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TWIN TRANSFORMATION PROJECT

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INCREASING THE GREEN AND DIGITAL COMPETENCIES OF SME OWNERS AND EMPLOYEES IN THE SHOE MANUFACTURING AND LEATHER SECTOR

TWIN TRANSFORMATION CURRENT SITUATION NATIONAL REPORT OF SPAIN

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PREFACE

This report was prepared to assess the impact of green and digital transformation on SMEs and tradespeople. These national reports will serve as the cornerstone of the joint report. Initially, a desk study was conducted during the preparation of the report. Following this, interviews were conducted with relevant public and private institutions and organizations. The information gathered was presented in a specific format in the report.

1. NATIONAL LEGISLATION REGARDING GREEN AND DIGITAL TRANSFORMATION

1.1. Signed International Agreements/Protocols and Their Implementation

1.1.1. Paris Agreement

The Paris Agreement, adopted on December 2015 and signed by Spain on April 2016, urges nations to reduce greenhouse gas emissions and promote sustainability. In Spain, this has impacted the footwear sector, leading to green and digital transformations. The industry is adopting eco-friendly materials, circular economy models, and low-emission production methods to meet environmental goals. Digital innovations like smart manufacturing, development of digital product passports, and blockchain are improving efficiency and sustainability. These changes help Spanish footwear brands lead in sustainable fashion while complying with environmental regulations and meeting consumer demands.

Access to the Agreement document: [ADOPTION OF THE PARIS AGREEMENT - Paris Agreement text English](#)

1.1.2. Aarhus Convention

The Aarhus Convention, ratified by Spain in December 2004, promotes public rights to environmental information, participation in decision-making, and access to justice. While not specific to footwear and leather, its principles encourage transparency and public involvement, influencing the sectors' green and digital transformation. It fosters sustainable practices in these industries by raising consumer awareness and promoting eco-friendly demand, while also supporting digital tools for tracking and reporting environmental impacts, as seen in industry events like "Footwearise" in Barcelona.

Access to the Convention document: [cep43e.pdf](#)

1.1.3. Declaration on A Green and Digital Transformation of the EU

In March 2021, Spain, along with 26 EU Member States, Norway, and Iceland, signed a declaration to accelerate the use of green digital technologies for environmental benefits. The aim is to deploy and invest in these technologies to achieve climate neutrality and drive green and digital transitions in key European sectors, including shoemaking and leather.

Access to the Declaration document: [EU countries commit to leading the green digital transformation | Shaping Europe's digital future](#)

1.2. National Legal Regulations (Laws, Regulations and Guidelines)

1.2.1. Royal Decree 1055/2022 on Packaging and Packaging Waste

Royal Decree 1055/2022, effective December 2022, establishes regulations for packaging and packaging waste to minimize its environmental impact. The decree focuses on reducing packaging waste, promoting reuse and recycling, and supporting the circular economy. It requires companies, including those in the shoemaking and leather sectors, to reduce packaging

use, adopt recyclable or reusable materials, and comply with EU recycling targets for 2025 and 2030. The decree also introduces extended producer responsibility (EPR), holding companies accountable for packaging waste management and encouraging eco-design and innovation in packaging solutions.

Access to the regulation published on the Official Newsletter of the State: [BOE-A-2022-22690 Real Decreto 1055/2022, de 27 de diciembre, de envases y residuos de envases.](#)

1.2.2. Law 7/2022 of 8 April on Waste and Contaminated Soils for a Circular Economy

Law 7/2022, effective April 2022, aims to reduce waste generation, promote resource efficiency, and transition to a circular economy while protecting the environment and human health. It has several implications for the shoemaking and leather sectors, including extended producer responsibility (EPR), requiring manufacturers to manage the entire lifecycle of their products. The law promotes waste reduction and sustainable materials, introduces taxes on non-recyclable plastic packaging, and encourages eco-design practices. It also tightens regulations on leather tanning and chemical use, incentivizing environmentally friendly methods like vegetable tanning.

