, recycling, upcycling, repair, and rental services.

4. Strengthen Sectoral Resilience and Global Competitiveness

- **Foster Innovation Clusters**: Strengthen links between research centres, innovation hubs, and SMEs to accelerate R&D uptake.
- **Promote Local and Regional Value Chains**: Support nearshoring strategies, strengthen supplier ecosystems, and reduce dependency on fragile global supply chains.
- **Enhance Export Support**: Help companies access new markets, especially those demanding ethical, traceable, and high-quality goods.

5. Adapt Policy and Financing Tools

- **Create Tailored Financing Schemes**: Public/private funds that target modernization, circular economy transition, and upskilling initiatives.
- **Simplify Access to EU Funds**: Make it easier for smaller companies to navigate and benefit from EU funding related to green and digital transitions.
- **Strengthen Regulation Clarity and Guidance**: Ensure that SMEs are supported with clear, practical pathways to meet regulatory requirements.

In short:

→ Focus must shift to **future skills, digital and green readiness**, **youth engagement**, and **innovation-based resilience**.
→ Actions must be **fast**, **coordinated**, and **aligned** with the upcoming waves of EU regulations, global market shifts and geopolitical environment.

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5. ANNEX

Annex 1. SWOT analysis templates (year 2025)
SWOT revalidation templates along with conclusions and recommendations, submitted by project partners in 2025.

Presented below is the list of the SWOT analyses included in the Annex, arranged in the sequence in which they are presented in the document.

1. Germany: Footwear.
2. Germany: Leather.
3. Greece: Textile, Clothing, Footwear.
4. Italy: Leather.
5. Italy: Textile, Clothing.
6. Italy: Footwear.
7. Poland: Textile.
8. Poland: Clothing.
9. Poland: Leather.
10. Poland: Footwear.
11. Portugal: Textile, Clothing.
12. Portugal: Footwear, Leather.
13. Romania: Textile, Leather, Clothing, Footwear.
14. Spain: Textile, Footwear.
15. Spain: Leather.
16. Sweden: Textile, Leather, Clothing, Footwear.
17. Ukraine: Textile, Leather, Clothing, Footwear.

Please note: *Should you wish to review the SWOT analyses corresponding to the year 2024, the templates completed by the project partners for the 2024 assessment are available in the annexes of the WP3 Final Report "Skills Intelligence for Forecasting and Monitoring TCLF Emerging Skills Needs".*

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FOOTWEAR

STRENGTHS

There is an awareness of the problem of the shortage of skilled workers and joint efforts are being made to find a solution, e.g. through the Vocational Training Committee (ABB) of the German Federal Association of the Footwear and Leather Goods Industry.

Initiatives to promote young talent such as the HDSL/Junior Award are in place.

Companies promote young talent through scholarships, including support for 10 university of applied sciences students and trainees at the PFI. Some companies also offer their employees the opportunity to train as shoe technicians.

A Campaigns is currently run to promote the attractiveness and awareness of professions in the TCLF sector. The "GO Textile #RunY-ourFuture" campaign, which is dynamic and youth-oriented. Its aim is to provide information about career opportunities in the TCLF sector. With an appealing online presence that is specifically tailored to the habits and preferences of the younger generation, the campaign appeals to the young target group and encourages them to explore career prospects in the textile, clothing, leather and footwear industry.

Existing sustainability awareness in the company is an advantage. Companies that already deal intensively with the issue of sustainability, whether for marketing reasons or as part of their corporate strategies, have the advantage over their competitors of a reduced risk of both.

Artificial intelligence is used for production optimisation in order to optimise processes, improve quality and reduce costs. By analysing large amounts of data, manufacturers can identify patterns and make predictions to avoid bottlenecks and increase efficiency.

By using new technologies and analysing data, companies can influence purchasing behaviour. Major fashion retailers such as Zalando and SHEIN are successfully using these

OPPORTUNITIES

Marketing to increase the attractiveness and visibility of the sector. Influencers and celebrities are successfully used to market products. This strategy could also be used to promote the footwear industry as a profession.

Restructuring of the shoe manufacturing profession. In view of the low level of production in Germany, commercial qualifications are increasingly in demand. A qualification combining knowledge about shoes and industrial sales practices is in the making.

Extension of the admission requirements for qualification as a shoe technician. A new measure is the introduction of a three-month structured internship by the DSF. This program also allows people with commercial training access to further training as a state-certified shoe technician. However, the expansion of the admission requirements also harbours risks with regard to the quality and reputation of the qualification as a shoe technician.

Innovation and advances in technology are increasing the appeal of the footwear industry in the battle for apprentices by appealing not only to people interested in footwear manufacturing - a profession often seen as conventional, old-fashioned and without a future. They also appeal to people who are interested in technological, research and sustainability aspects and want to be involved in exciting projects.

One opportunity for transparency and customer information would be to develop a sustainability scale based on the NutriScore in the food sector in order to provide customers with information for their purchasing decisions. Similar to the NutriScore, which evaluates the health value of food based on various criteria, a sustainability scale could evaluate the ecological and social impact of products. Eco Score and Planet Score already exist in the food sector.

New technologies such as blockchain and AI have the potential to enable secure and transparent recording of transactions along the entire supply chain. This allows both manufacturers and consumers to gain certainty regarding

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technologies to motivate customers to make impulse purchases through discount campaigns and personalized offers in their apps. In addition to the personalization of products, the personalization of purchase offers is particularly important in today's abundance of choices. Another example of the use of new technologies is the chatbot at Zalando, which is designed to help customers make their choice. The aim is to combine personal advice in the store with the extensive selection offered by e-commerce.

Companies actively collaborate with organisations from the scientific and technological sectors, fostering innovation and knowledge transfer.

the origin and sustainability of raw materials, intermediate products and end products.

Additive manufacturing holds considerable potential for the customization of shoes and insoles, especially in the orthopaedic sector. It enables the rapid creation of prototypes and their testing, which leads to a shortened and extended development time. This promotes innovation potential. With the help of lattice structures, lightweight and durable products can be realized. Additive manufacturing also helps to reduce material waste.

New regulations can open up new opportunities for business models that may not have been profitable in the past. Particularly in the areas of repairs, rentals or clothing exchanges, the current cost-benefit ratio could change in comparison to buying. If regulations against fast fashion and overproduction are introduced, this could help to make these alternative business models more attractive.

Sustainable products have the potential to increase the appeal for certain target groups. Generation Z, as the Friday for Future generation, show a changed awareness of sustainability compared to previous generations. Nevertheless, fast fashion is still popular, as the success of low-cost, low-quality retailers such as SHEIN shows.

Growing health awareness in society is leading to an increased demand for clothing and shoes that prioritize comfort and functionality.

Young consumers attach great importance to individuality and self-expression. Brands can utilize that demand.

The trend towards experience instead of consumption has become increasingly important in the fashion industry and is being successfully implemented. Instead of just buying clothes or accessories, consumers are looking for products and brands that offer them unique experiences or reflect their lifestyle and personality. By creating emotional and personal connections, brands can successfully build customer loyalty and achieve long-term success. Even though products can still serve as status symbols, the diversity of what a product can represent has increased.

AI could replace jobs, especially in the areas of design and data analysis. This might help to compensate for the lack of skilled employees.

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Circular economy models are gaining traction, offering opportunities for businesses focused on recycling, repair, and sustainable materials.

WEAKNESSES

Lost expertise due to generational change. In the past 10-15 years, there have been significant shortcomings in training and further education. The extensive specialist knowledge is mainly to be found in the older generation, which is close to retirement age. The middle age group, which is currently still benefiting from this knowledge, has sufficient knowledge to keep the business going, but they may not be able to pass on the extensive qualified knowledge to the next generation.

Companies invest too little in the training and further education of their staff. The number of companies training shoe technicians is continuously decreasing, while there is a shift towards business management training. At the same time, production is increasingly taking place abroad. Lack of loyalty and commitment to the employer is a widespread phenomenon nowadays. In the past, it was common to promote employees within the company by investing in their training and development to advance their careers. Nowadays, however, professionals are often headhunted by competitors, leading to a lack of commitment and loyalty to the employer.

Companies are in strong competition with each other. Small training companies in particular are exposed to the risk of losing their trainees to larger companies with more attractive salary offers.

THREATS

Lack of apprenticeship applicants: Significant discrepancy between the number of apprenticeship applicants required and the actual number. Despite a slight increase in the number of applicants, there is a statistical shortfall of more than 130,000 training applicants in Germany.

Decline in competitiveness and lack of innovative capacity due to a lack of skilled workers or personnel. Employees have qualifications in purchasing, marketing and sales but little product-specific expertise.

Quality problems can arise because the expertise to check product quality is no longer available internally. When quality control is outsourced, there is less control over the process. This applies to both production and purchasing.

Additional costs can arise, for example, from incorrect purchases, faulty production and a general lack of expertise.

Incorrect future strategies or the inability to adapt to change can arise if the company has insufficient knowledge of its products. Specific product knowledge and knowledge of production processes are essential for a well-founded assessment of the effects of trends and regulations.

Overworking of existing staff due to a lack of skilled workers leads to a vicious circle: only the bare essentials of day-to-day business are maintained, leaving no time to consider

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Initial and further training often suffer from a lack of proximity to industry. For cost reasons, not all new technologies can be available in the training centres. Teachers who have not had direct contact with industry for too long may no longer be up to date with the latest developments.

Industry often relies on short-term cost-cutting measures by failing to promote and train workers to avoid the cost of higher salaries. In reality, the starting salary of apprentices in the footwear industry is often far below that of other industries.

The lack of advertising for careers in the footwear industry contributes to the perception of this sector as a declining industry, especially as most production takes place in Asia. As a result, there is a lack of attractiveness and awareness of these professions among the population.

future developments and develop new innovations. This can lead to a slow decline of the company.

Economic risks due to the high costs of new technologies and their relatively short lifespan. The implementation of new technologies can be associated with high initial costs and it can take a while for the systems to function smoothly. There are also high maintenance and installation costs. In comparison, previous machines had a longer lifespan, while software-based systems become obsolete more quickly and may no longer be compatible with new updates.

Lack of human and financial resources for compliance. Regulatory compliance requires continuous monitoring of evolving laws and regulations and the promotion of possible solutions. Both financial and human resources are required. For small and medium-sized enterprises (SMEs) in particular, these resources are often not available. These resources can also be difficult to provide in the low-price sector of an industry that is challenged by competition from non-EU countries.

AI could replace jobs, especially in the areas of design and data analysis. This might make the field les attractive for job starters

Uncertainty regarding EU regulations, in particular because there is a change of direction with measures being withdrawn or readjusted, see omnibus proposal package (Feb. 2025)

The EU demands unattainable limit values for substances, see PFAS. Change in attitude, in the past the decision on limit values tended to be made with the input of companies and testing laboratories, today a limit value is set without much consideration of technical and economic feasibility.

Customers (industrial and private) do not want to bear the additional costs associated with sustainability. Most are not prepared to pay more for sustainable production or to compromise on design. So while there has been progress in developing sustainable material there is little demand on the market.

There are significant limitations to technical solutions for recycling, reuse, and raw material recovery in current foot-

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	wear. Achieving a circular economy remains a major challenge, as the complexity of footwear makes many approaches difficult to implement. Consumer acceptance of certain circular strategies, such as second-hand products, may be limited. While second-hand clothing is widely accepted, items like underwear and footwear often face greater resistance. Sustainable materials may not be as durable as those long-established in the industry, potentially posing financial or reputational risks for companies that adopt materials without a proven long term track record of performance.

REVALIDATION PROCESS

The process of re-evaluating the results began with a review of the previously conducted SWOT analysis. The participants, who were internal PFI experts with experience in the footwear industry, analysed the previously identified strengths, weaknesses, opportunities and threats in the industry, taking into account any recent changes.

In the second phase, an on-site group discussion was held in which footwear industry experts (Footwear companies and their suppliers: Baak, Solor, Gore, Elten, Otto Stockmayer + Sohn, Jaeger, Bär, Desma, framas) shared their individual experiences and the challenges they have faced recently.

The discussion confirmed and expanded on the findings of the earlier SWOT analysis, particularly in relation to the risks associated with regulation and consumer acceptance. These findings have been included in the conclusions and recommendations section below. Changes are indicated by blue coloured texts.

CONCLUSIONS AND RECOMMENDATIONS

About the lack of skilled workers:

There is an ongoing dramatic loss of expertise in the footwear industry due to generational change, with older professionals going into retirement. Companies are not investing enough to counter this loss and with the production shifted to Asia companies have stopped offering apprenticeships in shoe making, offering qualifications in industrial sales instead. Small companies still offering apprenticeships in shoe making are at risk of losing their employees to larger corporations after the initial training. The Initial and further training also suffers from a lack of proximity to the industry. Ideally trainees would have the opportunity to experience new technologies first hand in an industrial setting. In addition, the lack of advertising for careers in the footwear industry leads to a lack of awareness of the available opportunities and consequently to a lack of applicants.

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There is awareness of the issue in the industry and there are initiatives to counteract the issue. Organizations such as the Vocational Training Committee (ABB) of the German Federal Association of the Footwear and Leather Goods Industry (Bundesverband der Schuh- und Lederwarenindustrie e.V.) are actively involved in promoting young talent. The HDSL/Junior Award and scholarship programs are examples of such initiatives that aim to inspire and support young people for a career in the footwear industry. Some (but not enough) companies offer their employees opportunities and financial support for education and training, including training to become a footwear technician. The promotion of technical college students and trainees through scholarships is another measure to attract and retain qualified specialists.

Efforts are being made to restructure the training for shoemakers and to expand the admission requirements for shoe technicians to include people with commercial training in the industry or those interested in it.

In order to successfully combat the shortage of skilled workers in the footwear industry, significant financial investment and commitment from companies, as well as solid cooperation both between companies and between vocational training centres and companies, are required to modernise the profession and make it more attractive.

About technology, innovation and sustainability:

There are significant limitations to technical solutions for recycling, reuse, and raw material recovery in current footwear. The complexity of footwear materials and construction makes many circular economy approaches difficult to implement, and there are currently no viable large-scale recycling solutions for footwear. Additionally, consumer acceptance of certain circular business models, such as second-hand footwear, remains low, further hindering progress.

The shift in EU regulations, particularly with the Omnibus proposal, has introduced additional uncertainty regarding future investment strategies and compliance requirements. Companies must navigate evolving regulatory frameworks, making it challenging to plan long-term sustainability strategies. The increasing stringency of the EU Green Deal presents both risks and opportunities. Established companies with strong sustainability credentials and existing environmental measures have a competitive advantage, while smaller businesses struggle to keep up due to the high costs of research, innovation, and compliance.

Furthermore, the rising costs of energy, raw materials, and transportation add another layer of complexity. If governments implement stringent new regulations, it is crucial to balance these mandates with financial support to facilitate compliance. Funding research projects that develop viable solutions for footwear recycling and reuse would be a necessary step toward a more sustainable industry..

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However, these regulations can also offer opportunities for companies capable of leveraging them to attract environmentally conscious consumers, particularly the younger generation. Introducing new measures such as a sustainability score for footwear could empower brands, enhance transparency, and facilitate informed decision-making processes.

The shift towards prioritising experiences over mere consumption brings with it a demand for personalized products, a demand that can be met through the utilization of new technologies and advertising tools. While these new technologies hold immense potential for streamlining production, marketing, and sales processes, they also entail significant initial costs, lengthy development times, disruptions of existing processes, and the risk of becoming outdated by the time they are fully integrated into a company's operations.

The rapidly evolving regulatory, marketing, and technological landscape demands a much more continuous approach to education than in previous times when employees could rely on skills acquired years or even decades ago to remain productive. It is highly advisable for companies to prioritize ongoing training needs and integrate training management into their corporate strategy. Addressing the shortage of apprenticeships and meeting the constant need for training will be a significant challenge in the years to come.

STRENGTHS	OPPORTUNITIES
• Existing education • Advanced manufacturing processes, technologies, and materials • Environmental standards in processing • Machine/work equipment/plant safety • Up to now, no digital skills gap seen in the workforce • moderate to extensive incorporation of sustainibility measures into production processes • well trained workforce in sustainability-related skills • regularly training on sustainability and circular economy	• Adoption of circular economy practices (e.g, recycling, waste reduction);Use of renewable energy sources; • Implementation of energy-efficient technologies; • significant changes in the TCLF sectors expected within the next 5-10 years, particularly in the areas of digitalization and sustainability

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WEAKNESSES	THREATS
• extent companies adopted digital technologies such as AI, additive manufacturing, and digital design in the past year varies greatly • proportion of the current workforce with advanced digital skills is also vatying dpending on the company • varying on the job training for digital skills (scale from none to significant), limited collaborations to improve digital skills • up to 70% of the workforce needs retraining for new skills related to digitalization or sustainability within the next 5 years	• significant gap in specialized skills due to insufficient generational renewal • significant changes in the TCLF sectors expected within the next 5-10 years, particularly in the areas of digitalization and sustainability • Leather gets blamed for being not environmental friendly, whereas it is in reality a recycling and upscaling industry for the Meat and Dairy industry.

Changes in Digital Supply Chain Management are expected to be high,

Artificial Intelligence (AI): Moderate to high; and Digital Design Tools: Moderate to high.

Additive Manufacturing (3D Printing) is expected to play no major role in leather manufacturing;

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TEXTILES

STRENGTHS

- Competitive prices
- Great business flexibility in small orders
- Developed export business and extensive export experience.
- Long-term cooperation with many European countries
- Very good fashion/quality/price ratio
- Excellent quality of domestic cotton
- Strong Research & Innovation "offer" and expertise from academic and research organisations
- Significant performance (both nationally and regionally) in the cultural and creative industries & significant position of the country in terms of employment in related productive activities
- High quality human resources
- Strong manufacturing base with a long tradition, sectoral concentrations and considerable know-how.
- Existence of a small but dynamic ecosystem of knowledge-intensive businesses combined with support infrastructures (incubators, technology parks).
- Existence of excellent, according to European criteria, research groups in research centers.
- Significant achievements in European competitive research and technological development projects.