Access to the regulation published on the Official Newsletter of the State: [BOE-A-2022-5809 Ley 7/2022, de 8 de abril, de residuos y suelos contaminados para una economía circular.](#)

1.2.3. Law 7/2021 of 20 May on Climate Change and Energy Transition

The law, that entered into force in May 2021, aims to meet Paris Agreement goals, decarbonize Spain's economy, and promote a circular model while fostering sustainable development and reducing inequalities. For the shoemaking and leather sectors, this law has several key impacts:

1. **Sustainability and circular economy:** Companies must reduce greenhouse gas emissions, adopt circular economy models, and disclose environmental impacts through eco-labelling and traceability.
2. **Renewable energy and efficiency:** The law encourages manufacturers to use renewable energy and improve energy efficiency in production, including leather tanning.
3. **Pollutant restrictions and carbon footprint:** Stricter regulations on emissions and wastewater treatment affect the leather industry, pushing companies to adopt eco-friendly practices.
4. **Green innovation and digitalization:** Businesses investing in green technologies and digital tools can access public funding to support greener and more digital models.

Access to the regulation published on the Official Newsletter of the State: [BOE-A-2021-8447 Ley 7/2021, de 20 de mayo, de cambio climático y transición energética.](#)

1.2.4. Royal Decree 163/2014 and its Amendment on Carbon Footprint Registry

Royal Decree 163/2014, effective March 2014, creates a voluntary registry for calculating, reducing, and offsetting greenhouse gas (GHG) emissions through carbon footprint certification and CO₂ absorption projects like reforestation. For the shoemaking and leather industries, this regulation addresses carbon footprint concerns due to processes like leather tanning, material sourcing, and energy-intensive production. The preliminary draft for the RD amendment implies several measures, such as:

1. **Mandatory carbon footprint reporting:** The amendment may introduce mandatory reporting for sectors exceeding emission thresholds, increasing administrative responsibilities for footwear and leather manufacturers.
2. **Supply chain transparency:** Companies may need to ensure accurate emission reporting and collaborate with suppliers to implement reduction strategies throughout the supply chain.

Access to the regulation published on the Official Newsletter of the State: [BOE-A-2014-3379 Real Decreto 163/2014, de 14 de marzo, por el que se crea el registro de huella de carbono, compensación y proyectos de absorción de dióxido de carbono.](#)

Access to the Public information platform on the Draft Royal Decree amending Royal Decree 163/2014 : [Información pública sobre el Proyecto de Real Decreto que modifica el Real Decreto 163/2014, de 14 de marzo, por el que se crea el registro de huella de carbono, compensación y proyectos de absorción de dióxido de carbono](#)

1.2.5. Law 28/2022 of 21 December on Startups and Digital Entrepreneurship

This 2022 law promotes innovation and tech entrepreneurship in Spain. For the shoemaking and leather sectors, it supports sustainable material development and attracts tech startups focused on fashion tech, such as virtual fitting rooms and smart footwear.

Access to the press release of the Ministry of Economic Affairs and Digital Transformation: [211210_np_startups2.pdf](#)

Access to the regulation published on the Official Newsletter of the State: [BOE-A-2022-21739 Ley 28/2022, de 21 de diciembre, de fomento del ecosistema de las empresas emergentes.](#)

2. NATIONAL LEVEL APPLICATIONS/RESPONSIBLE INSTITUTIONS AND ORGANIZATIONS/ROLES REGARDING GREEN AND DIGITAL TRANSFORMATION

2.1. Public Authorities Responsible for Green and Digital Transformation/Their Duties and Responsibilities

2.1.1. Ministry for the Ecological Transition and the Demographic Challenge (MITECO)

MITECO is responsible for implementing environmental policies, promoting sustainability, and addressing climate change. In the context of the footwear and leather sectors, MITECO develops regulations and initiatives aimed at reducing environmental impact, encouraging resource efficiency, and supporting the transition to a circular economy.

Access to the official web site: [Ministerio para la Transición Ecológica y el Reto Demográfico](#)

2.1.2. Ministry of Industry, Trade and Tourism (MINCOTUR)

This ministry focuses on industrial development, trade policies, and tourism. It supports the digital transformation of industries, including footwear and leather, by facilitating technological innovation, enhancing competitiveness, and promoting internationalization. MINCOTUR also collaborates with sector-specific organizations to implement modernization strategies.

Access to the official web site: [Portal of the Ministry of Industry and Tourism](#)

2.1.3. Ministry of Economic Affairs and Digital Transformation

This ministry leads Spain's digital agenda, aiming to boost digital skills, infrastructure, and innovation across all sectors. For the footwear and leather industries, it promotes the adoption

of digital technologies such as advanced manufacturing, e-commerce, and data analytics to improve efficiency and market reach.

Access to the official web site: [Ministerio de Economía, Comercio y Empresa](#)

2.2. Professional Organizations and NGOs Representing Craftsmen and SMEs, Their Duties and Responsibilities Regarding Green and Digital Transformation

A) Professional Organizations

2.2.1. Spanish Confederation of Business Organisations (CEOE)

Although the main focus of CEOE, established in 1977, is on defending the interests of the entire Spanish business community, it represents all companies and business associations in Spain, including SMEs.

Access to the official web site: [CEOE|CEOE represents and defends the interests of Spanish entrepreneurs](#)

2.2.2. Spanish Confederation of Small and Medium Enterprises (CEPYME)

Founded also in 1977, CEPYME is a national organization that defends, represents, and promotes the interests of SMEs and self-employed entrepreneurs in Spain. It is recognized as the most representative business organization at the national level and represents Spanish SMEs in the European Union. Its functions include providing information, advisory services, technical assistance, and research support to affiliated companies.

Access to the official web site: [Cepyme - Confederación Española de la Pequeña y Mediana Empresa](#)

2.2.3. Federation of Artisan Organizations of Castilla y León (FOACAL)

FOACAL is an organization that brings together various artisan associations in the Castilla y León region, representing and defending the interests of the local artisan sector.

Access to the official website: [Artesanía Castilla y León - FOACAL. Artesanía Castilla y León](#)

2.2.4. Federation of Artisan Associations of Andalusia (FADA)

FADA is an entity that unites different artisan associations in Andalusia region, promoting and protecting Andalusian craftsmanship and advocating for the interests of its professionals.

Access to the official website: [FADA Federación de Artesanos de Andalucía](#)

2.2.5. Small and Medium Enterprises of Catalonia (PIMEC)

PIMEC is a multisectoral business confederation that represents SMEs and self-employed entrepreneurs in Catalonia. It has multiple offices and regional delegations within the autonomous community and is also present in Madrid and Brussels. PIMEC is affiliated with the National Confederation of Small and Medium Enterprises (CONPYMES) and the European Union of Crafts, Small, and Medium Enterprises (SMEUnited), of which it is a founding member and holds a vice-presidency.

Access to the official website: [PIMEC | Micro, pequeña y mediana empresa de Catalunya](#)

B) NGOs and Others

2.2.6. Technological Center for Information and Communication Foundation (CTIC)

Established in 2004, CTIC is a non-profit foundation dedicated to advancing information and communication technologies (ICT) in Asturias, Spain. It collaborates with ICT firms and the Government of the Principality of Asturias. The foundation's objectives include enhancing societal benefits and improving SME competitiveness through ICT knowledge generation, research and innovation activities, and promoting the information society. CTIC also hosts the Spanish office of the World Wide Web Consortium (W3C), promoting web standards among developers and organizations.

Access to the official website: [Home | CTIC](#)

2.2.7. Institute for the Diversification and Saving of Energy (IDAE)

The Institute for the Diversification and Saving of Energy (IDAE) is an agency under the Spanish Ministry for the Ecological Transition. It aims to promote energy efficiency, renewable energy, and low-carbon technologies across various sectors, including SMEs. IDAE offers technical assistance, develops programs, and provides funding for projects that enhance energy efficiency and sustainability in businesses.