OPPORTUNITIES

- Increased development prospects from engaging sustainability
- Growth prospects in new markets
- Growing importance of the creative industry at regional and national level to tackle youth unemployment, while harnessing the potential of ICT.
- Display of new, extroverted business ventures, in the form of start - ups & new ventures with an emphasis on the creative industry, contributing significantly to product / service innovation
- Potential for economic transformation of the traditional critical mass of the textile and clothing industry into an activity that will incorporate the latest technological developments and innovations.
- The development of the green product market, strengthened environmental regulations and the strengthening of environmental awareness.
- The possibility of funding of excellent research groups from the European financial tools in the new programming period.
- The regional smart specialization strategy for the research groups with related subjects to the needs of the regional economy as well as the neighboring states/regions.
- The adoption of new regulations and legislative arrangements by the EU in matters of sustainability
- The tightening of compliance checks on imported products in the EU

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WEAKNESSES

- Cash-flow problems due to restrictions of the banking system.
- High cost of energy compared to other countries, which leads to deindustrialization of the country.
- High labor costs (high insurance contributions) and the relevant institutional framework.
- High cost of money.
- The lack of sectoral infrastructure.
- Lack of a coordinated and long-term sectoral policy in relation to key supporting sectors (eg energy, exports).
- Lack of qualified executives who could give new impetus to the businesses in the sector.
- The lack of a stable and long-term policy for Greek cotton
- Low rate of investment in research and development of new and innovative products for the sector and minimal interconnection of production with training, design and production of quality and branded products.
- Difficulty finding new talent in businesses and keeping them.
- Business succession issues.
- Rapidly aging workforce.
- Inability to attract new employees
- Significant decline in the textile industry, since after 1990 many businesses closed due to competition

THREATS

- International competition & fragile environment due to geopolitical conditions
- Weak demand in Europe due to inflation
- Difficult economic environment, financial sector instability, weak demand and private consumption at the national level.
- Negative environment for promoting entrepreneurship (legislation, bureaucracy, taxation, access to financing).
- Low proportion of research funding to educational institutions.
- High youth unemployment.
- Low rate of funding for R&D actions and difficulty in increasing private investment.
- The appreciation of the euro against the dollar, the yen and also against the currencies of third countries with significant exports of clothing and textile products.
- The increase of the price of raw materials
- Competition from third countries (China, India, Turkey, etc.), where costs are incomparably lower (mainly due to low labor costs).

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CLOTHING

STRENGTHS

- Competitive prices
- Great business flexibility in small orders
- Developed export business experience.
- Long-term cooperation with many European countries
- Exploitation of neighboring low-cost production countries
- Short delivery times
- Very good fashion/quality/price ratio
- Excellent quality of domestic cotton
- Strong Research & Innovation "offer" and expertise from academic and research bodies
- Significant performance (both nationally and regionally) in the cultural and creative industries & significant position of the country in terms of employment in related productive activities
- Greece's geographical position of strategic importance in SE Europe combined with an established position in the business development of the specific region.
- Strong manufacturing base with a long tradition, sectoral concentrations and considerable know-how.
- Increase in branded clothing exports and decrease in exporting private label
- Significant rise of domestic brands in clothing.
- Existence of a small but dynamic ecosystem of knowledge-intensive businesses – use of supportive infrastructure such as incubators, technology parks.

OPPORTUNITIES

- Increased development prospects from utilization sustainable fashion
- Growth prospects in new markets
- Growing importance of the creative industry at regional and national level to tackle youth unemployment, while harnessing the potential of ICT.
- Display of new, extroverted business ventures, in the form of start - ups & new ventures with an emphasis on the creative industry
- New possibilities for the development of the sector from the explosive rise of tourism.
- Potential for economic transformation of the traditional critical mass of the textile and clothing industry into an activity that will incorporate the latest technological developments and innovations.
- The development of the green product market, strengthened environmental regulations and the increase of environmental awareness.
- The possibility of stable funding of research groups from the European financial tools of the new programming period.
- The regional smart specialization strategy for the research groups with related subjects to the needs of the regional economy as well as the neighboring states/regions.
- Better aware consumers
- Shifting from fast-fashion model towards slow fashion
- The adoption of new regulations and legislative arrangements by the EU in matters of sustainability
- The tightening of compliance checks on imported products in the EU

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WEAKNESSES

- Liquidity problems due to the restriction of lending by the banking system.
- High labor costs (high insurance contributions) and the relevant institutional framework.
- High cost of money
- The lack of sectoral infrastructure.
- Lack of coordinated and long-term sectoral policy in relation to key supporting sectors (e.g. energy, exports)
- Small size of domestic market.
- Lack of qualified executives who could give new impetus to the businesses in the sector.
- Low rate of investment in research and development of new and innovative products for the sector and minimal interconnection of production with training, design and production of quality and branded products.
- Counter-trafficking and the illegal imports
- Low ranking on environmental sustainability
- Difficulty finding new talent in businesses and keeping them.
- Business succession issues together with rapidly aging workforce.
- Poor image of the sector in society and young people
- The shrinking of the textile industry also negatively affects clothing since important categories of intermediate products are in limited quantity
- Rapid increase in production costs in neighboring low-cost production countries affecting apparel businesses
- Shifting of production of large European clothing chains from Greece to cheaper cost countries
- Very small size of the majority of businesses which does not favor economies of scale.

THREATS

- International competition & fragile environment due to geopolitical conditions
- Difficult economic environment, financial sector instability, weak demand and low private consumption at the national level.
- Weak demand in Europe due to inflation
- Negative environment for promoting entrepreneurship (legislation, bureaucracy, taxation, access to financing).
- The increase in the price of raw materials
- The increase in labor costs and production costs
- Competition from third countries (China, India, Turkey, etc.) with lower costs in energy, labour costs etc
- The inability to control illegal trade
- The impossibility of substantial checks of compliance with European regulations on imported products
- The stagnation of consumption in many European countries due to inflation.
- Changes in consumer behavior

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FOOTWEAR

STRENGTHS

- Competitive prices
- Great business flexibility in small orders
- Developed export entrepreneurship and export experience.
- Short delivery times
- Very good fashion/quality/price ratio
- Specialization in the production of leather shoes and especially sandals
- Significant Research & Innovation "offer" and expertise from academic and research bodies
- Currently high human resource specialization.
- Greece's geographical position of strategic importance in SE Europe combined with an established position in the business development of the specific region.
- Great production tradition, sectoral concentration in Attica with easy and fast transports.
- Existence of a small but dynamic business ecosystem.

OPPORTUNITIES

- Considerable growth prospects in new markets.
- Growing importance of the creative industry at regional and national level to tackle youth unemployment, while harnessing the potential of ICT.
- Development, differentiation and organization of basic products and especially sandals targeting new focused markets
- New possibilities for the development of the sector from the explosive rise of tourism.
- Ability to operationally transform the industry's traditional critical mass into an activity that will incorporate the latest technological developments and innovations.
- The development under conditions in the framework of the technological limitations concerning the production of footwear, the ecological market of products, and the strengthening of environmental awareness.
- The possibility of stable funding of research groups from the European financial tools of the new programming period.
- The regional smart specialization strategy for the research groups with related subjects to the needs of the regional economy as well as the neighboring states/regions.
- More aware consumers
- Tightening compliance checks on imported products in the EU and enforcing reciprocity rules in international trade.

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WEAKNESSES

- Unstable conditions for the business environment and complex tax framework.
- Liquidity problems due to limited funding from the banking system.
- High labor costs (high insurance contributions) and the relevant institutional framework for regulating labor relations.
- High cost of money
- The lack of sectoral horizontal support/consulting infrastructure for small businesses.
- Absence of coordinated and long-term sectoral industrial policy in relation to key supporting sectors (e.g. modernization investments, exports)
- Small size of domestic market due to population.
- Lack of specialized human resources in production as well as executives who could give new impetus to businesses in the sector.
- Low rate of investment in research and development of new and innovative products for the industry
- Absence of training schools of all levels for the sector and zero interconnection of production with education.
- Counter-trafficking and the illegal imports
- Low ranking on environmental sustainability
- Business succession issues.
- Rapidly aging workforce.
- Inability to attract new production workers as well as executives.
- Poor image of the sector for young people and lack of vocational guidance programs.
- Very small size of the majority of businesses which does not favor economies of scale.
- Significant lag in modernization of retail stores and in the integration of digital technologies for the development of consumer services.

THREATS

- International competition & fragile environment due to geopolitical conditions
- Migration stream that passes through Greece as the border of Europe in the east
- Difficult economic environment, financial sector instability, weak demand and private consumption at the national level.
- Negative environment for promoting entrepreneurship (legislation, bureaucracy, taxation, access to cheap financing).
- Flight of valuable human resources in response to persistently high youth unemployment.
- The increase in the price of raw materials, lengthening of delivery times and limited flexibility of quantities for small-medium enterprises.
- The increase in labor costs and production costs
- Competition from third countries (China, India, Turkey, etc.), whose costs were incomparably lower (mainly due to low labor costs).
- The inability to curb illegal trade
- The impossibility of substantial checks of compliance with European regulations on imported products
- The stagnation of consumption in many European countries due to inflation.
- Changes in consumer behavior

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CONCLUSIONS AND RECOMMENDATIONS

This process of revalidating results began with an individual analysis of the results obtained previously through extensive focus groups and presentations / discussions. Participants in this revalidation process are HCIA's experts (internally and collaborators) with experience in the textile, clothing and footwear sectors. They analysed the previously identified strengths, weaknesses, opportunities and threats for the 3 sub-sectors, in the light of any changes that have occurred at different levels: economic, political and social.

Each member had time to review the document and register any comments deemed relevant in light of any changes that had occurred between the drafting of the first document and its revalidation.

The second phase of the process consisted of a group meeting with these same members, in which each shared any suggestions for changes they considered relevant.

This sharing resulted in the addition of a few points in the different quadrants of the swot analysis, for the textile, clothing and footwear sectors.

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KEY AREAS OF SUSTAINABILITY IN THE INDUSTRY

Level of **IMPLEMENTATION**

SKILL / COMPETENCE	RANK				
Sustainable materials Use of recycled, organic, or renewable materials to reduce the environmental impact			**3**		
Eco-efficient manufacturing processes Implementation of technologies and practices that reduce the consumption of energy, water, and greenhouse gas emissions during the production			**3**		
Waste reduction Minimization of solid and liquid waste along the entire supply chain, including reuse and recycling of materials		**2**			
Sustainable design Development of products that maximize durability, separability, and removability at end-of life				4	
Ethical supply chain Ensuring fair and safe working conditions for workers at all stages of production, as well as the elimination of child labour and respect for human rights.				**4**	
Sustainable logistics and transportation Optimization of transportation operations to reduce carbon emissions and minimize social impact					**5**
Corporate social responsibility Commitment to ethical and responsible business practices, including transparency in the supply chain and positive contribution to local communities and the environment		**2**			
Education and awareness raising Promotion of sustainability awareness among consumers, employees, and other stakeholders, as well as education on the importance of making responsible purchasing decisions			**3**		

TRAINING NEED

SKILL / COMPETENCE	RANK				
Knowledge of sustainability Understanding the fundamental principles of sustainability, including concepts such as circular economy, eco-design, waste management, energy efficiency and corporate social responsibility				**4**	
Environmental management Have a sound knowledge of environmental regulations, sustainability standards and best practices in environmental management, as well as the skills to develop and implement environmental policies and programs					**5**
Life cycle analysis Ability to assess the environmental impact of products and processes throughout their life cycle, using life cycle analysis tools and methodologies to identify areas for improvement and optimization				**4**	
Risk management and compliance Be aware of the risks associated with unsustainable practices and be aware of relevant environmental, labour and safety regulations and standards to ensure compliance					**5**
Communication and awareness Skills to effectively communicate the company's sustainability objectives and commitments both internally and externally, as well as to raise awareness and educate employees, customers, and other stakeholders on sustainable practices				**4**	
Project management			**3**		

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Be able to plan, coordinate and execute sustainability-related projects, setting clear objectives, allocating adequate resources, and monitoring progress to ensure project success					
Sustainable supply chain management Understand the importance of a sustainable supply chain and have skills to assess and improve supplier sustainability, as well as to establish collaborative and transparent supply chain relations				**4**	
Innovation and creativity Encourage creativity and innovation in the search for sustainable solutions, including the development of more efficient and environmentally friendly products and processes.				**4**	
Critical thinking and problem solving Be able to analyse complex problems related to sustainability and find creative and viable solutions that balance the economic, environmental and social needs of the company.			**3**		
Collaboration and teamwork Work effectively as a team and collaborate with different departments and stakeholders to integrate sustainability into all areas of the company and promote a culture of sustainability throughout the organization.				**4**	

KEY AREAS OF DIGITALIZATION AND TECHNOLOGICAL INNOVATION IN THE INDUSTRY

Level of **IMPLEMENTATION**

SKILL / COMPETENCE	RANK				
Computer Aided Design (CAD) Use of specialized software for the design of textile products, clothing, leather, footwear, and accessories, allowing for greater precision, speed and flexibility in the creative process.					**5**
Fast prototyping Use of technologies such as 3D printing for rapid product prototyping, facilitating design iteration and refinement prior to mass production			**3**		
Additive manufacturing Integration of additive manufacturing techniques, such as 3D printing, into the production of components for footwear, apparel, and other accessories, enabling customization and on- demand production			**3**		
Internet of Things (IoT) Incorporation of sensors and smart devices into textile and apparel products to collect data on usage, performance, and user interaction, facilitating customization and continuous product improvement			**3**		
Intelligent manufacturing Implementation of automated and connected production systems, such as networked manufacturing and collaborative robotics, to increase the efficiency, flexibility, and responsiveness of manufacturing operations				**4**	
Big data and predictive analytics Use of advanced data analytics to better understand market trends, forecast product demand, optimize the supply chain, and personalize the customer experience		**2**			
Augmented Reality (AR) and Virtual Reality (VR) Application of AR and VR technologies to enhance the online shopping experience, allowing customers to virtually view and try products before making a purchase			**3**		
Blockchain Implementation of blockchain technologies to improve traceability and transparency in the supply chain, guaranteeing the authenticity and provenance of materials used in the manufacture of TCLF products	**1**				

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Sustainability and traceability Development of technological solutions to monitor and manage more efficiently the processes related to sustainability and traceability of products, from raw materials to the final consumer					**5**

TRAINING NEED

SKILL / COMPETENCE	RANK				
Specific digital technologies Knowledge in the use and implementation of digital technologies specific to the TCLF sector, such as CAD/CAM systems for design and pattern making, production management software, augmented/virtual reality tools for product design and visualization, and supply chain management systems					**5**
Software development Software development and programming skills for the creation and customization of applications, e-commerce platforms, enterprise resource planning (ERP) systems and industry- specific data analysis tools	**1**				
Data analytics Ability to collect, analyse and interpret data using data analytics and business intelligence tools to make informed decisions on marketing strategies, inventory management, demand forecasting and process optimization				**4**	
Internet of Things (IoT) Expertise in sensors and IoT devices applied to the TCLF industry to monitor production in real time, optimize operations efficiency, improve product quality, and deliver personalized customer experiences			**3**		
Additive manufacturing (3D printing) Familiarity with additive manufacturing technologies, such as 3D printing, for rapid prototyping, custom production and manufacturing of footwear and apparel components			**3**		
Artificial intelligence (AI) and machine learning Understand the basic concepts of AI and machine learning and their application in the TCLF sector, such as product recommendation systems, predictive analysis of fashion trends, and optimization of production processes				**4**	
Cybersecurity Cybersecurity expertise to protect sensitive data and company systems against cyber threats, ensuring the integrity and privacy of information			**3**		
User experience (UX) and interface design Understand the principles of UX and interface design to develop intuitive and engaging digital platforms that improve customer experience and increase sales conversions			**3**		
Digital transformation Ability to lead digital transformation projects in the company, identifying opportunities for improvement, implementing innovative technology solutions, and promoting a culture of innovation and change					**5**
Project management and collaboration Agile project management and teamwork skills to coordinate the implementation of technology solutions, ensuring that the established objectives are met in a timely manner					**5**

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ITALY - LEATHER – 2025 SWOT revalidation

By distributing the targets among the Italian partners, while Polical focused on Footwear and Pin on Textiles and Clothing, Confindustria Accessori Moda focused on Leather.

METHODOLOGY

In order to compare the answers of 2024 with the current Italian reality, we asked the coordinator of 2024 Leather survey (UNIC-CONCERIE ITALIANE, the Confindustria Moda affiliate specifically for leather), to re-contact and interview the same companies interviewed during the 2024 focus groups, on the same topics and with the same questions.

In addition to the request to focus on any changes with respect to the items already indicated, we explicitly asked to analyse whether there were any “new entries”, i.e. events to be taken into account that had occurred in the months between the first and this second interview.

Following the checks carried out at the companies participating in the Focus Group, the results are:

The contents related to **Strengths + Opportunities + Weaknesses are confirmed as in 2024.**

Regarding Threats, there are new elements:

- the imposition of duties threatened by the US government
- the renewal of sanctions against Russia
- the difficult implementation of some EU regulations and directives in the short term (e.g. EUDR)

The new items are highlighted in yellow in the SWOT model / list of threats, as follows

Please find details in the following pages

ITALY - LEATHER - 2025 SWOT

STRENGHTS	WEAKNESSES
- Circular economy - Capacity to create beauty by transforming a waste - Capacity to respond to quality research - Leather is a renewable, natural and biodegradable material - Tradition of the sector - Commitment to the environment and sustainability	- Increased demand for traceability along the supply chain - Difficulty in attracting young people - Difficulty in attracting STEM graduates - Difficulty in attracting young people to technical positions - Confusion in consumer perception - Ability to communicate effectively with consumers - Image of the sector - Ageing of the workforce
OPPORTUNITIES	**THREADS**
- Positive consumer view of social and environmental sustainability - Increased concern for a healthier lifestyle and well-being - Generational turnover	- Increase in the cost of energy and raw materials due to climate change or geopolitical developments - The legislative threat is significantly felt, particularly in the realms of economics and globalization - Increase in the cost of transportation - duties threatened by the US government - renewal of sanctions against Russia - difficult implementation of certain EU regulations and directives in the short term (e.g. EUDR).

2025 SWOT REVALIDATION INTERVIEWS

COORDINATOR - UNIC-CONCERIE ITALIANE (Confindustria Moda affiliate)

SECTOR - Leather

2024 CONCLUSION AND RECOMMENDATION ARE CONFIRMED AS FOLLOW

TRAINING – GENERATIONAL TRANSITION – ATTRACTIVENESS OF THE SECTOR

The issues of workers skills, attractiveness and innovation are strongly interconnected in the Italian tanning and leather sector.

The professionalism of the workforce maintains a fundamental importance for the quality of the final product, even for workers performing the simplest tasks and, in the industry, a significant skill alongside theoretical training is experience.

At the same time, it was confirmed that in companies there will be about 5/10 people retiring in the next 3/5 years, especially in the production area, and contemporarily the industry's evolutionary trends have introduced significant changes and technological progress, including mandatory digitalization.

Companies are therefore demanding new workers, with more awareness and skills than before: the perfect combo would be the experience in production, an up-to-date technological capability and a 360-degree view of the production process.

Furthermore, while the new workers need to be aware of their role in the company, they are looking at a healthier and more balanced aspect in their working life.

How is the industry addressing the need for this generational turnover?

An overview of the SWOT analysis shows that leather tanning sector has STRENGHT points in the Commitment to the environment and sustainability, the renewability of Leather, a natural and biodegradable material, its role in Circular economy, the Capacity to create beauty by transforming a waste. Environmental certifications, more and more obtained by the companies, also match the most up-to-date expectations of the consumers and the workers themselves.

On the contrary, a WEAKNESS of the sector is the difficulty of communicating its positive aspects, and this creates a lack of capability to attract new working forces.
Also, while production processes are evolving towards digitalized and automated management systems, the tanning sector still retains artisanal characteristics, since some processes must necessarily be left to the intervention and evaluation of the worker, and it’s possible that youngest generations are more attracted by more digitalized procedures.

That’s why the attractiveness of the companies and the training become a key knot for the companies.