Access to the official website: [Inicio | Idae](#)

3. ECONOMIC AND SOCIAL IMPACTS OF GREEN AND DIGITAL TRANSFORMATION ON CRAFTSMEN AND SMES—CHALLENGES ENCOUNTERED AND WORKS TO BE DONE FOR SOLUTIONS

3.1. Economic and Social Impacts of Twin Transformation

3.1.2. Financial Challenges and Investment Requirements

The shift toward greener and more digital operations presents a substantial financial burden for SMEs and craftsmen in Spain's leather and shoemaking sectors. These traditional industries often lack the liquidity and access to credit needed for technological upgrades, such as the acquisition of automated machinery, digital design tools, and environmental management systems. Moreover, investments in eco-friendly materials and production processes—like waterless tanning technologies or biodegradable alternatives—are cost-intensive. Many SMEs face difficulties in navigating available funding instruments, EU programs, or sustainability-linked loans due to administrative complexity or insufficient financial literacy. For micro-enterprises, especially in rural regions, the cost of transformation often surpasses their annual operating budgets, posing a serious barrier to progress.

3.1.3. Opportunities and Economic Benefits for SMEs

Despite financial constraints, the green and digital transformation offers long-term economic advantages for the footwear and leather industries. Digitization enhances efficiency, reduces waste, and shortens product development cycles through tools like 3D modeling and predictive inventory systems. Green practices improve brand reputation and open access to sustainability-conscious markets, both domestically and in export destinations such as Northern Europe.

Certifications such as the EU Ecolabel or ISO 14001 are increasingly demanded by large retailers and consumers. Moreover, the incorporation of circular economy models—like repair, reuse, and recycling services—allows SMEs to diversify revenue streams. The rise of e-commerce and digital marketplaces also enables small shoemakers to reach global audiences without relying on costly intermediaries.

3.1.4. Changing Consumer Behaviour and Market Dynamics

Consumer preferences in Spain are shifting toward transparency, sustainability, and customization. Younger demographics prioritize ethical production, fair labor practices, and environmental impact in their purchase decisions. This growing awareness presents an opportunity but also pressure for traditional craftsmen to adapt. At the same time, fast fashion and price competition from low-cost imports remain a challenge. However, niche markets focused on artisan craftsmanship, locally-sourced materials, and limited-edition products are gaining traction. Digital platforms have amplified this trend by allowing direct-to-consumer models, personalized shopping experiences, and storytelling around the heritage and sustainability of products.

3.2. Challenges Faced by SMEs and the Footwear Sector

3.2.1. Barriers to Technology Adoption and Green Practices

A primary obstacle is the lack of infrastructure and know-how for integrating modern technologies into legacy manufacturing systems. Many SMEs still rely on manual or semi-automated processes, making the transition to Industry 4.0 a significant leap. Moreover, green practices such as energy-efficient production, renewable materials, and waste management require both technical and organizational transformation. Limited access to skilled labor, especially in rural areas, and a shortage of specialized training programs further compound the problem. Legal compliance with environmental standards is also challenging due to regulatory complexity and insufficient support for implementation.

3.2.2. Resistance to Change and Knowledge Gaps

Cultural resistance to change remains high among craftsmen and family-owned SMEs, who may perceive digital and green transitions as threats to traditional methods. This skepticism is often rooted in generational divides and a fear of losing artisanal identity. Additionally, many business owners lack awareness of available technologies or fail to see the potential return on investment. Training gaps persist, particularly in digital literacy and sustainability management. Without tailored guidance, SMEs struggle to develop a strategic roadmap for transformation, leaving them vulnerable to market shifts and regulatory penalties.

3.3. Solutions and Adaptation Strategies for SMEs and Craftsmen

3.3.1. Technological Integration

A phased and modular approach to digital adoption is essential. SMEs should start with low-barrier tools such as cloud-based inventory systems, e-commerce platforms, and social media

marketing, gradually integrating more complex systems like CAD software, ERP solutions, or robotics. Partnerships with universities, tech incubators, and digital innovation hubs can ease this transition by providing access to expertise and pilot testing. Publicly funded demonstration projects and shared manufacturing facilities (“fab labs”) can lower entry costs. Training programs designed for craftsmen, with hands-on, practical methodologies, are critical for success.

3.3.2. Sustainable Business Model Adaptations

Adopting circular economy principles can position SMEs as innovation leaders while aligning with environmental goals. Initiatives such as take-back schemes, shoe repair services, and upcycling of leather offcuts add value and build consumer loyalty. Additionally, SMEs can create eco-conscious collections with traceable supply chains, using certified organic or recycled materials. Developing shorter supply chains—sourcing locally and minimizing transport—reduces emissions and improves flexibility. Embracing transparency through digital traceability tools, such as blockchain, enhances brand trust and meets regulatory expectations.

3.4. Support and Incentive Mechanisms to Accelerate the Twin Transformation of Craftsmen and SMEs

3.4.1. Governmental and EU Support Programs

3.4.1.1. EU Next Generation Funds

In July 2020, the European Council established Next Generation EU, a €750 billion recovery fund to help EU Member States tackle the economic and social impacts of the pandemic. The funds include up to €360 billion in repayable loans and up to €390 billion in non-repayable grants. These funds are designed to support Spain's and other EU countries recovery and transformation, focusing on green innovation, digitalization, and sustainability. For the footwear and leather sectors, these funds offer financial support for circular economy initiatives, digital transformation, and the adoption of sustainable practices like renewable energy and eco-friendly materials. This helps the SMEs from these industries become more sustainable, efficient, and competitive.

Accesso to more information: [NextGeneration EU - The Recovery and Resilience Mechanism to fund the Plan](#)

3.4.1.2. Recovery, Transformation, and Resilience Plan (PRTR)

Spain's Recovery, Transformation, and Resilience Plan (2021-2026), supported by the EU's Next Generation EU initiative, focuses on ecological transition, digitalization, social cohesion, and gender equality. With €140 billion in EU backing, the plan aims to drive sustainability and digital economy transformation. For the footwear and leather sectors, it provides funding for circular economy projects and grants for digital manufacturing transformation.

Access to more information: [Plan de Recuperación, Transformación y Resiliencia: DGPMRR](#)

3.4.1.3. PERTE for Circular Economy (Strategic Project for Economic Recovery and Transformation)

The Ministry for Ecological Transition in Spain, through the “Biodiversidad” Foundation, launched a grant program to promote the circular economy in textiles, fashion, and footwear. It aims to reduce raw material consumption, waste, and promote digitalization and eco-design. The program provides €492 million in funding, focusing on investments in eco-design, recycling, sustainable materials, and developing biodegradable or synthetic leather alternatives in the footwear and leather sectors.

Access to more information: [Convocatoria para la concesión de ayudas al impulso de la economía circular para el año 2024](#)

3.4.1.4. Spain’s Digital Agenda 2026

Spain’s Digital Agenda 2026 supports digitalization aligned with the EU’s goals. For the shoemaking and leather sector, it offers funding for smart manufacturing and promotes digital tools to improve supply chain efficiency and transparency.

Access to more information: [S.E. de Digitalización e Inteligencia Artificial y S.E. de Telecomunicaciones e Infraestructuras Digitales - España Digital 2026](#)

3.4.1.5. “Acelera Pyme” Program

This Spanish government initiative provides resources and support for SMEs to navigate digital transformation. It highlights the importance of digitalization for competitiveness and offers guidance on overcoming internal and human barriers to change.

Access to more information: [Mitigating resistance to change in e-commerce transformation for SMEs | Acelera pyme](#)

3.4.1.6. National Artificial Intelligence Strategy (ENIA)

The National Artificial Intelligence Strategy (ENIA) is a government initiative in Spain aimed at increasing AI adoption across various industries, including manufacturing, retail, and product design.