Since attractiveness is not given anymore only by salary, but by what the company can offer, its reputation, a dynamic environment where the workers can find their place and opportunities, not only the companies need to do continuous training to obtain the requested skills from the workers, but they recognize it is also a way to attract people, by showing an important investment in them.

DRIVERS OF CHANGE: COMMUNICATING THE REDUCTION OF ENVIRONMENTAL IMPACTS OF THE SECTOR

The legislative threat is significantly felt, particularly in the realms of economics and globalization. The Anti-Deforestation Regulation poses a risk of losing a considerable number of our suppliers, which, if unchanged, will undoubtedly have a negative impact on the sector.

A crucial area of concern is environmental change. Certain factors necessitate companies to alter their environmental practices, with European regulations imposing restrictions that necessitate process changes.

With reference to changing demographics, it is observed that there are increasingly fewer young people, who are, in any case, more interested in other areas.

Consumers are disoriented, facing increasing attacks manipulated by entities that promote a lifestyle favoring plastic over natural materials, due to a lack of awareness of the challenges and opportunities presented by natural materials like leather. The main factor driving changes among consumers is environmental impact, with the most engaged being the younger demographic.

The tanning industry is not well understood; on the one hand, disinformation plays a crucial role. One possible solution is to enhance marketing efforts and showcase the industry's sustainability. Companies are highly committed to environmental concerns. Beyond the professional and training needs of the sector, image enhancement of the tanning industry in public opinion seems central to interviewees. The tanning process is still viewed as one of the most polluting, especially because of the chemicals used, and there is also a consolidation of a distorted perception of leather's value and significance.

The sector, therefore, requires an information campaign to highlight the progress that tanning companies have made in recent years in reducing the environmental impact of their processes and the role of the tanning process as an integral part of the circular economy, based on the exclusive processing of by-products from the food industry. An integrated strategy to enhance the industry's image appears to be an increasing priority, aiming to revitalize a leather culture and create a more impactful exchange with educational systems.

TEXTILE

STRENGHTS	OPPORTUNITIES
✓ The growth of immigration flows provides textile productions with the opportunity to have a workforce willing to perform tasks in environments and at times no longer preferred by Italian younger generations. ✓ Young people coming out of university circuits are willing to perform "creative/cognitive" tasks (not in production). This makes it relatively easy to find personnel for such roles that are becoming increasingly important. ✓ The increasing demand for highly customised products is well managed by textile companies in *shared economy areas*[1] because they are accustomed to working on small batch and just-in-time production. ✓ The growing demand for luxury and/or high-quality products is well managed by textile companies in *shared economy areas* because they are accustomed to producing with high-quality standards. ✓ The high quality standards of the Italian textile companies could make easier the compliance to the EU legislation for textiles. ✓ Italian textile companies have a strong heritage in recycling models of textile products	✓ The increasingly stringent national and European regulations on sustainability can provide exceptional stimulus for process and product innovation, in which Eu companies can benefit more for the technologies and skills. ✓ The growing public attention to environmental issues stimulates the research needed to produce products with innovative features, making Western (and therefore European) production more competitive than that of Southeast Asian countries. ✓ The rising cost of raw materials increases the strategic importance of raw material recycling processes. At the same time, final customers tend to appreciate them more because they are synonymous with eco-sustainability. ✓ The new demands from consumers' brands, new regulations, and standards on environmental sustainability will require increasing integration among businesses. In practice, this leads to rationalization of value chains, generating more vertically integrated and efficient supply chains. The new digital technologies - on which textile

[1] "Shared economy areas" are zones characterized by a homogeneous distribution of productive activities or businesses related to a specific industrial or commercial sector, but without a particularly dense or distinctive geographic concentration. These areas may exhibit a greater geographical dispersion of activities compared to traditional industrial districts, with businesses being spread over a wider area rather than concentrated in a specific zone.

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companies are investing - will make it increasingly easier to trace and manage the entire production chain.

- ✓ Italian textile districts have been addressing the issue of sustainability for some time now and already have solutions to reduce the environmental impacts of production
- ✓ The ongoing technological changes will increase the competitiveness of companies that manage to implement them. In fact, this translates into better and more environmentally sustainable products. At the same time, technology can rationalise production processes, making them less costly (once the technological investment has been amortised).

- ✓ The decreasing willingness of younger generations towards long working hours will, in the long run, lead to a restructuring of production processes, which will need to be reconsidered with the aim of producing the same amount of fabric (with the same quality) in shorter times.
- ✓ Italian companies have long been adopting procedures to provide information about products' environmental sustainability, ensuring traceability in various stages of the production chain. The increasing spread of this process (already underway) will make it easier to export textile products to more demanding and wealthier markets (such as Western ones).
- ✓ The digital passport in the fashion supply chain can be the instrument to protect "Made in Italy" as it aims to guarantee traceability, sustainability, and labor protection.

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WEAKNESSES

- ✓ The aging workforce makes it difficult to find traditional professional figures, which nevertheless remain core for textile and productions.
- ✓ Younger generations are not fond of performing traditional tasks deemed unattractive (because work is often carried out at hours and times that are difficult to reconcile with personal life, in environments that are often dirty, noisy, and sometimes unhealthy).
- ✓ Small businesses are unable to offer young people career paths that make professional growth within the company attractive.
- ✓ Investments in process and product sustainability are currently poorly remunerative. (Being green, for the moment, does not allow selling the product at higher prices.)
- ✓ The resistance to change within traditional companies, such as a reluctance to embrace new technologies or sustainable practices, hinders innovation and restricts the sector's 78'8''''7capacity to adapt to changing market needs and regulations.
- ✓ High energy costs make textile Italian products less competitive.
- ✓ It is necessary to protect and revive the textile industry through strict controls on imported products, otherwise unfair competition will be created.

THREATS

- ✓ The increasingly stringent national and European regulations on the sustainability of processes and products risk excluding smaller companies that lack the resources to adapt to the required changes from the market.
- ✓ The growing public attention to environmental issues risks excluding from the market companies unable to innovate their productions.
- ✓ The significant increase in energy and raw material costs could make textile production uneconomical (especially for the most energy-intensive phases of the production process). In fact, this could lead to the following main effects:

a) Some stages of product processing could be outsourced to foreign companies (able to produce at lower costs);
b) Italian companies would have to undergo lengthy and costly restructuring processes aimed at reducing the energy impact of their production processes.

- ✓ The increase in raw material costs could inflate the final costs of products, reducing target markets.
- ✓ Technological changes will eventually push weaker companies out of the market, unable to make the necessary investments.
- ✓ The significant variations in energy costs and raw materials create major problems in upstream evaluation of production costs.

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- ✓ Textile districts specialized in winter productions (such as wool productions) are penalized by climate change.
- ✓ The decreasing inclination of young people towards long working hours makes it difficult for companies that ARE UNWILLING TO REORGANISE their processes to survive. This is a phenomenon now well known (also in literature) defined as "generational break", whereby companies are challenged by the lack of new workforce (consisting of younger generations) called upon to replace retiring workers.
- ✓ Ontological volatility of the fashion system (the risk that sustainability too represents just a passing trend destined to end). This phenomenon could result in a low return on investments in more sustainable processes or - even worse - lead to a loss.
- ✓ There is a strong risk of the implementation of greenwashing policies by companies that are not aligned with the principles of eco-sustainability of products and processes that probably will be based on evidence.
- ✓ The textile sector faces risks to production continuity and cost stability due to its vulnerability to international supply chain disruptions, such as dependence on raw material imports and global logistical uncertainties.
- ✓ The increasing trade barriers, international competition, and fluctuating demand for exports pose a threat to the competitiveness of EU textile businesses, especially SMEs. Rising protectionism, customs regulations, and changing trade agreements can restrict access to crucial export markets.
- ✓ Tariffs levied by the Trump administration are creating considerable uncertainty, and Italian textiles risk becoming uncompetitive. A tangible risk could be competition from Turkish textiles, which were subject to a 10% tariff in contrast to the 25% tariff applied to European textiles
- ✓ The decline in luxury sales of major fashion brands has put Italian companies operating in the high-end product sector in crisis, with a sharp increase in temporary layoffs. Market uncertainty, also due to geopolitical instability, severely risks the survival of many companies if

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they are not supported by adequate government policies.

CLOTHING

STRENGHTS	OPPORTUNITIES
✓ The increase in immigration offers clothing manufacturers the opportunity to exploit a workforce eager to undertake tasks in contexts and schedules less favored by Italians, especially those belonging to younger demographics. ✓ Graduates emerging from academic institutions tend to engage in "creative enterprises," making it relatively easy for companies to find workforce for cognitive roles. ✓ Italian clothing companies located in areas with widespread economy[2] "accustomed" to managing the demand for highly personalized items by leveraging their expertise in small-batch and	✓ The increasingly stringent national and European sustainability regulations can provide an exceptional stimulus for process and product innovation, making Italian companies that adapt to ongoing changes increasingly competitive. ✓ The growing public attention to environmental issues stimulates the research needed to produce products with innovative features, making Western (and therefore European) production more competitive than that of Southeast Asian countries.

[2] The areas with widespread economy are zones characterised by a homogeneous distribution of productive activities or businesses related to a specific industrial or commercial sector, but without a particularly dense

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just-in-time production methods. Therefore, the increase in demand for customised products does not create (and will not create) any particular problems for them.	✓ The rising cost of raw materials increases the strategic importance of raw material recycling processes. At the same time, final customers tend to appreciate them more because they are synonymous with eco-sustainability. ✓ Technological changes will streamline supply chains that will be more vertically integrated and efficient. ✓ Italian companies have long been adopting the so-called digital passport (ensuring traceability in various stages of the production chain). The increasing spread of this tool (already underway) will make it easier to export clothing products to more demanding and wealthier markets (such as Western ones). ✓ The digital passport in the fashion supply chain can be the instrument to protect "Made in Italy" as it aims to guarantee traceability, sustainability, and labor protection.
✓ Clothing companies located in areas with a widespread economy adeptly meet the increasing demand for luxury and/or high-quality goods, relying on their expertise in maintaining high production standards. Therefore, the increase in demand for luxury and high-end products does not create (and will not create) any particular problems for them.	

or distinctive geographic concentration. These areas may exhibit a greater geographical dispersion of activities compared to traditional industrial districts, with businesses being spread over a wider area rather than concentrated in a specific zone.

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WEAKNESSES

- ✓ An ageing workforce makes it difficult to find traditional professional figures, who nevertheless remain essential for clothing production.
- ✓ Younger generations are not inclined to carry out traditional tasks considered unattractive (as the work is often done at hours and times that are difficult to reconcile with personal life, in often dirty, noisy and sometimes unhealthy environments).
- ✓ Small businesses are unable to offer young people career paths that make professional growth within the company attractive.
- ✓ The limited availability of Italian workers to carry out production tasks in the clothing sector pushes companies to turn to immigrant workers, but this often leads to longer internal training times due to language difficulties and a complete lack of basic knowledge/skills that young people leaving local technical institutes possess.
- ✓ Currently, there is a shortage of professional figures defined as 'Supply Chain Auditors' (individuals capable of assessing and monitoring the compliance of production activities and supply chains with certain standards and requirements imposed by regulations or certifications voluntarily adhered to by companies). However, at the same time, there is a growing demand for product testing and third-party certifications (especially on chemical aspects), favouring countries with higher technical expertise.
- ✓ It is necessary to protect and revive the textile industry through strict controls on imported products, otherwise unfair competition will be created.

THREATS

- ✓ Increasingly stringent national and European regulations on the sustainability of processes and products risk excluding small businesses that do not have the resources to adapt to the changes required by the market.
- ✓ The ever-increasing public attention to environmental issues risks excluding from the market companies that are unable to innovate their productions.
- ✓ The increase in the cost of raw materials could lead to an increase in the final costs of products. This, in the medium term, could result in increased competition from low-cost productions (such as those in Southeast Asia). In fact, many market segments currently have difficulty accepting price increases due to the higher sustainability of clothing items and the processes required to produce them. Consequently, those investing in greater environmental sustainability could be penalised. Technological changes will eventually lead to the exclusion from the market of the weakest companies, unable to make the necessary investments.
- ✓ Investments in the production of eco-friendly and eco-compatible products are not always recognized by the market. Therefore, in the short and medium term, green investments may not be (sufficiently) profitable.
- ✓ Italy conducts little research in the field of applied chemistry. This limitation is due to various factors: large Italian chemical companies have disappeared since the 1990s, so the companies that can currently serve as references for Italian companies are large foreign multinational corporations (mostly Swiss, Belgian, and German). Given the small size of our companies, it is difficult - for most of them - to establish collaborative relationships in the development of new/innovative products necessary for textile finishing. Furthermore, relationships between companies and the world of university research, which are highly prevalent abroad, are much rarer in Italy.

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- ✓ Due to the tariffs imposed by the Trump administration, there is a concrete risk that garment production will shift to other countries, such as Morocco, where the tariff is only 10%.
- ✓ The decline in luxury sales of major fashion houses has put Italian companies operating in the high-end product sector in crisis, with a sharp increase in temporary layoffs (cassa integrazione). Market uncertainty, also due to geopolitical instability, severely risks the survival of many companies if they are not supported by adequate government policies.

The update of the SWOT analysis was based on data collected by the local labor market observatory and on the opinions expressed by experts in the textile and clothing sector and education. The reflection on strengths and weaknesses, threats and opportunities started from the previous SWOT analysis, which was asked to highlight changes and integrate new information.

The evolution being recorded is linked to international geopolitical instability, which creates uncertainty and will influence future economic balances. If in the previous study the ongoing wars were seen as a temporary problem, their persistence and, above all, the new Trump administration with its tariff policies have completely called into question international trade balances.

The speed at which the decisions of the American Administration are impacting is such that future changes are expected in terms of new supply and sales channels for textile products, and new commercial alliances.

At the same time, the fashion manufacturing sector is experiencing a strong period of crisis, mainly due to the drop in turnover of major brands, which is penalising the entire production chain.

The competitiveness of "made in Europe" products must be supported by significant government interventions to support businesses:

- For the reduction of energy costs
- To support the labor market in the face of a period of crisis
- For the control of international trade policies (tariffs)

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- Creating a climate of greater stability and certainty

In conclusion, the changes observed require more political interventions that are outside the sphere of action of training. The latter is called upon to make production processes more effective and efficient (particularly in reducing energy consumption), to accelerate the introduction of the Digital Product Passport as a tool to guarantee the production quality of "made in Europe" products, and to study new international commercial opportunities.

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FOOTWEAR GROUP – POLITECNICO CALZATURIERO

In the revalidating process was involved a group of teachers and professionals belonging to the footwear sector for a total of: 12 participants. This group revised the previous statements present within the first SWOT analysis and evaluated them considering the present context

The group compled a short questionnaire giving an evaluatin of the previous findings rating them from: I strongly agree / I agree / I do not agree. Questions and doubts emerged in some points and it was possible to discuss it together trying to evaluate is a modification of the original statement was necessary or if it was better to introduce a new one.

The results were the following.

FOOTWEAR SECTOR – STREGHTS

- It is a well-developed sector all over Europe and especially in Italy, where it is part of a "production chain" context, with the presence of a dense network of suppliers of raw materials, tanneries, manufacturers of footwear components and machinery. – CONFIRMED
  Almost everyone strongly agreed.

- In Italy there are several networks that bring together both the companies, the VET/HE providers and the research centres. – NOT SO MUCH
  Most of the participants agreed but a small group disagreed.

- Certain companies are starting to implement new sustainable processes (especially in terms of traceability and LCA) – CONFIRMED
  Almost everyone strongly agreed.

- The COVID-19 pandemic forced certain companies to introduce new more technological tools in their processes – TRUE BUT NOT SO RELEVANT ANYMORE
  It emerged that this could be considered as true but not so relevant anymore in the management of the sector's companies.

- Companies that invested in sustainability are getting good responses from consumers – NEW
  This was a new point agreed by all the participants.

FOOTWEAR SECTOR – OPPORTUNITIES

- Great margin from improvement both in the field of sustainability and the field of digitalization
  Almost everyone strongly agreed.

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- Growing demand for highly specialized workers both in the technical and in the managerial companies' sectors
  Almost everyone strongly agreed.

- Possibility to "learn" how to implement modernization processes from other more dynamic sectors (for example the textile sector)
  Most of the participants agreed but a small group disagreed.

- The introduction of new technologies in production and design can boost the attractiveness of the sectors towards younger generations
  This was a new point agreed by all the participants

FOOTWEAR SECTOR – WEAKNESSES

- The Footwear sector seems to be highly attached to the "traditional" methodologies and appears reluctant to open towards more modern tools and processes.
  This point brought up some disagreements between the participants: a group agreed with it but not totally, while a bigger part of them strongly disagreed. The result was the decision not to include it anymore.

- Lack of specialized workers who has a clear vision of all of the production process phases.
  Almost everyone strongly agreed.

- Great number of workers which will retire in the next years.
  Almost everyone strongly agreed (only a couple of participants disagreed)

- Difficulties to attract younger generations.
  Almost everyone strongly agreed.

FOOTWEAR SECTOR – THREATS

- Lack of clarity on EU legislations that can create confusion among the companies about which process to implement.
- Lack of harmonization between the EU countries in terms of legislation and processes (for example in the field of traceability)
  These two points were summed up as follows:
  It is difficult to interpret the new legislation coming from the EU, this is creating confusion and lack of harmonized interventions, especially related to the footwear companies

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- Need to gather financial helps both from private and from public investors for upgrading the capabilities of the companies.
  Everyone strongly agreed or agreed.

- It is still missing the upskilling of workers and trainers about the use of new technologies and machines.
  This was a new discussed point:
  - *Some participants underlined that, besides the upskilling, it is also missing the real time knowledge of the new technologies introduced in the market.*
  - *It is difficult to implement the training of workers and students in digitalization and new technologies if the input does not come from the companies themselves because they do not invest in new machines.*

  This consideration brought up the following point:

  There is still a low level of upskilling of workers and trainers about new technologies and machines, since most of the companies do not significantly invest in these technologies.

Finally, we compiled together a new SWOT considering what could be maintained and what could be added.

The new affirmation inserted will be in bold.

STRENGTHS	OPPORTUNITIES
• It is a well-developed sector all over Europe and especially in Italy, where it is part of a "production chain" context, with the presence of a dense network of suppliers of raw materials, tanneries, manufacturers of footwear components and machinery • In Italy there are several networks that bring together both the companies, the VET/HE providers and the research centres. • Certain companies are starting to implement new sustainable processes (especially in terms of traceability and LCA)	• Great margin from improvement both in the field of sustainability and the field of digitalization • Growing demand for highly specialized workers both in the technical and in the managerial companies' sectors - • Possibility to "learn" how to implement modernization processes from other more dynamic sectors (for example the textile sector) • **The introduction of new technologies in production and design can boost the attractiveness of the sectors towards younger generations**

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- **Companies that invested in sustainability are getting good responses from consumers**

WEAKNESSES

- Lack of specialized workers who has a clear vision of all of the production process phases.
- Great number of workers which will retire in the next years.
- **Difficulties to attract younger generations.**

THREATS

- **It is difficult to interpret the new legislation coming from the EU, this is creating confusion and lack of harmonized interventions, especially related to the footwear companies**
- Need to gather financial helps both from private and from public investors for upgrading the capabilities of the companies
- **There is still a low level of upskilling of workers and trainers about new technologies and machines, since most of the companies do not significantly invest in these technologies.**

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TEXTILE

The textile and clothing industry is developing dynamically and is subject to many changes resulting from the changing way of life, the development of new technologies, digitalization, social, health and climate challenges and changing consumer behavior. One of the more pressing problems that have been discussed in recent years is the impact of production and consumption in the textile and clothing sector on environment and climate. These discussions are undertaken both by non-governmental organizations and consumers, as well as by representatives of this sector.