In the shoemaking and leather sector, ENIA has the following impacts:

1. **AI-driven customization and predictive demand analysis:** AI tools allow footwear brands to offer personalized designs and optimize production based on real-time demand data, helping to reduce overproduction and waste, supporting sustainability.
2. **Smart factories with automated quality control:** AI-driven computer vision systems detect defects in leather and footwear, improving quality and reducing returns. Robotic automation enhances productivity in tasks like cutting, stitching, and material sorting.

Access to more information: [Conoce la Estrategia Nacional de Inteligencia Artificial \(ENIA\) | Plan de Recuperación, Transformación y Resiliencia Gobierno de España.](#)

3.4.2 Private Sector Collaboration and Industry Partnerships

Private sector collaboration is essential to scale transformation across the value chain. Large footwear brands, suppliers, and retailers can partner with SMEs to share technology, offer joint training programs, and co-develop sustainable product lines. Public-private partnerships can enable clusters of innovation, where manufacturers, designers, and technology providers collaborate under a shared vision. National and regional business associations play a vital role in brokering these partnerships and aggregating demand for shared services, such as digital platforms or environmental auditing.

Additionally, corporate procurement policies that prioritize sustainability and local sourcing can stimulate SME participation in green markets. Industry-wide innovation challenges and awards can also spotlight best practices and incentivize change.

4. IMPACTS OF TWIN TRANSFORMATION ON THE LABOR MARKET (EMPLOYMENT/PROFESSIONAL EDUCATION/NEW SKILLS/NEW PROFESSIONS)

4.1. Changes in Labor Demand and Emerging Professions

4.1.1. Impact of Automation and Technology-Driven Job Transformations

The twin transition - digital and green - has already begun reshaping labour demand within Spain's traditional leather and footwear industries. Automation is playing a growing role in tasks once handled manually, such as pattern cutting, stitching, and quality inspection. Technologies like computer-aided design (CAD), robotic assembly lines, and digital inventory systems are replacing or augmenting traditional roles. While this transition improves efficiency and consistency, it simultaneously reduces the demand for certain low-skilled positions, particularly in production lines.

However, automation does not necessarily imply job loss—it changes the nature of work. Roles are shifting toward supervision of automated systems, digital production coordination, and machine maintenance. Craftsmanship remains valuable, but it now increasingly requires fluency in digital tools. As companies adopt data-driven decision-making, even administrative roles are evolving to include digital competencies. Furthermore, the demand for professionals able to integrate sustainability metrics into operational workflows is rising, such as life cycle analysts and environmental compliance officers.

4.1.2. New Professions Emerging from Green and Digital Technologies

As the twin transformation unfolds, entirely new job profiles are emerging within the Spanish leather and footwear sectors. These include:

- **Sustainable product designers:** Professionals skilled in eco-design principles who integrate sustainability into product development using renewable, biodegradable, or recycled materials.
- **Digital fabrication technicians:** Experts in additive manufacturing (e.g., 3D printing of shoe components), essential for rapid prototyping and mass customization.

- **Supply chain digitalization analysts:** Specialists who use AI and IoT technologies to optimize inventory, logistics, and resource management with a focus on sustainability.
- **Circular economy consultants:** Advisors helping SMEs transition to business models that prioritize reuse, repair, and recycling.
- **Digital marketing and e-commerce managers:** Key for expanding SME market reach in a digitally driven, consumer-centric economy.

These roles often require hybrid competencies: combining traditional craftsmanship or industry knowledge with digital proficiency and an understanding of environmental standards and consumer expectations.

4.2. Required Skills and Workforce Adaptation Strategies

4.2.1. Essential Digital and Sustainability-Oriented Skills for SMEs

The evolving nature of work in the Spanish leather and shoemaking sectors demands that small and medium-sized enterprises (SMEs) build a workforce equipped with both digital and sustainability-oriented competencies. With Spain's strong tradition in footwear manufacturing — particularly in regions like Valencia — staying competitive requires not only technological adaptation but also the embrace of responsible, environmentally conscious production methods in line with EU regulations and consumer expectations.