Due to the fact that this sector provides many jobs, human rights, employee rights, decent pay and work are no less important issues. As a result, the textile and clothing sector, taking into account the changes taking place in its environment, on its own initiative began to take action for the climate and environment and to protect human and employee rights. Initially, large international textile and clothing organizations came up with appropriate initiatives, developing strategies that took into account sustainable development and internal codes of good practice.

One of the important issues from the point of view of the impact of the textile industry on the environment and climate is extending the life of products, i.e. ensuring the durability of the product and the possibility of its reuse. Product design plays a key role in achieving this goal. This is what design is an important stage in the value chain enabling the recycling of textile and clothing products and enabling the "life extension" of products. Currently, mixing different fibers in textile and clothing products, as well as the lack of available technologies separating different types of fibers, significantly hampers recycling.

The current lack of a coherent approach to improving the environmental sustainability of products could result in inconsistent national action in setting requirements for sustainable products, which in turn could lead to disruptions in the functioning of the Single Market. For these reasons, creating a regulatory framework enabling the gradual introduction of ecodesign requirements, through the Ecodesign Regulation, seems to be the right solution.

• durability and reliability of the product

• product reuse

• product improvements, repairability, ease maintenance and renewal

Field Research: Focus Groups preparation and guidelines

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• presence of potentially hazardous substances in products

• energy efficiency of the product and its resource efficiency

• content of recycled materials in products

• product regeneration and recycling

• the product's carbon and environmental footprint

• the expected amount of waste generated in connection with the product.

Transforming the economy towards a sustainable and circular model is an absolute necessity. The textile sector, as one of the largest emitters of greenhouse gases, should be a leader in this change. Effective implementation of the Sustainable

Textile Strategy by companies requires that companies have real leaders, promoters of change, who have the ability to actually translate their thoughts and beliefs into business decisions. Natural candidates for this role are members of the management board, supervisory board and directors. They must build awareness of the need for change, set the organization's strategy, show through their actions how to change and hold responsible people accountable for the specific goals of the strategy. Quick adaptation to the new reality may be, especially for smaller players, an opportunity to build a stronger market position.

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STRENGTHS

- Competitive prices. Great business flexibility in small orders, fast local delivery.
- Good infrastructure for domestic production. Possibility to increase production in the country.
- Interest among consumers in Poland in the slow-fashion trend
- Giving up low-quality clothing, usually from large chain stores that carry out mass production in Asian countries
- The approach of companies and mass consumers is changing, it is proposed to focus on more expensive, high-quality clothing that is expected to last for many years.
- A new direction, Innovation Specialist, has been created clothing materials
- Most companies producing textiles have product quality certificates respected throughout Europe
- Awareness of methods to extend the durability of products and the possibility of reusing them is increasing – ecodesign
- the inflow of workers from the Philippines and Colombia has increased

OPPORTUNITIES

- Hiring new employees with competences related to online sales, e-commerce, etc
- Finding new industry employees, especially those for production positions due to the lack of such people on the labor market
- Sustainable development and attention to ecology during production.
- Introducing solutions enabling easy identification of products manufactured in Poland
- Increasing domestic production of innovative and ecological materials. Export of high-quality raw materials to European countries
- Product passports and certificates
- Preventing the destruction of unsold and returned items textile products
- Regulatory framework for guidelines and acts delegated for detailed informatioN

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WEAKNESSES

- A social and legal challenge
- Adapting production to appropriate ecological standards due to legal requirements
- Consideration of issues in the production process related to fair trade
- Reorienting production towards producing clothes that are more expensive, but much better in terms of quality
- Reorientation of production towards the production of more expensive, high quality fabrics
- Introduction and development of digital solutions that allow you to measure clothes remotely and personalize them before the production stage
- Finding local suppliers of materials due to shortening supply chains.
- Counteracting greenwashin
- the inflow of workers from Ukraine has decreased
- there are no visible Polish brands on the international stage (weak brand significance)
-

THREATS

- Stabilization of the industry will be based on maintaining a balance between customer expectations and the industry's economic situation.
- implementation of new technological solutions will not be common in the industry, and it will not generate much demand for specialists in the field new technologies
- The lack of response of the Polish fashion and textile industry to market needs will lead to its gradual shrinkage, and thus to the lack of interest in educating new generations of employees in this field.
- Balance of competencies (competence mismatch, competence gap and changing the meaning of competences in the future)
- Companies see no point in developing an employee to fulfill their career path
- current Energy and Gas prices have increased, which is a potential threat

CONCLUSIONS AND RECOMMENDATIONS

In the transformation of the fashion sector, the most important thing is to build awareness - both among consumers and creators. Without a full understanding of the impact of the clothing and textile industry on various areas of our lives, it is difficult to have the motivation and effort necessary to make the necessary changes.

The language of benefits is also important. Consumers should understand that responsible consumption is not only about a smaller water and carbon footprint and concern for workers' rights. There are also numerous personal benefits, e.g. health

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(avoiding harmful chemicals and microplastics) or economic (savings thanks to thoughtful purchases, also in the second cycle).

Grassroots consumer pressure and new, extremely necessary regulations at the EU level also force changes in companies and the way they educate future staff. We urgently need ecological education at every level of science and business, because preventing a climate catastrophe and adapting to climate change require a revision of all our everyday decisions. Both business and consumer ones.

Sustainable fashion can no longer be a niche alternative to conventional fashion, but must become the new normal. Meanwhile, changing the linear fashion model to a circular one requires a completely different way of designing, producing, consuming and communicating.

Encourage students to think about clothing design as a creative way to solve the world's most pressing problems:

• Not agreeing to waste resources can be a point starting points for developing "zero waste" techniques in construction clothing.

• The answer to biodiversity protection will be environmental protection houses a selection of certified, sustainably sourced raw materials sources (to reduce the risk of deforestation, contamination water or soil).

• We can treat mountains of clothing waste as islands treasures, basing their activities on upcycling.

• Sensitivity to social issues, e.g. menstruation poverty ation in Africa, can give rise to social sewing companies and clothing brands that support women in accessing education and achieving financial independence.

• Repair services, tailoring and creative alteration of clothes and accessories can be an expression of rebellion against the disposability and mediocrity in fashion.

All these solutions, of course, still require great design, knowledge of the market and customers, and strict rules of entrepreneurship. However, the businesses of the future are those built on values that can be communicated loudly based on radical transparency instead of greenwashing.

KEY AREAS OF SUSTAINABILITY IN THE INDUSTRY

SKILL / COMPETENCE	RANK				
Sustainable materials Use of recycled, organic, or renewable materials to reduce the environmental impact	1	2	3	**4**	5
Eco-efficient manufacturing processes Implementation of technologies and practices that reduce the consumption of energy, water, and greenhouse gas emissions during the production	1	2	**3**	4	5

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Sustainable design Development of products that maximize durability, separability, and removability at end-of life	1	2	3	4	**5**
Sustainable logistics and transportation Optimization of transportation operations to reduce carbon emissions and minimize social impact	1	2	**3**	4	5
Corporate social responsibility Commitment to ethical and responsible business practices, including transparency in the supply chain and positive contribution to local communities and the environment	1	**2**	3	4	5
Education and awareness raising Promotion of sustainability awareness among consumers, employees, and other stakeholders, as well as education on the importance of making responsible purchasing decisions	1	2	**3**	4	5
Environmental management Have a sound knowledge of environmental regulations, sustainability standards and best practices in environmental management, as well as the skills to develop and implement environmental policies and programs	1	2	3	**4**	5
Critical thinking and problem solving Be able to analyse complex problems related to sustainability and find creative and viable solutions that balance the economic, environmental and social needs of the company.	1	2	**3**	4	5

KEY AREAS OF DIGITALIZATION AND TECHNOLOGICAL INNOVATION	RANK				
Additive manufacturing Integration of additive manufacturing techniques, such as 3D visualisation	1	2	**3**	4	5
Intelligent manufacturing Implementation of automated and connected production systems, such as networked manufacturing and collaborative robotics, to increase the efficiency, flexibility, and responsiveness of manufacturing operations	1	2	**3**	4	5
Augmented Reality (AR) and Virtual Reality (VR) Application of AR and VR technologies to enhance the online shopping experience, allowing customers to virtually view and try products before making a purchase	1	**2**	3	4	5
Sustainability and traceability Development of technological solutions to monitor and manage more efficiently the processes related to sustainability and traceability of products, from raw materials to the final consumer	1	2	**3**	4	5

TRAINING NEED

SKILL / COMPETENCE	RANK				
Artificial intelligence (AI) and machine learning Understand the basic concepts of AI and machine learning and their application in the TCLF sector, such as product recommendation systems, predictive analysis of fashion trends, and optimization of production processes	1	2	**3**	4	5
Innovative research Research and development projects within the country, own technologies and research in innovative fabrics, recycling and eco textiles	1	2	3	**4**	5

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CLOTHING

STRENGTHS

- The number of Polish clothing brands in the country is increasing, opening their own small productions and promoting their own brand for everyday use.
- There is great interest among young people in designing clothes and they engage in various fashion-related activities. In Poland, there are design headquarters of such mothers as LPP and 4F, which employ a large number of local designers.
- There is greater awareness of companies using the sustainable development method to produce clothes
- More and more companies with luxury products manufactured in Europe are being established on the Polish market.
- Due to emigration caused by the war in Ukraine, the number of people looking for work in the clothing sector increased
- the inflow of workers from the Philippines and Colombia has increased

OPPORTUNITIES

- Development of modern technologies for the modernization of clothing production. Potential for work automation and efficiency improvement
- Specific and strict regulations regarding the use of recycled materials and components.
- Education of qualified specialists to increase premium products and recycled products.
- Poland has its own high-quality clothing industry zone, which uses its own raw materials and is competitive with low-quality products from Asia.

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WEAKNESSES

- The number of well-educated production workers is decreasing due to aging (constructors, technologists) and the interest of young people in performing production work is decreasing. The young generation does not want to engage in physical work and there is a shortage of specialists.
- Most large companies have unmodernized production and work on old equipment, which reduces the interest of local companies in cooperation.
- Small companies are unable to maintain good quality of production due to limited financial and production resources.
- Most companies do not have the knowledge and financial skills to be able to introduce closed-loop production technologies.
- Small companies are not able to offer good working conditions (remuneration, development) for new employees.
- the inflow of workers from Ukraine has decreased
- there are no visible Polish brands on the international stage (weak brand significance)

THREATS

- Small companies or factories cannot constantly develop and become competitive with companies that export cheap products from Asia to the Polish market. Sometimes they have a limited budget and cannot modernize productions
- The increase in raw material prices reduces the quality of goods, but it is not possible to reduce prices because production costs (employees, raw materials, logistics) are constantly increasing.
- More and more stringent national and European regulations, which make it impossible to quickly adapt to changes in small companies
- Investments in the production of ecological and compatible products are not always appreciated by the market.
- There are very few analyzes of trends, market and economic forecasts available that small companies can afford to train or train employees.
- The education system does not introduce new methods of teaching young people to do physical work. There are few institutions that educate good specialists in the clothing sector
- current Energy and Gas prices have increased, which is a potential threat

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CONCLUSIONS AND RECOMMENDATIONS

The younger generation's interest in learning professional professions and physical work is decreasing every year. Most young generations perceive this profession as not prestigious. Most people who took part in the focus group said that the number of well-educated workers in the clothing sector (tailor, designer, technologist) is decreasing on the market. If the young generation is interested in the fashion industry, most of them are interested in intellectual work and design. But these people are also not interested in standard learning methods, but are rather looking for new learning methods, which are few on the market.

The lack of interest of such people in professional professions is also caused by low remuneration, lack of personal development and lack of modernization of small and medium-sized enterprises. In turn, small companies are not able to offer attractive working conditions for a worker who has to be trained to meet their needs and requirements. Mostly, like the younger generation, companies are aware of climate change and agree to act in the use of ecological production methods and materials.

The SWOT analysis also shows that in Poland we have great potential to increase our own clothing production resources. There is interest from companies and educational units in introducing new production or education methods.

The main yet unsolved problems in training are:

- what methods of teaching the young generation will be most effective to increase their interests

- how to train young people in professional professions so as not to discourage them

- what training methods will be best for older employees if the company modernizes its production.

The main yet unsolved problems in production modernization are:

- No costs for company modernization

- Lack of a person who was only responsible for training or further training of employees

- Attractive working conditions for the young generation

Recommendations

Skills

- Introduction of new training methods and techniques using modern technologies

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- Vocational training for the young generation with the possibility of interactive internships

- Designated or international exchange for talented students in the field of internships on modern productions.

- Collaborating with productions to fill in real-world tactics from those in training

- Education in the field of 3D design, implementation and design of design lines.

- Education in the field of sustainable development and recycling.

- Introduction of subjects aimed at teaching new legal aspects in the field of sustainable development and ways of introducing these methods into the company.

- Modern laboratories for modernized productions in AR or 3D visualization.

- Compulsory training in CAD/CAM programs

Technology and modernization

- Organizing employee training courses

- Introduction of quality and product control methods

- Introducing attractive conditions for employees (training, self-development, remuneration)

- Assure customers that textile products are manufactured according to product/process certifications (GOTS, GRS, RAF, etc.).

- Ability to use the so-called technological tools addition

- "production", such as 3D printing, rapid prototyping, customized production

and component manufacturing

- Use the information received by the company's management systems on which you can prepare forecasts of costs, revenues and profit potential

- Identify and obtain (public) funding for Projects aimed at improving the environmental sustainability of processes/products and manage them.

- Analyze and monitor production activities and business processes based on green and blue economy principles.

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KEY AREAS OF SUSTAINABILITY IN THE INDUSTRY

Level of **IMPLEMENTATION**

SKILL / COMPETENCE	RANK				
Sustainable materials Use of recycled, organic, or renewable materials to reduce the environmental impact	1	**2**	3	4	5
Eco-efficient manufacturing processes Implementation of technologies and practices that reduce the consumption of energy, water, and greenhouse gas emissions during the production	1	2	**3**	4	5
Waste reduction Minimization of solid and liquid waste along the entire supply chain, including reuse and recycling of materials	1	**2**	3	4	5
Sustainable design Development of products that maximize durability, separability, and removability at end-of life	1	**2**	3	4	5
Ethical supply chain Ensuring fair and safe working conditions for workers at all stages of production, as well as the elimination of child labour and respect for human rights.	1	2	3	**4**	5
Sustainable logistics and transportation Optimization of transportation operations to reduce carbon emissions and minimize social impact	1	2	**3**	4	5
Corporate social responsibility Commitment to ethical and responsible business practices, including transparency in the supply chain and positive contribution to local communities and the environment	1	**2**	3	4	5
Education and awareness raising Promotion of sustainability awareness among consumers, employees, and other stakeholders, as well as education on the importance of making responsible purchasing decisions	1	**2**	3	4	5

TRAINING NEED

SKILL / COMPETENCE	RANK				
Knowledge of sustainability Understanding the fundamental principles of sustainability, including concepts such as circular economy, eco-design, waste management, energy efficiency and corporate social responsibility	1	2	3	**4**	5
Environmental management Have a sound knowledge of environmental regulations, sustainability standards and best practices in environmental management, as well as the skills to develop and implement environmental policies and programs	1	2	3	4	**5**
Life cycle analysis Ability to assess the environmental impact of products and processes throughout their life cycle, using life cycle analysis tools and methodologies to identify areas for improvement and optimization	1	2	3	4	**5**
Risk management and compliance Be aware of the risks associated with unsustainable practices and be aware of relevant environmental, labour and safety regulations and standards to ensure compliance	1	2	**3**	4	5

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Communication and awareness Skills to effectively communicate the company's sustainability objectives and commitments both internally and externally, as well as to raise awareness and educate employees, customers, and other stakeholders on sustainable practices	1	2	3	4	**5**
Project management Be able to plan, coordinate and execute sustainability-related projects, setting clear objectives, allocating adequate resources, and monitoring progress to ensure project success	1	2	**3**	4	5
Sustainable supply chain management Understand the importance of a sustainable supply chain and have skills to assess and improve supplier sustainability, as well as to establish collaborative and transparent supply chain relations	1	2	**3**	4	5
Innovation and creativity Encourage creativity and innovation in the search for sustainable solutions, including the development of more efficient and environmentally friendly products and processes.	1	2	3	4	**5**
Critical thinking and problem solving Be able to analyse complex problems related to sustainability and find creative and viable solutions that balance the economic, environmental and social needs of the company.	1	**2**	3	4	5
Collaboration and teamwork Work effectively as a team and collaborate with different departments and stakeholders to integrate sustainability into all areas of the company and promote a culture of sustainability throughout the organization.	1	2	**3**	4	5

KEY AREAS OF DIGITALIZATION AND TECHNOLOGICAL INNOVATION IN THE INDUSTRY

Level of **IMPLEMENTATION**

SKILL / COMPETENCE	RANK				
Computer Aided Design (CAD) Use of specialized software for the design of textile products, clothing, leather, footwear, and accessories, allowing for greater precision, speed and flexibility in the creative process.	1	**2**	3	4	5
Fast prototyping Use of technologies such as 3D printing for rapid product prototyping, facilitating design iteration and refinement prior to mass production	1	**2**	3	4	5
Additive manufacturing Integration of additive manufacturing techniques, such as 3D printing, into the production of components for footwear, apparel, and other accessories, enabling customization and on- demand production	1	2	**3**	4	5
Intelligent manufacturing Implementation of automated and connected production systems, such as networked manufacturing and collaborative robotics, to increase the efficiency, flexibility, and responsiveness of manufacturing operations	**1**	2	3	4	5

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Big data and predictive analytics Use of advanced data analytics to better understand market trends, forecast product demand, optimize the supply chain, and personalize the customer experience	1	2	**3**	4	5
Augmented Reality (AR) and Virtual Reality (VR) Application of AR and VR technologies to enhance the online shopping experience, allowing customers to virtually view and try products before making a purchase	**1**	2	3	4	5
Blockchain Implementation of blockchain technologies to improve traceability and transparency in the supply chain, guaranteeing the authenticity and provenance of materials used in the manufacture of TCLF products	1	**2**	3	4	5
Sustainability and traceability Development of technological solutions to monitor and manage more efficiently the processes related to sustainability and traceability of products, from raw materials to the final consumer	1	2	**3**	4	5

TRAINING NEED

SKILL / COMPETENCE	RANK				
Specific digital technologies Knowledge in the use and implementation of digital technologies specific to the TCLF sector, such as CAD/CAM systems for design and pattern making, production management software, augmented/virtual reality tools for product design and visualization, and supply chain management systems	1	2	3	4	**5**
Software development Software development and programming skills for the creation and customization of applications, e-commerce platforms, enterprise resource planning (ERP) systems and industry- specific data analysis tools	1	2	**3**	4	5
Data analytics Ability to collect, analyse and interpret data using data analytics and business intelligence tools to make informed decisions on marketing strategies, inventory management, demand forecasting and process optimization	1	2	**3**	4	5
Artificial intelligence (AI) and machine learning Understand the basic concepts of AI and machine learning and their application in the TCLF sector, such as product recommendation systems, predictive analysis of fashion trends, and optimization of production processes	1	2	3	4	**5**
Cybersecurity Cybersecurity expertise to protect sensitive data and company systems against cyber threats, ensuring the integrity and privacy of information	1	2	**3**	4	5
User experience (UX) and interface design Understand the principles of UX and interface design to develop intuitive and engaging digital platforms that improve customer experience and increase sales conversions	1	2	3	**4**	5
Digital transformation Ability to lead digital transformation projects in the company, identifying opportunities for improvement, implementing innovative technology solutions, and promoting a culture of innovation and change	1	2	3	4	**5**
Project management and collaboration	1	**2**	3	4	5

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Agile project management and teamwork skills to coordinate the implementation of technology solutions, ensuring that the established objectives are met in a timely manner					

PROJECT NAME Alliance for Cooperation on Digital and Circular Economy Skills for the TCLF sector across Europe

PROJECT ACRONYM
METASKILLS4TCLF

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LEATHER

Polish producers have been producing leather for industrial use for years, but every year the Polish leather industry is disappearing and becoming less and less competitive. We really had dozens of family businesses producing top-class leather, clothes and shoes, and today there are only companies left that simply found their way to survive. Surviving the crisis that has certainly hit the Polish leather industry, as sales of products from tannery plants have dropped significantly, at least when it comes to exporting goods outside the country. Of course, the leather industry is still doing well inside the country, because animal skins are an essential material for producers of clothes and accessories. But the enemy of our leather industry is neither falling exports nor internal wars. Ecologists have always been trying to prevent the development of this type of business, as they do everything to protect all species of animals from all possible threats. And such a threat to farm animals is, of course, the leather industry, which simply could not exist without farm animals.

It is impossible to write in any optimistic way about how the leather industry is developing in Poland, because it is simply not developing. In fact, it is in constant stagnation due to the fact that orders for leather and leather materials do not come from abroad but only from domestic clothing producers. It all depends on the fact that Polish animal skin is of really high quality, so its price does not allow for typical mass or rather wholesale export. It's more about maintaining domestic sales. And probably the best thing about all this is that there is no cure for this impasse that has been affecting the leather industry for years. It would be possible to significantly reduce the quality of leather and the quality of Polish tanning plants, but this can only be done to increase exports. However, then the quality of our Polish products will also have to be lowered. However, in order not to jinx in any way the development that may await the Polish leather industry, we will only write that everything may change in the coming years. Polish leather materials go primarily to domestic factories that produce luxury clothes and leather products. However, this makes everything work. Western producers of leather clothing prefer cheaper leather than Polish ones. For example, taking into account the Turkish industry, which is qualitatively superior to our Polish industry but is much more competitive in terms of prices. We just have to wait patiently for our chance and for our leather industry to be appreciated.

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STRENGTHS

- Crafts. Production of good quality leather for the production of textiles, footwear and accessories. A good quality product is produced and may be waste in the production of premium products. Various applications
- Production of high quality grades of leather with appropriate regulations imported from outside the EU
- Large products have final product certificates
- We have research units within the country that conduct research on materials produced in Poland
- Export of utility materials on the foreign market, mostly to European countries
- the inflow of workers from the Philippines and Colombia has increased

OPPORTUNITIES

- Domestic production of a product of very good quality
- Expansion and modernization of production plants
- Possibility to obtain EU funds, thanks to which it is possible to increase domestic production
- Increasing the competitiveness of production by modernizing plants
- Introduction of software to streamline the production cycle

WEAKNESSES

- Leather companies are less interested in closed circuit productions
- A decline in companies producing leather due to a decline in market interest in the domestic product.
- Regulations that could encourage sustainable practices. Development and use of products of biological origin
- Aging workforce, resulting in attrition
- High water consumption
- Failure to introduce digitization of production

THREATS

- The amount of good quality raw material is changing due to a decrease in the number of cattle raised
- Inflow of low-quality products from Turkey
- No modernization of production
- No new technologies are introduced in production
- High water consumption
- There is no specific strategy for waste management

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- The amount of good quality raw material is decreasing
- High logistic costs
- the inflow of workers from Ukraine has decreased
- there are no visible Polish brands on the international stage (weak brand significance)

- There is no desire to switch to a closedcircuit economy because it is quite an expensive solution
- current Energy and Gas prices have increased, which is a potential threat

CONCLUSIONS AND RECOMMENDATIONS

The tannery plants are outdated and underinvested, and the machinery and production process are not automated and the cost of human labour is still high. The last one was very dynamic. Due to the increase in the minimum wage, the cost structure of the tanneries was disrupted. There is tanning production fragmented and lack of economies of scale or good cost position to compete on the regional market.

The offered product mix is limited and does not meet customer needs. Also quality leather available in Poland leaves much to be desired and products must be based on the highest quality on the import of quality leather at high prices, which has a negative impact on competitiveness finished product. On the other hand, it results in an influx of very cheap, uncertified leather outside the EU. The supply of domestic leather is decreasing, and imports constitute over ¾ of the leather supply.

An additional problem is the high environmental pollution caused by water discharge industrial process. There are investments in closed circulation or improvement of wastewater treatment expensive and long lasting. Tanning in Poland has introduced virtually no significant innovations in terms of limiting the use of "aggressive chemicals" in the leather processing process or in terms of modifications tanning process in terms of reducing emissions into the environment or cost optimization. Due to the difficult working conditions in the tanning industry, there is little interest in working there profession and the lack of young, educated staff is very noticeable. It happens because vocational schools providing education in this field were closed down.

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KEY AREAS OF SUSTAINABILITY IN THE INDUSTRY

The sustainability areas listed below reflect the interconnected and multidimensional nature of sustainability in the industry, highlighting the need to address not only environmental, but also social, economic, ethical, cultural, and technological aspects in order to achieve sustainable development.

SKILL / COMPETENCE	RANK				
Sustainable materials Use of recycled, organic, or renewable materials to reduce the environmental impact	1	2	**3**	4	5
Eco-efficient manufacturing processes Implementation of technologies and practices that reduce the consumption of energy, water, and greenhouse gas emissions during the production	1	**2**	3	4	5
Waste reduction Minimization of solid and liquid waste along the entire supply chain, including reuse and recycling of materials	1	2	**3**	4	5
Sustainable design Development of products that maximize durability, separability, and removability at end-of life	1	**2**	3	4	5
Corporate social responsibility Commitment to ethical and responsible business practices, including transparency in the supply chain and positive contribution to local communities and the environment	1	2	**3**	4	5
Education and awareness raising Promotion of sustainability awareness among consumers, employees, and other stakeholders, as well as education on the importance of making responsible purchasing decisions	1	2	3	**4**	5

SKILL / COMPETENCE	RANK				
Sustainability and traceability Development of technological solutions to monitor and manage more efficiently the processes related to sustainability and traceability of products, from raw materials to the final consumer	1	2	**3**	4	5
Knowledge of sustainability Understanding the fundamental principles of sustainability, including concepts such as circular economy, eco-design, waste management, energy efficiency and corporate social responsibility	1	2	**3**	4	5
Environmental management Have a sound knowledge of environmental regulations, sustainability standards and best practices in environmental management, as well as the skills to develop and implement environmental policies and programs	1	2	**3**	4	5
Life cycle analysis Ability to assess the environmental impact of products and processes throughout their life cycle, using life cycle analysis tools and methodologies to identify areas for improvement and optimization	1	2	**3**	4	**5**
Risk management and compliance Be aware of the risks associated with unsustainable practices and be aware of relevant environmental, labour and safety regulations and standards to ensure compliance	1	2	**3**	**4**	5

SKILL / COMPETENCE	RANK

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Communication and awareness Skills to effectively communicate the company's sustainability objectives and commitments both internally and externally, as well as to raise awareness and educate employees, customers, and other stakeholders on sustainable practices	1	2	3	**4**	5
Project management Be able to plan, coordinate and execute sustainability-related projects, setting clear objectives, allocating adequate resources, and monitoring progress to ensure project success	1	2	3	**4**	5
Sustainable supply chain management Understand the importance of a sustainable supply chain and have skills to assess and improve supplier sustainability, as well as to establish collaborative and transparent supply chain relations	1	2	3	**4**	5
Innovation and creativity Encourage creativity and innovation in the search for sustainable solutions, including the development of more efficient and environmentally friendly products and processes.	1	2	3	**4**	5
Critical thinking and problem solving Be able to analyse complex problems related to sustainability and find creative and viable solutions that balance the economic, environmental and social needs of the company.	1	2	3	4	**5**
Collaboration and teamwork Work effectively as a team and collaborate with different departments and stakeholders to integrate sustainability into all areas of the company and promote a culture of sustainability throughout the organization.	1	2	3	4	**5**

SKILL / COMPETENCE	RANK				
Software development Software development and programming skills for the creation and customization of applications, e-commerce platforms, enterprise resource planning (ERP) systems and industry- specific data analysis tools	1	2	3	**4**	5
Data analytics Ability to collect, analyse and interpret data using data analytics and business intelligence tools to make informed decisions on marketing strategies, inventory management, demand forecasting and process optimization	1	2	3	4	**5**
Internet of Things (IoT) Expertise in sensors and IoT devices applied to the TCLF industry to monitor production in real time, optimize operations efficiency, improve product quality, and deliver personalized customer experiences	1	2	3	4	**5**

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Additive manufacturing (3D printing) Familiarity with additive manufacturing technologies, such as 3D printing, for rapid prototyping, custom production and manufacturing of footwear and apparel components	1	2	3	4	**5**
Artificial intelligence (AI) and machine learning Understand the basic concepts of AI and machine learning and their application in the TCLF sector, such as product recommendation systems, predictive analysis of fashion trends, and optimization of production processes	1	2	3	**4**	5
Cybersecurity Cybersecurity expertise to protect sensitive data and company systems against cyber threats, ensuring the integrity and privacy of information	1	2	3	4	**5**
User experience (UX) and interface design Understand the principles of UX and interface design to develop intuitive and engaging digital platforms that improve customer experience and increase sales conversions	1	2	3	4	**5**
Digital transformation Ability to lead digital transformation projects in the company, identifying opportunities for improvement, implementing innovative technology solutions, and promoting a culture of innovation and change	1	2	3	**4**	5
Project management and collaboration Agile project management and teamwork skills to coordinate the implementation of technology solutions, ensuring that the established objectives are met in a timely manner	1	2	3	**4**	5

FOOTWEAR

STRENGTHS

- Easy to adapt. Fast response to requirements of the market.
- High qualified middle and senior technical staff able to train new workers.
- Most companies are able to produce customised products.
- Polish footwear is considered as durable and high quality.
- the inflow of workers from the Philippines and Colombia has increased

OPPORTUNITIES

- Potential to improve the level of technical advancement and ability to adopt new solutions related to IT.
- increasing number of jobs that do not require much manual work (greater attractiveness to young people).
- Possibility to take new economic niche. For example manufacture orthopaedic products.
- Increasing interest in education in design.

WEAKNESSES

- Low income margin.
- Insufficient financial resorces.
- Aging staff.
- Difficulties to attract younger employees
- due to low salaries, tedious, manual work.
- inability to compete on price with competitors from countries with cheap labour.
- No schools for workers in the leather sector
- the inflow of workers from Ukraine has decreased
- there are no visible Polish brands on the international stage (weak brand significance)
-

THREATS

- Green deal" which favours producers outside EU.
- Uncontrolled import of goods from countries of low labour costs.
- Financial support is aimed at other, more "innovative" sectors
- current Energy and Gas prices have increased, which is a potential threat

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CONCLUSIONS AND RECOMMENDATIONS

The Focus Group gathered the representatives of 2 footwear companies, one VET/HE provider. One participant represents both footwear manufacturers as well as association.

During the meeting, the Project and its objectives were presented, and the main results of the online survey were discussed.

In the second part there were asked questions related to the status of Polish footwear sector.

One should mention, that in Poland most of companies belong to micro companies. There is vary variable level of technical advancement. Most micro companies have basic equipment, whereas some companies, including medium have got the most advanced equipment, and digitalised control systems.

The interlocutors pointed out several problems they face up. It relates foremost to the lack of new, young workers who would replace the old one. There is a problem with education, most companies are training new workers by themselves but there is a problem that only a fraction of workers continues their carrier in the footwear sector. The previous initiatives to attract new workers have failed, for example a project to provide the beginners with scholarship funds. The hopes that immigrants will supplement local workforce were futile. It due to fact that most immigrants prefer other sectors (just like Poles) and additionally, most manufacturing plants are located in small villages where there is a limited availability of accommodation.

The additional problem is a very low profit margin of the activity. It determines both reluctance for investments in new technologies as well as low salaries, which in turn additionally reduces attractiveness of the sector.

The next problem to solve is huge competition, both official by big retail networks producing in low cost countries as well as uncontrolled import of various goods from these countries. Regarding the big retailers. The started to get rid off small companies, both manufacturers as well as shops from the market. In this there is a vicious circle: less shops – less places to sell shoes by small manufacturers – less manufacturers. The efforts to substitute the traditional sale by internet sale is at the moment standard, but for small companies it generates huge amount of costs.

Companies want to implement new technologies but are unable to do so due to limited finances as well as inability to employ employees of high competences in digitization and generally in implementation of new technologies. In this case it would be beneficial if there were independent freelancers who would support shoe companies in these activities.

There is a need to provide efficient tools for traceability. Polish producers do not trust suppliers of materials from EU since regardless of nationality of supplier, it often turns out that the material comes from outside Europe.

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SKILL / COMPETENCE	RANK					COMMENTS ON THE RANKING / ON THE COMPETENCE
Staff Is it difficult to find employees with appropriate (required) experience in the footwear industry? how are you dealing with this?	1	**2**	3	4	**5**	It is a huge problem. There is no method. They take everybody willing to work. Immigrants, due to specificity of the work are not considered a solution.
Staff Is retirement of experienced employees a problem? How do companies in your industry deal with the retirement of experienced employees? How do they increase the competences of younger employees?	1	2	**3**	4	**5**	Training young workers by its own
Digitization Are footwear companies taking advantage of the digitalization of the supply chain, or does it affect the overall efficiency of the company?	1	**2**	3	4	5	For small companies digitization of supply chain is not as important as in case of big.
Environment Do environmental, health and safety regulations significantly influence changes in the footwear industry? How to deal with them?	1	**2**	**3**	4	5	The issue is important but generates only additional costs. Most producers do only this which is required by the law.
Environment Does the footwear industry impact the natural environment? How to deal with it? What are the effects of this influence?	1	**2**	3	**4**	5	he general belief is that the effect of footwear industry on environment is low. However most aspects is not known.
Economy Do fluctuations in raw material prices or changes in interest rates affect the footwear industry? How and how to deal with it?	1	2	**3**	4	**5**	2 approaches: -to buy in advance when price is low. -adjust fin
Technology Does automation have a positive impact on production processes in footwear companies?	1	**2**	3	**4**	5	
Market Are demographic changes and lifestyle changes affecting footwear companies? How can you adapt to these changes?	**1**	2	**3**	4	5	
Sustainable materials Use of recycled, organic, or renewable materials to reduce the environmental impact	1	**2**	**3**	4	5	Generally only recycled paper as boxes
Eco-efficient manufacturing processes Implementation of technologies and practices that reduce the consumption of energy, water, and greenhouse gas emissions during the production	1	**2**	**3**	4	5	Better insulation, fotovoltaic systems
Waste reduction Minimization of solid and liquid waste along the entire supply chain, including reuse and recycling of materials	**1**	2	3	4	**5**	They reduce it as much possible in purpose to reduce costs of purchase of materials and waste management
Sustainable design Development of products that maximize durability, separability, and removability at end-of life	1	**2**	3	4	**5**	Nothing new in footwear sector. Improvement of effectiveness

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						of cutting by use of proper patterns has been a standard for years.
Corporate social responsibility Commitment to ethical and responsible business practices, including transparency in the supply chain and positive contribution to local communities and the environment	1	2	3	4	5	It an expensive „toy" for big players, and is not reliable

TEXTILE

STRENGTHS

- Industry resilience
- Young people - greater adaptability to the fields of digitalisation
- Rapid response in scientific knowledge
- Knowledge of industrial processes
- Flexibility and quick response
- Capacity to innovate/evolve
- Collaborative network with organisations from the scientific and technological system
- Established partnerships
- Integrated cluster bringing together various services
- *Made in Portugal* is increasingly valued by international clients

OPPORTUNITIES

- New markets & new brands
- New materials
- Emerging technologies (AI, AR, VR)
- Machine learning
- New production processes
- New occupations
- Industry's changing image
- New business models
- New training programmes more focused on practice and the new needed skills
- Continous sharing industrial good practice
- Bringing academia and industry closer together
- *Made in Portugal* is increasingly valued by international clients

WEAKNESSES

- Lack of technical expertise in emerging areas of digitalisation (AI, AR, VR)
- Resistance to change and resistance to the integration of highly qualified staff
- High % of employees close to retirement age
- Behaviour of new generations (high expectations, lack of commitment)
- Lack of environmental culture
- Difficulty in attracting and retaining talent due to low salaries
- Efficient monitoring technology solutions
- Difficulty in communicating internally/lack of balanced coverage of sustainability commitments

THREATS

- Replacement of jobs by AI
- Loss of skilled workers
- Young people undervalue the value of textile occupations
- Economic instability and global security
- Too many regulations
- SME's lack of capacity to invest in new equipment and technologies
- Economic crisis
- Imminence of war

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CLOTHING

STRENGTHS

- Essential goods industry
- Capacity to articulate between different agents in the value chain
- Integrated service with high added value
- Collaborative network with organisations from the scientific and technological system
- Differentiation through quality and innovation
- Integrated cluster bringing together various services
- *Made in Portugal* is increasingly valued by international clients
- Personalisation

OPPORTUNITIES

- New markets
- New materials
- New occupations
- Industry's changing image
- New business models
- New training programmes more focused on practice
- More personalised marketing actions
- Bringing academia and industry closer together
- *Made in Portugal* is increasingly valued by international clients
- Increased demand for clothes made from sustainable materials and produced responsibly

WEAKNESSES

- Lack of technical expertise in emerging areas of digitalisation (AI, AR, VR)
- Resistance to change and the integration of highly qualified staff
- High % of employees close to retirement age
- Behaviour of new generations (high expectations, lack of commitment)
- Lack of people/recruitment - mainly in the production área
- Lack of environmental culture
- Difficulty in attracting and retaining talent due to low salaries and new ways of looking to work
- Efficient monitoring technology solutions
- Difficulty in communicating internally/lack of balanced coverage of sustainability commitments
- Difficulty in effectively communicating the product/s to the consumer
- Lack of knowledge of applicable legislation
- High commercial dependency

THREATS

- Replacement of jobs by AI
- Staying competitive with current legislation
- Consumer - duality - more conscious - more fast fashion
- Society of speed - may quickly lose competitive advantage
- Loss of skilled workers
- Young people undervalue the value of clothing occupations
- Lack of surveillance / inspection at the community market
- Economic instability and global security
- Economic crisis
- Fast fashion cycle

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- Environmental impacts

CONCLUSIONS AND RECOMMENDATIONS

This process of revalidating results began with an individual analysis of the results obtained previously. Participants are internal CITEVE's experts with experience in the textile and clothing sectors. They have analysed the previously identified strengths, weaknesses, opportunities and threats for the textile and clothing sectors, in the light of any changes that have occurred at different levels: economic, political and social.

Each member had time to review the document and register any comments deemed relevant in light of any changes that had occurred between the drafting of the first document and its revalidation.

So, first of all, a circumstantial analysis was made:

- in terms of Markets - *have new trends emerged? has new competition been identified?*
- in the Business Context - *have new products emerged? has there been any growth? has there been a downturn?*
- in terms of Society - *have any new challenges been identified? has there been an economic crisis? have new regulations been imposed on the sector?*

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The second phase of the process consisted of a group meeting with these same members, in which each shared any suggestions for changes they considered relevant.

This sharing resulted in the addition of a few points in the different quadrants of the swot analysis, for both the textile and clothing sectors.

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KEY AREAS OF SUSTAINABILITY IN THE INDUSTRY

Level of **IMPLEMENTATION**

SKILL / COMPETENCE	RANK				
Sustainable materials Use of recycled, organic, or renewable materials to reduce the environmental impact	1	2	**3**	4	5
Eco-efficient manufacturing processes Implementation of technologies and practices that reduce the consumption of energy, water, and greenhouse gas emissions during the production	1	2	**3**	4	5
Waste reduction Minimization of solid and liquid waste along the entire supply chain, including reuse and recycling of materials	1	**2**	3	4	5
Sustainable design Development of products that maximize durability, separability, and removability at end-of life	1	2	3	4	5
Ethical supply chain Ensuring fair and safe working conditions for workers at all stages of production, as well as the elimination of child labour and respect for human rights.	1	2	3	4	**5**
Sustainable logistics and transportation Optimization of transportation operations to reduce carbon emissions and minimize social impact	1	2	3	4	**5**
Corporate social responsibility Commitment to ethical and responsible business practices, including transparency in the supply chain and positive contribution to local communities and the environment	1	**2**	3	4	5
Education and awareness raising Promotion of sustainability awareness among consumers, employees, and other stakeholders, as well as education on the importance of making responsible purchasing decisions	1	2	3	**4**	5

TRAINING NEED

SKILL / COMPETENCE	RANK				
Knowledge of sustainability Understanding the fundamental principles of sustainability, including concepts such as circular economy, eco-design, waste management, energy efficiency and corporate social responsibility	1	2	3	4	**5**
Environmental management Have a sound knowledge of environmental regulations, sustainability standards and best practices in environmental management, as well as the skills to develop and implement environmental policies and programs	1	2	3	4	**5**
Life cycle analysis Ability to assess the environmental impact of products and processes throughout their life cycle, using life cycle analysis tools and methodologies to identify areas for improvement and optimization	1	2	3	4	**5**
Risk management and compliance	1	2	3	4	**5**

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Be aware of the risks associated with unsustainable practices and be aware of relevant environmental, labour and safety regulations and standards to ensure compliance					
Communication and awareness Skills to effectively communicate the company's sustainability objectives and commitments both internally and externally, as well as to raise awareness and educate employees, customers, and other stakeholders on sustainable practices	1	2	3	4	**5**
Project management Be able to plan, coordinate and execute sustainability-related projects, setting clear objectives, allocating adequate resources, and monitoring progress to ensure project success	1	**2**	3	4	5
Sustainable supply chain management Understand the importance of a sustainable supply chain and have skills to assess and improve supplier sustainability, as well as to establish collaborative and transparent supply chain relations	1	2	3	**4**	5
Innovation and creativity Encourage creativity and innovation in the search for sustainable solutions, including the development of more efficient and environmentally friendly products and processes.	1	2	**3**	4	5
Critical thinking and problem solving Be able to analyse complex problems related to sustainability and find creative and viable solutions that balance the economic, environmental and social needs of the company.	1	2	3	**4**	5
Collaboration and teamwork Work effectively as a team and collaborate with different departments and stakeholders to integrate sustainability into all areas of the company and promote a culture of sustainability throughout the organization.	1	2	3	4	**5**

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KEY AREAS OF DIGITALIZATION AND TECHNOLOGICAL INNOVATION IN THE INDUSTRY

Level of **IMPLEMENTATION**

SKILL / COMPETENCE	RANK				
Computer Aided Design (CAD) Use of specialized software for the design of textile products, clothing, leather, footwear, and accessories, allowing for greater precision, speed and flexibility in the creative process.	1	2	3	4	**5**
Fast prototyping Use of technologies such as 3D printing for rapid product prototyping, facilitating design iteration and refinement prior to mass production	1	**2**	**3**	4	5
Additive manufacturing Integration of additive manufacturing techniques, such as 3D printing, into the production of components for footwear, apparel, and other accessories, enabling customization and on- demand production	1	2	**3**	4	5
Internet of Things (IoT) Incorporation of sensors and smart devices into textile and apparel products to collect data on usage, performance, and user interaction, facilitating customization and continuous product improvement	1	2	**3**	**4**	5
Intelligent manufacturing Implementation of automated and connected production systems, such as networked manufacturing and collaborative robotics, to increase the efficiency, flexibility, and responsiveness of manufacturing operations	1	2	3	**4**	5
Big data and predictive analytics Use of advanced data analytics to better understand market trends, forecast product demand, optimize the supply chain, and personalize the customer experience	1	2	**3**	4	5
Augmented Reality (AR) and Virtual Reality (VR) Application of AR and VR technologies to enhance the online shopping experience, allowing customers to virtually view and try products before making a purchase	1	2	**3**	**4**	5
Blockchain Implementation of blockchain technologies to improve traceability and transparency in the supply chain, guaranteeing the authenticity and provenance of materials used in the manufacture of TCLF products	1	2	3	**4**	5
Sustainability and traceability Development of technological solutions to monitor and manage more efficiently the processes related to sustainability and traceability of products, from raw materials to the final consumer	1	2	3	**4**	**5**

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TRAINING NEED

SKILL / COMPETENCE	RANK				
Specific digital technologies Knowledge in the use and implementation of digital technologies specific to the TCLF sector, such as CAD/CAM systems for design and pattern making, production management software, augmented/virtual reality tools for product design and visualization, and supply chain management systems	1	2	3	**4**	5
Software development Software development and programming skills for the creation and customization of applications, e-commerce platforms, enterprise resource planning (ERP) systems and industry- specific data analysis tools	1	**2**	3	4	5
Data analytics Ability to collect, analyse and interpret data using data analytics and business intelligence tools to make informed decisions on marketing strategies, inventory management, demand forecasting and process optimization	1	2	3	**4**	5
Internet of Things (IoT) Expertise in sensors and IoT devices applied to the TCLF industry to monitor production in real time, optimize operations efficiency, improve product quality, and deliver personalized customer experiences	1	2	3	4	**5**
Additive manufacturing (3D printing) Familiarity with additive manufacturing technologies, such as 3D printing, for rapid prototyping, custom production and manufacturing of footwear and apparel components	1	2	3	**4**	5
Artificial intelligence (AI) and machine learning Understand the basic concepts of AI and machine learning and their application in the TCLF sector, such as product recommendation systems, predictive analysis of fashion trends, and optimization of production processes	1	2	**3**	4	5
Cybersecurity Cybersecurity expertise to protect sensitive data and company systems against cyber threats, ensuring the integrity and privacy of information	1	2	3	**4**	5
User experience (UX) and interface design Understand the principles of UX and interface design to develop intuitive and engaging digital platforms that improve customer experience and increase sales conversions	1	2	**3**	4	5
Digital transformation Ability to lead digital transformation projects in the company, identifying opportunities for improvement, implementing innovative technology solutions, and promoting a culture of innovation and change	1	2	3	4	**5**
Project management and collaboration Agile project management and teamwork skills to coordinate the implementation of technology solutions, ensuring that the established objectives are met in a timely manner	1	2	3	4	**5**

Caption:

Yellow – previous (which can also mean that it is considered to be maintained)

Blue - reviewed

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FOOTWEAR

STRENGTHS

- Strong knowledge about the industry;
- Concentration of the Companies in São João da Madeira;
- Good network of Companies that make up the entire cluster in a short geographic space;
- High level of exportations;
- Variety of training programmes;
- Advanced equipment;
- VET providers invest to be able to offer training more in line with the state-of-art technology and the companies' needs;
- Companies that bet on new technologies as a calling factor to attract new corners;
- Close contact of entities with Education institutions or training centres to enhance workers' skills.

WEAKNESSES

- The negative stigma about the sector and lack of attractiveness;
- Leadership, communication and computer difficulties inside companies;
- Sustainability duality between natural leathers and vegan ones;
- Employers don't want more responsability – they are already overwhelmed with tasks.
- Lack of specific competences in trainers;
- Difficulties in finding innovative training offer;
- Insufficient generation renewal;
- Lack of technology training to keep the processes updated.

OPPORTUNITIES

- Alliances that could emerge between Companies, schools and town hall to promote training in schools;
- Motivate kids and young adults towards the possibilities in the sector combined with new technologies;
- Update skills for people who are unemployed and prepare them for new opportunities;
- The National Catalogue of Qualifications is being updated, and will offer new opportunities of training;
- The use of technology as a key to attract new comers.

THREATS

- Aging workers;
- Young people don't want to work in the sector;
- Climate changes;
- Increase of professional courses provided by the schools use to compete with the ones offered by the VET centres.
- Lack of trained trainers to teach more technical parts.

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LEATHER

STRENGTHS

- Keep trainig programs up do date;
- More training for those already employed;
- Alternative materials to leather are capturing the attention of new consumers (associated with sustentability);
- Campaigns to attract new comers near schools and VET centres already in place to abolish the bad image of the sector and its products.

WEAKNESSES

- Wrong idea that animals are killed to use their skins in the industry;
- Difficulty in attracting and creating new classes of the younger generation to be trained;
- Lack of technology training to keep the processes updated.

OPPORTUNITIES

- Clarification and training actions with schools and training entities to demystify the idea of the sector and the product itself (leather);
- Campaign to highlight the value of leather as a durable and a sustainable product;
- Raise awareness and change mentalities and ideas in the medium-term.

THREATS

- Lack of information about the origin of the materials;
- Lack of trained trainers to teach more technical parts.

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CONCLUSIONS AND RECOMMENDATIONS

The SWOT is a revalidating of the data collected previously and must be updated each year. This analysis is like the previous one and was based in a questionnaire to the CTCP's partners and clients. It reveals a great number of strengths and opportunities for footwear as well as for leather sectors. In the first one, we can emphasize the strong knowledge about the industry, high level of exportations, investment in advanced equipment, variety of training programmes and increase the articulation between schools and VET centres and companies. On the other one, the training programmes that are kept up to date, the alternative materials to leather that are capturing the attention of new consumers and clarification and training actions in schools.

The weaknesses and threats that must be worked on are mostly the negative stigma about the TCLF sector, the lack of specific competences in trainers, the aging workers, climate changes and pre-conceived ideas about how leather is obtained and its origin.

In conclusion, for both footwear and leather, is important to keep increasing their attractiveness, by using new technologies and appropriate training programmes. Clarification sessions must be helpful too to explain some details about the sector that are not always talked about. Therefore, the main goal is keeping up with the positive evolution of the sector, mainly in skills and technologies, with highly qualified workers and new talents, in order to rejuvenate the sector and make it last for many years.

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KEY AREAS OF SUSTAINABILITY IN THE INDUSTRY

Level of **IMPLEMENTATION**

SKILL / COMPETENCE	RANK				
Sustainable materials Use of recycled, organic, or renewable materials to reduce the environmental impact	1	2	**3**	4	5
Eco-efficient manufacturing processes Implementation of technologies and practices that reduce the consumption of energy, water, and greenhouse gas emissions during the production	1	2	**3**	4	5
Waste reduction Minimization of solid and liquid waste along the entire supply chain, including reuse and recycling of materials	1	**2**	3	4	5
Sustainable design Development of products that maximize durability, separability, and removability at end-of life	1	2	3	4	5
Ethical supply chain Ensuring fair and safe working conditions for workers at all stages of production, as well as the elimination of child labour and respect for human rights.	1	2	3	4	**5**
Sustainable logistics and transportation Optimization of transportation operations to reduce carbon emissions and minimize social impact	1	2	3	4	**5**
Corporate social responsibility Commitment to ethical and responsible business practices, including transparency in the supply chain and positive contribution to local communities and the environment	1	**2**	3	4	5
Education and awareness raising Promotion of sustainability awareness among consumers, employees, and other stakeholders, as well as education on the importance of making responsible purchasing decisions	1	2	3	**4**	5

TRAINING NEED

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SKILL / COMPETENCE	RANK				
Knowledge of sustainability Understanding the fundamental principles of sustainability, including concepts such as circular economy, eco-design, waste management, energy efficiency and corporate social responsibility	1	2	3	4	**5**
Environmental management Have a sound knowledge of environmental regulations, sustainability standards and best practices in environmental management, as well as the skills to develop and implement environmental policies and programs	1	2	3	4	**5**
Life cycle analysis Ability to assess the environmental impact of products and processes throughout their life cycle, using life cycle analysis tools and methodologies to identify areas for improvement and optimization	1	2	3	4	**5**
Risk management and compliance Be aware of the risks associated with unsustainable practices and be aware of relevant environmental, labour and safety regulations and standards to ensure compliance	1	2	3	4	**5**
Communication and awareness Skills to effectively communicate the company's sustainability objectives and commitments both internally and externally, as well as to raise awareness and educate employees, customers, and other stakeholders on sustainable practices	1	2	3	4	**5**
Project management Be able to plan, coordinate and execute sustainability-related projects, setting clear objectives, allocating adequate resources, and monitoring progress to ensure project success	1	**2**	3	4	5
Sustainable supply chain management Understand the importance of a sustainable supply chain and have skills to assess and improve supplier sustainability, as well as to establish collaborative and transparent supply chain relations	1	2	3	**4**	5
Innovation and creativity Encourage creativity and innovation in the search for sustainable solutions, including the development of more efficient and environmentally friendly products and processes.	1	2	**3**	4	5
Critical thinking and problem solving Be able to analyse complex problems related to sustainability and find creative and viable solutions that balance the economic, environmental and social needs of the company.	1	2	3	**4**	5
Collaboration and teamwork Work effectively as a team and collaborate with different departments and stakeholders to integrate sustainability into all areas of the company and promote a culture of sustainability throughout the organization.	1	2	3	4	**5**

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KEY AREAS OF DIGITALIZATION AND TECHNOLOGICAL INNOVATION IN THE INDUSTRY

Level of **IMPLEMENTATION**

SKILL / COMPETENCE	RANK				
Computer Aided Design (CAD) Use of specialized software for the design of textile products, clothing, leather, footwear, and accessories, allowing for greater precision, speed and flexibility in the creative process.	1	2	3	4	**5**
Fast prototyping Use of technologies such as 3D printing for rapid product prototyping, facilitating design iteration and refinement prior to mass production	1	2	3	4	5
Additive manufacturing Integration of additive manufacturing techniques, such as 3D printing, into the production of components for footwear, apparel, and other accessories, enabling customization and on- demand production	1	2	**3**	4	5
Internet of Things (IoT) Incorporation of sensors and smart devices into textile and apparel products to collect data on usage, performance, and user interaction, facilitating customization and continuous product improvement	1	2	**3**	4	5
Intelligent manufacturing Implementation of automated and connected production systems, such as networked manufacturing and collaborative robotics, to increase the efficiency, flexibility, and responsiveness of manufacturing operations	1	2	3	**4**	5
Big data and predictive analytics Use of advanced data analytics to better understand market trends, forecast product demand, optimize the supply chain, and personalize the customer experience	1	2	**3**	4	5
Augmented Reality (AR) and Virtual Reality (VR) Application of AR and VR technologies to enhance the online shopping experience, allowing customers to virtually view and try products before making a purchase	1	2	**3**	4	5

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Blockchain Implementation of blockchain technologies to improve traceability and transparency in the supply chain, guaranteeing the authenticity and provenance of materials used in the manufacture of TCLF products	1	2	3	**4**	5
Sustainability and traceability Development of technological solutions to monitor and manage more efficiently the processes related to sustainability and traceability of products, from raw materials to the final consumer	1	2	3	**4**	**5**

TRAINING NEED

SKILL / COMPETENCE	RANK				
Specific digital technologies Knowledge in the use and implementation of digital technologies specific to the TCLF sector, such as CAD/CAM systems for design and pattern making, production management software, augmented/virtual reality tools for product design and visualization, and supply chain management systems	1	2	3	**4**	5
Software development Software development and programming skills for the creation and customization of applications, e-commerce platforms, enterprise resource planning (ERP) systems and industry- specific data analysis tools	1	**2**	3	4	5
Data analytics Ability to collect, analyse and interpret data using data analytics and business intelligence tools to make informed decisions on marketing strategies, inventory management, demand forecasting and process optimization	1	2	3	**4**	5
Internet of Things (IoT) Expertise in sensors and IoT devices applied to the TCLF industry to monitor production in real time, optimize operations efficiency, improve product quality, and deliver personalized customer experiences	1	2	3	4	**5**
Additive manufacturing (3D printing) Familiarity with additive manufacturing technologies, such as 3D printing, for rapid prototyping, custom production and manufacturing of footwear and apparel components	1	2	3	**4**	5
Artificial intelligence (AI) and machine learning Understand the basic concepts of AI and machine learning and their application in the TCLF sector, such as product recommendation systems, predictive analysis of fashion trends, and optimization of production processes	1	2	**3**	4	5
Cybersecurity Cybersecurity expertise to protect sensitive data and company systems against cyber threats, ensuring the integrity and privacy of information	1	2	3	**4**	5
User experience (UX) and interface design Understand the principles of UX and interface design to develop intuitive and engaging digital platforms that improve customer experience and increase sales conversions	1	2	**3**	4	5
Digital transformation Ability to lead digital transformation projects in the company, identifying opportunities for improvement, implementing innovative technology solutions, and promoting a culture of innovation and change	1	2	3	4	**5**
Project management and collaboration Agile project management and teamwork skills to coordinate the implementation of technology solutions, ensuring that the established objectives are met in a timely manner	1	2	3	4	**5**

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SWOT Analysis of the TCF Sector

STRENGTHS

- Romania has a long tradition in the TCF industries, which has resulted in a skilled workforce with expertise in various aspects of manufacturing.
- Compared to Western European countries, laour and production costs in Romania are relatively lower, providing a cost advantage for footwear manufacturers.
- Romania's geographical location offers logistical advantages for exporting footwear, clothing, texiles to both Eastern and Western European markets.
- Access to high-quality leather and other materials for footwear production, both domestically and through imports, contributes to the production of durable and desirable products.
- Romania continues to provide vocational education and training (VET) for students interested in the footwear industry, alongside engineering programs. It stands out as one of the few countries in Europe offering a dedicated university program specifically tailored to footwear.
- The access to the competitive market for the companies from is also supported by a diversified range of products (yarns and fabrics), both for traditional textiles and technical textiles.
- The competitive advantage and international recognition, not only in the EU area, are mainly due to the product portfolio, the tradition in the specific market and even the affiliation to strong European groups of companies, but also to the consistency of maintaining and continuously providing a higher level of quality.

OPPORTUNITIES

- The TCF sector in Romania may lag behind in terms of innovation and technology adoption compared to some Western European counterparts, impacting product differentiation and competitiveness.
- Although improving, infrastructure limitations such as transportation networks and utilities may hinder efficient production and distribution processes.
- Romanian footwear brands may struggle with establishing strong international brand recognition compared to well-known global brands, which could limit market penetration beyond domestic and neighbouring markets.
- Despite access to quality materials, Romania may still rely on imports for certain specialized components or materials, which can expose manufacturers to supply chain disruptions and cost fluctuations.
- Concern for waste management creates opportunities for collaboration with partners involved in textile waste recycling and for launching research projects in partnership with companies producing chemical/synthetic yarns.
- The tightening of national and European regulations regarding process and product sustainability runs the risk of marginalizing small businesses unable to afford the necessary adaptations demanded by the evolving market standards.

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WEAKNESSES

- With the right marketing strategies and product differentiation, Romanian TCF manufacturers can tap into growing export markets, especially in Eastern Europe and emerging markets.
- The increasing popularity of e-commerce provides an opportunity for Romanian companies to reach a wider international audience and compete on a global scale.
- Embracing sustainable practices in production processes can attract environmentally conscious consumers and open doors to markets with strong sustainability preferences.
- The problem of technological waste is difficult to handle at the level of some of the companies. There are situations where the specific processing requires the use of chemical solutions to treat the materials destined for the technical/functional end use. Therefore, there are difficulties in sorting the waste, but also in identifying some solutions for its valorisation (including through outsourcing services).
- Forming partnerships with international retailers or distributors can facilitate access to new markets and enhance brand visibility and credibility globally.

THREATS

- Romanian TCF manufacturers face intense competition from both established international brands and emerging competitors from low-cost manufacturing countries, which can squeeze profit margins and market share.
- Fluctuations in global economic conditions, currency exchange rates, and consumer spending patterns can impact demand for products, affecting the sector's profitability.
- Changes in trade agreements, tariffs, or regulations related to labour, environmental standards, or product safety can add compliance costs and create uncertainties for Romanian TCF companies.
- The proliferation of counterfeit products, especially online, poses a threat to the reputation and market share of genuine Romanian TCF brands, undermining trust and revenue potential.
- The presence of an older workforce poses challenges in sourcing traditional skilled professionals, despite their indispensable role in clothing manufacturing.
- Younger individuals show reluctance towards engaging in traditional roles deemed unappealing due to the demanding nature of the work, involving inconvenient hours and conditions that are often dirty, noisy, and occasionally hazardous to health.
- The increasing importance of some organisations or private bodies that take on the role of certification providers for various aspects related to sustainability, but do not always have the necessary legitimacy, sometimes represents an obstacle for the companies to sell products from their own portfolio in some markets.
- It is difficult to recognise the practise of greenwashing, especially because the raw material suppliers of most of the companies are from unmonitored markets (Asia, South Africa, etc.), but the customers are from Europe.
- Changes in the economic environment related to the vulnerability of political factors and the existence of several conflict zones in the global area led to unpredictability of raw material prices and affect the efficiency of most companies.

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CONCLUSIONS AND RECOMMENDATIONS

Conclusions:

The Romanian TCF sector possesses significant strengths such as a skilled workforce and access to quality materials. However, it faces challenges in international brand recognition and market penetration beyond domestic and neighboring markets.

Opportunities exist in leveraging e-commerce, sustainable practices, and international partnerships for growth.

The sector must address threats such as intense competition, economic fluctuations, regulatory changes, and the threat of counterfeit products.

The companies recognise the importance of digitalisation as a means of increasing efficiency in all areas (business, procurement, design, production, delivery), but also as a positive factor influencing sustainability. However, with a few exceptions, the current level of implementation is very low for various reasons.

Recommendations:

- Invest in Innovation and Technology: Emphasize innovation and technology adoption to enhance product differentiation and competitiveness.
- Strengthen Workforce Development: Address challenges in sourcing skilled professionals by investing in workforce development programs and appealing to younger individuals through improved working conditions and career prospects.
- Ongoing implementation of programmes to raise employee awareness of sustainability, starting with the importance of reducing textile waste.
- Continue and strengthen relations between textile companies and educational institutions (HEI and VET) to attract young professionals to the Textile sector by organising internships, proposing topics for bachelor and diploma theses, organising professional competitions in faculties and schools with a technological profile, etc.
- Expand International Presence: Develop strategies to enhance international brand recognition and penetrate new markets beyond domestic and neighboring ones.
- Diversify Supply Chain: Reduce reliance on imports by diversifying the supply chain and ensuring resilience against supply chain disruptions.

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- Adopt Sustainable Practices: Embrace sustainable production practices to attract environmentally conscious consumers and comply with evolving market standards.
- Monitor Regulatory Environment: Stay informed about regulatory changes and proactively adapt to comply with labor, environmental, and product safety standards to mitigate compliance risks.

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At AVECAL, we have conducted a comprehensive review of the latest developments in both the Textile and Footwear sectors, building upon our previous assessment for the WP3 Final Report. To ensure an accurate and up-to-date revalidation of the SWOT analyses for both industries, we leveraged a Board of Directors meeting, attended by representatives from various companies, as a platform for in-depth discussions.

This collaborative discussion group provided valuable insights, allowing us to reassess and refine the SWOT analyses originally developed by AVECAL last year. The revalidation process was informed by:

- The key drivers of change identified in April 2024.
- Findings from the latest online survey, capturing industry perspectives and emerging trends.
- Discussions held during the Board of Directors meeting, where industry representatives shared firsthand experiences, challenges, and strategic priorities shaping the sector.

The updated SWOT analyses, incorporating these insights, are presented in the following pages.

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TEXTILE

STRENGTHS

- **Growing need for digital skills**: Increased demand for advanced digital skills (AI, additive manufacturing, and digital design) highlights an opportunity for companies with skilled workforces.
- **Recognition of high-impact Technologies**: AI and automation are increasingly recognized as crucial for future sectoral competitiveness.

OPPORTUNITIES

- **Workforce upskilling and collaboration**: Moderate but increasing collaboration between businesses and educational institutions presents a chance to address skill shortages.
- **Sectoral transformation & job evolution**: With a great range of future jobs expected to require new skills in digitalization and sustainability, there is an opportunity for companies that invest in training and innovation.

WEAKNESSES

- **Persistent skills gap**: The sector faces a significant lack of specialized skills due to insufficient generational renewal, with critical gaps in workforce preparedness.
- **Limited technology adoption**: While digital technologies are acknowledged as important, their actual adoption remains low to moderate, creating a competitive disadvantage.
- **Low Retention of Young Talent**: Negative perceptions of career opportunities in the TCLF sector among young professionals' lead to challenges in attracting and retaining new talent.

THREATS

- **Aging workforce and talent attraction issues**: The sector continues to struggle with an aging workforce and a poor perception among young professionals, which threatens long-term sustainability.
- **Slow integration of sustainability in education**: Despite the growing importance of eco-friendly practices, sustainability competencies remain only moderately integrated into training programs, potentially affecting future compliance and competitiveness.

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FOOTWEAR

STRENGTHS

- The strengths outlined in April 2024 remain largely unchanged, including expertise in craftsmanship, high-quality materials, and a well-established global reputation.

OPPORTUNITIES

1. **Growing demand for sustainability measures**
   - More companies have prioritized circular economy practices, sustainable raw materials, and renewable energy sources as key investment areas.
   - Compliance with new sustainability regulations is also a major driver.
2. **Education sector slowly integrating sustainability and digitalization**
   - Some vocational training centres and universities are increasing the frequency of curriculum updates (e.g., from every 4-5 years to annually).
   - Digitalization and sustainability-related skills are becoming more embedded in educational programs.
3. **Future-proofing workforce via training investments**
   - More than 50% of companies acknowledge the need for sustainability training.
   - While the digital skills gap persists, some firms have begun investing in AI, digital supply chain management, and advanced manufacturing techniques.

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WEAKNESSES

1. **Aging workforce impact intensified**
   - Survey results indicate a higher perceived impact of an aging workforce, with multiple respondents rating it as “very high” or “high.”
   - This signals an increasing risk of skill gaps due to insufficient generational renewal.
2. **Persistent skill gaps in digitalization and sustainability**
   - A “critical” or “significant” skills gap remains, especially in digital and sustainability-related competencies.
   - Despite some workforce upskilling, adoption of AI, additive manufacturing, and digital design remains limited in many companies.
3. **Limited industry-education collaboration**
   - Some companies report no collaboration with educational institutions, while others engage only sporadically (every 4-5 years).
   - This could hinder workforce adaptation to emerging industry needs.

THREATS

1. **Slow adoption of digital technologies**
   - Some companies, particularly small businesses (1-10 employees), have not adopted digital tools at all.
   - This could impact long-term competitiveness, given the rapid technological transformation in the industry.
2. **Uncertainty over future workforce availability**
   - Young people's perception of career opportunities in the sector remains negative.
   - This may further exacerbate the recruitment challenge; especially as older workers retire.
3. **Industry-wide transformation expected in 5-10 Years**
   - Most respondents / participants predict significant or complete transformation in the next decade due to digitalization and sustainability demands.
   - Companies that fail to adapt risk becoming obsolete.

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SWOT Conclusion

Provide a concise summary of the key insights from the focus group discussions in 150 words or less. Highlight the most significant updates from the SWOT analysis and, where applicable, propose initial recommendations. These may involve strategies to address identified weaknesses, capitalize on emerging opportunities, or reduce potential threats, as well as areas needing further exploration.

Key Aspects to Include

- A general overview of the trends observed in the supply and demand for skills within the TCLF sectors.
- An assessment of the impact of key drivers of change on the labour market.
- Thoughtful recommendations for measures that can be implemented to align the future supply of skills with projected demand, ensuring that workforce capabilities are well-suited to meet the evolving needs of the TCLF industries.

TEXTILE

It has been identified that the textile sector in Spain faces a critical skills gap due to insufficient generational renewal, limited digital adoption, and negative perceptions among young professionals / young people. While demand for digital and sustainability-related skills is rising, workforce preparedness remains inadequate. AI, automation, and smart textiles are emerging as high-impact technologies, yet their integration into education and training is slow.

Key drivers of change and labour market impact:

- **Aging workforce and talent shortage: The sector struggles to attract and retain young talent.**
- **Digital and sustainable transformation: Most future jobs will require new skills.**
- **Slow educational adaptation: Sustainability and digital skills are not fully embedded in curricula.**

Recommendations:

1. **Strengthen industry-academia collaboration to enhance training programs.**
2. **Promote digital adoption through targeted upskilling initiatives.**
3. **Improve sector attractiveness via career awareness campaigns.**
4. **Support sustainability integration in education and business practices.**

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FOOTWEAR

During the Board of Directors, along with the online survey results, it was determined that the footwear sector in Spain continues to face significant structural changes driven by demographic shifts, digitalization, and sustainability demands. While some companies are proactively addressing these challenges through training programs, technology adoption, and sustainability investments, others - particularly small businesses - are struggling to keep pace.

To ensure long-term competitiveness and resilience, businesses, educational institutions, and policymakers must take targeted actions in the following key areas:

1. Strengthening the talent pipeline and workforce renewal

- **Address aging workforce challenges: With a growing number of skilled workers retiring and a persistent negative perception of career opportunities among young people, urgent action is needed to attract new talent.**
- **Increase industry-education collaboration: Many companies have limited or no partnerships with training institutions, leading to a skills gap in both digitalization and sustainability. Businesses should engage more closely with vocational schools, universities, and training centres to ensure curricula align with evolving industry needs.**
- **Promote career awareness campaigns: Efforts should be made to raise awareness of modern career opportunities in footwear, from artisanal craftsmanship to digital design and AI-driven manufacturing.**

2. Accelerating digital transformation

- **Expand adoption of AI and advanced technologies: Survey results indicate low to moderate adoption of digital tools such as AI, additive manufacturing, and digital supply chain management. SMEs in particular, need support in adopting and integrating these technologies.**
- **Upskill the workforce for digital competencies: A significant proportion of the workforce requires training in digital tools and automation. Companies should implement continuous training programs to bridge this digital skills gap.**

3. Expanding sustainability initiatives and compliance measures

- **Prioritize sustainable materials and circular economy practices: Many companies have begun transitioning to eco-friendly raw materials and renewable energy. However, efforts remain fragmented, and further investment in waste reduction, recycling, and sustainable production methods is required.**

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- **Enhance sustainability training for employees: Over 50% of companies acknowledge the need for training in sustainability-related skills, yet adoption remains slow. Businesses should provide structured training programs in eco-friendly production methods, sustainable sourcing, and compliance with evolving regulations.**

Conclusion & Recommendations

- **Urgent Focus on Talent Pipeline: Stronger collaboration between businesses and education institutions is needed to train and attract young workers.**
- **Accelerate Digital Adoption: Businesses, especially SMEs, should invest in digital upskilling and AI-driven technologies.**
- **Expand Sustainability Initiatives: Companies should align with circular economy models and stricter environmental regulations.**

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Finally, it is convenient to complete a section of conclusions and recommendations that should include:

- Summary of key findings of the SWOT analysis.
- Strategic recommendations based on internal strengths and external opportunities, as well as on how to address identified weaknesses and threats.
- Action plan to capitalize on strengths and opportunities, while mitigating weaknesses and threats.

By conducting a SWOT analysis, companies in the TCLF sector can identify the areas in which they need to strengthen their sustainability and technology training, as well as the threats and weaknesses they need to address to remain competitive in an ever-changing marketplace. This will allow us to design and implement effective training programs that drive innovation and sustainability in organizations.

SWOT ANALYSYS

STRENGTHS	OPPORTUNITIES
High quality and traceability of raw material	Proximity to major luxury brands in EU.
Essential in the food value chain	Access to suppliers with REACH
Strong brand names	Significant national footwear and leather goods industry
Industry expertise supported by cutting-edge technology	Adoption of Industry 4.0 technologies
Consolidated factories with all the permits	Development of the circular economy offers growth potential.
Skilled staff (extensive knowledge and specialization)	Expansion of training programs in digitalization, green skills, and sustainable innovation
Capacity for innovative and eco-conscious design	Rising consumer demand for traceable, eco-labelled, and low-carbon products
Strategic geographic proximity to EU high-quality hubs	Partnering with HEI/VET to develop high-quality training programs
Active collaboration with Research Centres and HEIs to foster innovation and knowledge transfer	Development of carbon-neutral and water-efficient leather production processes

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WEAKNESSES	THREATS
Small Sector Size Limits Political Interest	Ageing workforce without effective succession planning
Limited resources, including funding and time	Lack of attractiveness for young people
Progressive Aging Workforce and limited Young Talent Entry	Regulatory Requirements on emissions, water usage and chemical compliance
Suppliers and Clients are Larger Companies	Trade Protectionism by non-EU Competing Countries, restrictions on raw Material Exports and Tariffs on EU Leather
Lack of awareness of the benefits of digitalization	Lack of Legal Protection for the Term "Leather" in the EU against synthetic product marketing
Lack of specific skills related to sustainability practices and digitalization	Rapid Technological Changes, risking obsolescence of skills taught
Difficulties attracting Capital and Credit	Competition from Alternative materials (bio-based or synthetic) gaining consumer preference
Limited Sector Visibility in the Media	Consumer Trends Towards Non-Animal Origin Products (Veganism).
Bad environmental reputation of tanners	Bad farming practices
Low disclosure of a by-product that becomes a sustainable item for consumption	Abandonment of livestock farms
High consumption of water, slow adoption of low-impact technologies	Alternative uses of collagen (health, biotech sectors) creating competition for raw hides
Insufficient innovation in new tanning methods and value-added product lines	Water scarcity

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CONCLUSIONS AND RECOMMENDATIONS

Between April 2024 and April 2025, the Spanish Tanners Association (ACEXPIEL) achieved official endorsement in the COP-29 Manifesto, signalling a significant move by Spain's leather industry towards global sustainability and climate neutrality objectives. This milestone reflects the sector's broader commitment to responsible industrial transformation, addressing major change drivers such as demographics and employment, environmental sustainability, and digital innovation.

In terms of employment, the industry recognizes the need to upskill and reskill its workforce to support cleaner production methods, waste management, and eco-innovation. Attracting younger, environmentally aware professionals is seen as essential for securing the sector's future, positioning leather production as a modern and sustainable career path aligned with circular economy principles.

Environmentally, Spanish tanneries are reinforcing their efforts to lower greenhouse gas emissions, adopt renewable energy, and develop less-polluting tanning techniques. Their involvement in initiatives like ecosystem regeneration and climate finance mechanisms highlights their proactive role in supporting long-term ecological resilience and the achievement of the Sustainable Development Goals (SDGs).

On the technological front, the industry is promoting the integration of smart technologies to optimize processes, monitor environmental performance in real time, improve material traceability, and apply life cycle analysis tools. These innovations aim to simultaneously boost environmental outcomes and enhance global competitiveness.

Finally, ACEXPIEL has strengthened its strategic dialogue with ICEX Spain Trade and Investment, advocating for enhanced institutional support to drive the internationalization of the sector. Key priorities include increasing financial aid for participation in international trade fairs and revising existing five-year aid eligibility criteria to better align with the longer-term growth cycles typical of the leather industry.

1. Summary of key findings of the SWOT analysis.

When assessing the strengths of leather companies in Spain, it becomes evident that their high-quality production, traceable raw materials, and strong brand reputations have played a crucial role in establishing their industry expertise. This expertise extends to the manufacturing of premium sustainable articles for leading brands, supported by consolidated factories with all necessary environmental and safety permits. Moreover, the sector benefits from a skilled, specialized workforce essential for valorising by-products from the food industry, strengthening the role of leather

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within the circular economy. More specifically, the **strengths** of the Spanish leather sector are defined below:

- Raw Material: Spanish skins, particularly Spanish merino lamb, medium-fine, and goat skins, enjoy prestigious international recognition for their exceptional quality. The demand for Spanish leathers by luxury brands serves as evidence of this reputation.
- Know-how: The sector benefits from extensive knowledge and specialization, stemming from the country's rich tanning tradition and the proactive initiatives of sector companies.
- Technology: The industry is supported by cutting-edge technological advancements, serving as a catalyst for innovation in various specialties. Notably, significant investments have been made in clean technologies and waste reduction.
- Design: Spanish leathers are highly esteemed for their innovative designs, colours, textures, and finishes in footwear, clothing, leather goods, and upholstery.
- Market Proximity: The industry's proximity to the market allows for a high-fashion component and swift response times, aligning with the demand for quality items.
- Collaboration with Research Institutions: Active partnerships with universities and Research centres foster knowledge transfer, innovation, and alignment with European Green Deal objectives

Opportunities for growth and improvement abound. Strengthening training programs focused on digitalization, green technologies, and sustainability innovation can meet market demands for responsibly produced goods. Collaboration with educational institutions, government bodies, and industry associations provides access to resources and expertise necessary for sustainable industrial transformation. Additionally, complying proactively with emerging regulations, such as the EU Deforestation Regulation (EUDR), will position companies as reliable, future-ready suppliers. The main **opportunities** are:

- Proximity to major European hig-quality brands demanding sustainable, traceable leather.

- Access to REACH-compliant chemical suppliers in proximity, enabling eco-certifications.

- Strong availability of high-quality local and regional raw materials (sheep and cattle).

- Availability of a leading national training and research centre fostering innovation aligned with the EU Green Transition.

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- Significant national footwear and leather goods sector offering collaboration opportunities.
- Adoption of Industry 4.0 and digital tools to improve productivity, traceability, and resource efficiency.
- Presence of an Outstanding National-Level Training Center (University of Lleida/ Igualada Campus).
- Circular economy development, valorising leather waste and organic by-products.
- Proactive compliance with EU Deforestation Regulation requirements for traceable raw material sourcing, becoming a competitive advantage.
- Demand surge for traceable, environmentally certified products under the European Green Deal and sustainable consumption trends.

However, internal challenges hinder full potential realization. Limited sector size reduces political influence, while an aging workforce and scarce entry of young, digitally skilled talent threaten long-term sustainability. Many companies still lack full awareness of digitalization benefits and specific skills in sustainability, leading to reputational and operational risks. Spanish sector **weaknesses** include:

- Small sector size limiting political visibility and influence.
- SME limitations (compared to larger global players) in finance and negotiating power.
- Progressive aging of the workforce with low attraction rates for younger generations.
- Difficulties in accessing investment, public support funds, and innovation financing.
- Limited positive media visibility: sector sometimes portrayed negatively despite improvements.
- Need to strengthen sector preparation for compliance with stringent environmental regulations.

External threats must also be managed carefully. Technological advances could render current practices obsolete if not anticipated. Competition from synthetic and plant-based materials is rising. Increasing legislative pressure, including the EUDR,

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poses compliance and administrative challenges, particularly for SMEs. Main threats are:

- Competition from alternative and bio-based materials promoted as sustainable alternatives.
- Increasing consumer preference for non-animal origin products.
- Trade protectionism measures by non-EU countries affecting raw material availability.
- Struggles to attract young talent into industrial and tanning professions.
- Intensification of environmental regulation, creating compliance burdens.
- Lack of legal protection for the definition of "leather," leading to consumer confusion and unfair competition.
- Water scarcity and poor farming practices reducing raw material supply quality.
- Emerging alternative uses for collagen (e.g., medical, cosmetic sectors), increasing competition for by-products.

2. Strategic recommendations based on internal strengths and external opportunities, as well as on how to address identified weaknesses and threats.

Here are some strategic recommendations from the SWOT analysis:

a) Leverage Strengths: Promote Spain's high-quality, traceable leather as a sustainable material fully aligned with EU Green Transition policies and compliant with regulations like EUDR.

b) Innovation and Sustainability: Accelerate R&D investments to create carbon-neutral leather production, low-impact tanning methods, digital traceability systems (blockchain or QR tracking), and circular economy business models.

c) Training and Skill Development: Launch comprehensive programs focused on digitalization, sustainability practices, environmental regulations (including EUDR compliance), and new materials science to ensure workforce readiness for the green transition.

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d) Environmental Responsibility: Continue developing water-saving technologies, efficient energy use, and circular models that valorise waste materials, publicly communicating these achievements to improve sector reputation. Strengthen proactive measures to ensure compliance with EUDR and other upcoming environmental regulations, including full traceability systems and deforestation-free raw material sourcing. Communicate these commitments publicly.

e) Partnerships and Collaboration: Forge strong collaborations with research centres, EU-funded initiatives, and technology providers to access innovation funding, expertise, and support green transition projects.

f) Market Diversification: Expand into sectors valuing sustainability, such as green fashion, eco-friendly interiors, electric vehicle interiors, and certified bio-based products.

g) Risk Management: Develop dynamic risk management systems to handle regulatory changes, market volatility, and workforce transitions proactively.

3. Action plan to capitalize on strengths and opportunities, while mitigating weaknesses and threats.

To capitalize on strengths and opportunities while mitigating weaknesses and threats, the following action plan can be implemented:

Strengths and Opportunities Capitalization:

- Develop communication strategies emphasizing compliance with EUDR and leadership in the EU Green Transition.
- Invest in clean technologies, blockchain-based traceability systems, and water-saving innovations.
- Expand workforce skills in green technologies, sustainable sourcing verification, and eco-design.

Weaknesses and Threats Mitigation:

- Raise sector visibility through media campaigns highlighting environmental innovations and sustainable practices.
- Promote leather's authentic circular economy role compared to synthetics.

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- Introduce targeted programs to attract and retain young talent (such as dual education, innovation contests, internships).
- Implement traceability and compliance platforms for transparent raw material sourcing under EUDR.
- Upgrade production technologies to minimize water use, chemical inputs, and emissions.
- Diversify supplier relationships and raw material sourcing strategies to mitigate trade and farming risks.
- Engage in media and public outreach campaigns promoting authentic leather's role in circular economy and biodiversity conservation.

A Risk Management and Contingency Planning to implement the action plan with guarantees is outlined:

1) Create a formal risk management framework for regulatory, technological, and supply chain risks.
2) Monitor technological and consumer trends continuously to adapt product and business strategies.
3) Build flexible manufacturing capabilities to quickly adjust to supply chain disruptions or regulatory changes.

By implementing these updated strategies and actions, the Spanish leather sector can reinforce its competitiveness, accelerate sustainability leadership, and secure its long-term future in a rapidly changing global market.

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STRENGTHS

Sweden, and especially the Västra Götaland region, has a deep-rooted industrial tradition in textiles and fashion. Borås, historically known as the textile capital of Sweden, still plays a central role in the sector's development, providing both historical identity and continuity in knowledge and infrastructure.

The Swedish TCLF sector benefits from high levels of technological advancement, especially in smart textiles, automated production, and sustainable materials. This positions the sector as a front-runner in the development of environmentally responsible and digitally enhanced textile solutions.

Sweden boasts a strong research environment, particularly through institutions such as the University of Borås and Science Park Borås. These organizations are deeply engaged in circular economy models, digital innovation, and collaborative projects with industry and public actors.

There is a well-functioning ecosystem for innovation in Sweden, characterized by close collaboration between academia, industry, and the public sector. This triple-helix model ensures a smooth flow of knowledge and resources, stimulating both entrepreneurship and applied research.

Swedish fashion and textiles are internationally recognized for their focus on sustainability, minimalistic design, and quality. This reputation strengthens export potential and attracts global consumers who are becoming more environmentally conscious.

OPPORTUNITIES

Consumer preferences are shifting towards sustainable and traceable products, providing an opportunity for Swedish brands to differentiate themselves through transparent production, local sourcing, and environmental certifications.

With its innovative ecosystem and reputation, Sweden has the potential to lead Europe in circular fashion. This includes taking the lead in standard setting, piloting closed-loop systems, and developing scalable circular models.

Business models such as rental, repair, and resale are gaining traction. These models align well with Swedish consumer values and offer companies the chance to innovate their revenue streams and reduce environmental impact.

The EU's legislative push, including the Digital Product Passport and the Eco Design Regulation, creates incentives for innovation. Swedish companies can gain a first-mover advantage by aligning early and contributing to the development of standards.

Significant EU and national funding is available for digital upskilling, sustainability transformation, and industrial renewal. By actively pursuing this support, Swedish actors can boost capacity and resilience while meeting green transition goals.

WEAKNESSES

Compared to many international competitors, especially in Asia, Sweden's production costs are significantly higher. This poses challenges for price competitiveness in mass production, pushing many companies to focus on niche and high-value markets.

There is a growing shortage of skilled professionals in manual and technical areas such as sewing, patternmaking, and

THREATS

Swedish companies face increasing competition from international fast fashion retailers offering low-cost alternatives. This puts pressure on local producers who must differentiate through quality, innovation, and ethics to maintain market share.

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textile finishing. This skills gap limits the ability of companies to scale local production or explore innovations that are more technical. The Swedish TCLF sector has undergone decades of deindustrialization, leading to a loss of tacit knowledge and traditional skills. This affects the sector's capacity to revitalize domestic production at scale, especially in rural or deindustrialized regions. Young people are generally more drawn to creative or digital roles and tend to avoid careers in physical production. The sector competes with IT, gaming, and tech industries for talent, making it difficult to secure future generations of workers. Sweden lacks a coordinated national framework for textile reuse and recycling. Despite strong local initiatives, a cohesive system is needed to address waste, infrastructure gaps, and regulatory alignment across municipalities and industries.	A continued shortage of skilled workers, particularly in areas such as production, quality control, and technical development, could significantly delay the sector's transition to sustainable and digital production processes. The EU's upcoming sustainability regulations remain in development, and uncertainty around their scope and enforcement may cause hesitance in investment and slow down the adoption of new systems by Swedish SMEs. In times of economic downturn, consumers may prioritize price over sustainability. This could hinder the market growth of ethically and environmentally produced goods, which tend to carry a higher price point. While Sweden is home to cutting-edge textile research, the infrastructure for large-scale textile recycling is still underdeveloped. Without national coordination and investment, scaling sustainable systems will remain a significant challenge.

Conclusions

Sweden's TCLF sector stands on solid ground thanks to its strong industrial heritage, well-established research infrastructure, and leadership in sustainability. Regions like Borås serve as key innovation clusters where academia, businesses, and public actors collaborate seamlessly. This creates a unique environment for the development of smart textiles, sustainable fashion, and digital manufacturing areas in which Sweden is considered a European frontrunner.

However, structural weaknesses such as high labour costs, an ageing workforce, and a shortage of skilled workers pose serious risks to the sector's ability to grow and adapt. The lack of young talent in production-related roles threatens both capacity and continuity. Without targeted action to attract and retain skilled professionals particularly in technical and manual fields the sector risks losing its ability to meet market demands and keep pace with policy changes.

Sweden's competitive position is not guaranteed, despite its strong sustainability profile. Global competition is intensifying, and regulations are evolving rapidly. To remain relevant, the Swedish TCLF sector must continuously invest in innovation, digitalization, and brand positioning. A coordinated national strategy aligned with EU policies will be crucial to securing Sweden's leadership in sustainable and circular textiles.

Recommendations

- Develop a National Action Plan for Textile Circularity.

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This should set measurable goals for recycling, reuse, and reduced waste. It should also provide funding mechanisms and platforms for cooperation between municipalities, universities, and businesses. A national plan would help Sweden align with EU circularity goals while fostering domestic innovation and green jobs.

- Strengthen vocational training and lifelong learning.

Invest in modern training facilities and revise curricula to reflect the needs of today's industry — including digital skills, sustainability, and automation. Introduce hybrid education formats and establish industry-academia partnerships to ensure practical, hands-on learning that is responsive to rapid changes in technology and regulation.

- Position Sweden as a global leader in sustainable fashion.

Through branding, export promotion, and participation in international projects, Sweden can elevate its visibility. Support businesses in adopting eco-labels and communicating sustainability through transparency tools like the upcoming Digital Product Passport. This will appeal to both consumers and B2B buyers in conscious markets.

- Support SMEs in digital and green transitions.

Provide low-barrier access to innovation labs, demonstration facilities, and funding for tech adoption (e.g. CAD, 3D printing, block chain, AI). This is essential for reducing the innovation gap between large firms and smaller enterprises and ensuring the whole sector evolves together.

- Foster stronger collaboration between industry, academia, and training providers.

Encourage co-creation of research, pilot projects, and internships. Knowledge transfer mechanisms can help upskill employees, attract students, and enable innovation that is directly applicable to industry challenges — especially around sustainability and digital transformation.

- Actively engage in EU policy development and provide national guidance.

Swedish authorities and business networks should monitor and influence the development of regulations such as the ESPR and the Digital Product Passport. At the same time, Swedish SMEs will need support with compliance — including digital infrastructure, traceability systems, and sustainability reporting. Swedish businesses can comply and lead by example.

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SWOT Analysis of the TCF Sector

STRENGTHS

- Diversification of products that can be manufactured in Ukraine (textiles, clothing, leather, footwear)
- A lot of production facilities have been preserved in Ukraine, which continue to function today
- Competitive prices
- High quality of products (Ukrainian enterprises cooperate with European factories and sew clothes for European brands)
- Flexibility and high adaptability to unforeseen circumstances
- Resilience (in war conditions, most enterprises in the industry continue to operate)
- The presence of existing successful technological and innovative projects aimed at the sustainable development of the industry
- Existing experience and capabilities to produce special and uniform clothing for the purposes of the defense and security complex
- Capacity for export activities
- Connections with European industry actors, partnerships, alliances, joint productions
- Modernization of enterprises, purchase of modern equipment to optimize costs and increase efficiency and productivity

OPPORTUNITIES

- Development of a Ukrainian textile brand, defined by high quality and identity
- Implementation of sustainable practices and circularity in the production of industry products
- Building long-term partnerships and concluding mutually beneficial agreements with European manufacturers of high-tech equipment for the production of textiles, clothing, leather and footwear
- Inclusion in European production chains, in particular in the direction of the production of military clothing, uniforms, special clothing
- Cooperation with European partners for the full implementation of sustainable projects for the processing of textile waste (Reinventex) and the production of our own raw materials from technical hemp (Ma`rijany Hemp Company)
- Mutually beneficial cooperation in the production of products for the needs of the European market, thanks to which Ukrainian enterprises will have jobs and avoid the risk of closure, and European customers will have the opportunity to increase the volume of products produced for their markets and receive high-quality products manufactured thanks to nearshoring.

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WEAKNESSES

- Dependence on imported raw materials
- Lack of domestic equipment manufacturers
- Outflow of young people from the country, which causes difficulties in "rejuvenating" personnel at enterprises and reducing the number of employees in the industry
- Increased risk of loss of equipment and infrastructure due to actual destruction (war risks)
- Increasing the number of requirements and regulations from the state regarding business
- Difficulties with servicing technological equipment due to lack of qualified personnel and inability to invite foreign specialists due to the war
- Decrease in sales of domestic products on the domestic market due to reduced purchasing power of citizens
- Complications of logistics transportation (limited logistics routes)

THREATS

- Risks caused by the conduct of hostilities in Ukraine
- High level of competition from well-known international brands and, in particular, low-cost products from countries
- Limited number of young specialists who could replace those working at enterprises
- Growth in the share of exports of "second-hand" products to Ukraine
- Rising prices for raw materials

CONCLUSIONS AND RECOMMENDATIONS

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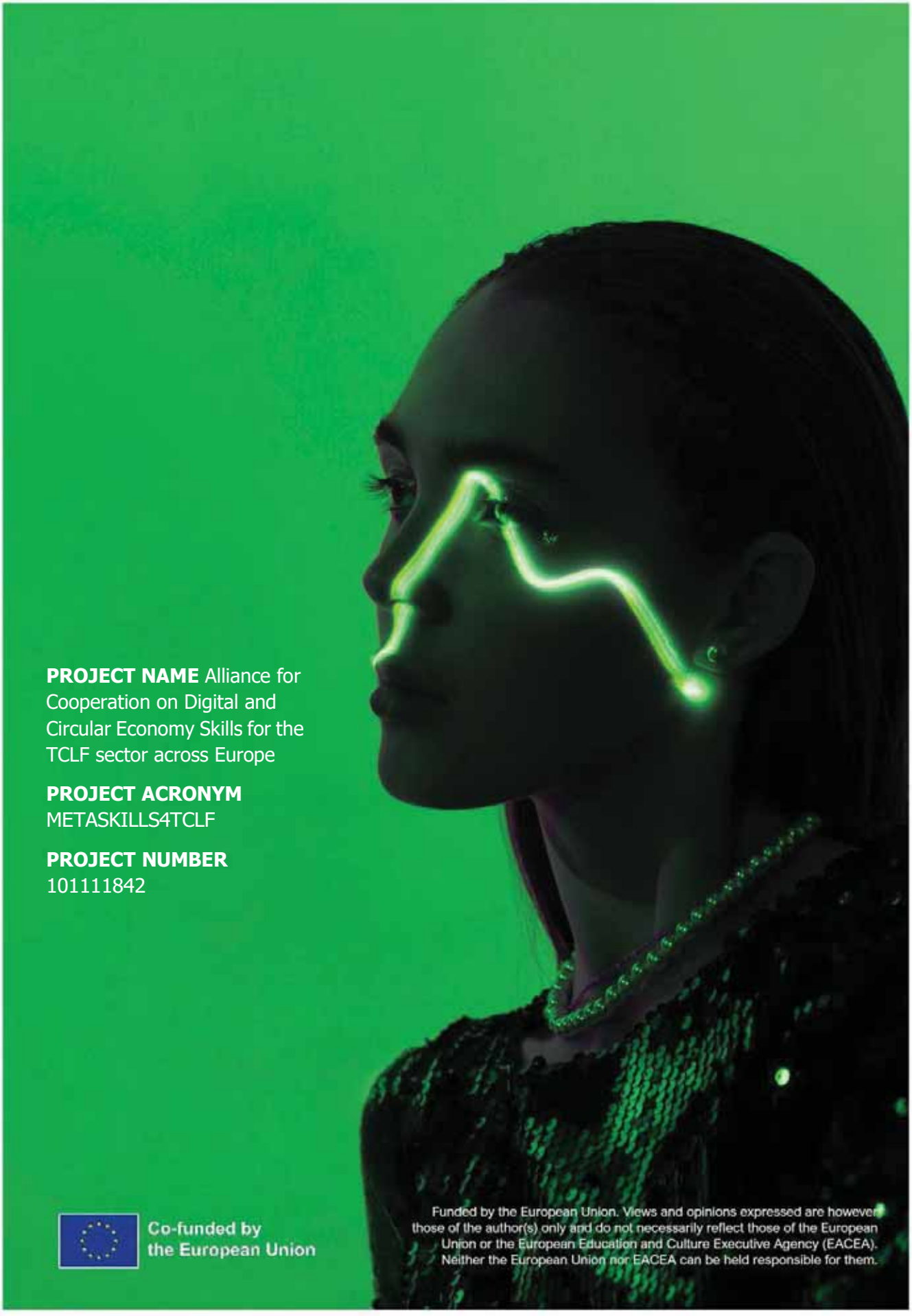

PROJECT NAME Alliance for Cooperation on Digital and Circular Economy Skills for the TCLF sector across Europe

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