On the digital side, the most critical skill areas include:

- **Basic digital literacy:** Spanish SMEs must ensure that employees at all levels are comfortable using standard office software (such as Excel, Word, and PowerPoint), cloud-based collaboration platforms (like Google Workspace or Microsoft 365), and data management systems. This foundational competence is essential for improving internal communication, digitizing documentation, and enabling flexible, responsive workflows — especially for companies participating in export markets or complex supply chains.
- **Digital design and modelling:** Product development teams, designers, and prototyping staff need training in advanced tools such as CAD software (e.g., Shoemaster, Romans CAD), 3D modelling programs, and virtual prototyping platforms. Spain's competitive edge in design-driven, high-quality footwear depends heavily on rapid iteration, reduced sampling costs, and the capacity to customize products for diverse markets — all of which are enhanced by strong digital design skills.
- **Automation and machinery interface:** As Spanish factories introduce semi-automated equipment and smart manufacturing technologies, workers must be able to operate, monitor, and troubleshoot machines that increasingly rely on sensors, software, and human-machine interfaces (HMI). Developing a basic understanding of programming logic, machine data analysis, and predictive maintenance is key for maintaining high productivity and product consistency, especially in internationally competitive clusters like Elda and Elche (both in the Valencian region).

On the green transformation side, essential sustainability skills include:

- **Eco-design principles:** Spanish workers and designers need to understand how to reduce environmental impact through informed material selection, sustainable construction techniques, and product designs that prioritize durability, reparability, and

recyclability. With growing global demand for eco-friendly products, Spanish brands must integrate bio-based materials or recycled components to meet both legal requirements and consumer preferences.

- **Life cycle analysis (LCA):** Employees involved in product development, sourcing, or compliance should be trained to assess the environmental footprint of their products, from raw material extraction to manufacturing, distribution, use, and end-of-life disposal. This is especially important in Spain, where producers are increasingly expected to report on environmental performance under EU directives (such as the Eco-design Regulation or Corporate Sustainability Reporting Directive). LCA capabilities help companies make data-driven decisions that improve sustainability outcomes and enhance brand reputation.
- **Waste management and resource efficiency:** Production teams and management alike must adopt best practices to minimize waste generation, reuse production scraps, optimize water and energy consumption, and shift toward circular business models. Many Spanish companies are already exploring innovative solutions like closed-loop recycling, renewable energy integration, or sustainable packaging, but scaling these efforts requires sector-wide upskilling and cultural change.

Importantly, these competencies are not confined to technical or factory roles. For Spanish SMEs to achieve meaningful transformation, both digital and sustainability awareness must extend across all departments — from management and administration to customer service, sales, and marketing. Business leaders need the skills to set and communicate digitalization and sustainability strategies; sales teams must effectively promote eco-friendly product features; and customer service staff should be equipped to address customer questions related to sustainability and digital platforms (including e-commerce).

To support this shift, Spanish SMEs should adopt adaptation strategies such as continuous upskilling programs, cross-departmental workshops, partnerships with local vocational training centres (such as INESCOP or the Centro Tecnológico del Calzado de La Rioja), and the integration of these competencies into recruitment profiles. Only by embedding these digital and green skills across the entire organization can Spanish leather and footwear SMEs remain competitive in a rapidly changing global market.

4.2.2. Strategies for Reskilling, Upskilling, and Career Transition

In the Spanish leather and shoemaking sectors, ensuring a just and inclusive transition toward digitalisation and sustainability requires targeted strategies tailored to the country's industrial fabric, educational framework, and regional dynamics. Spain's strong tradition of craftsmanship, combined with emerging innovation hubs and active participation in European funding schemes, offers a solid foundation for adapting the workforce to future demands. Key strategies include:

- **Company-led training programs:** Many Spanish SMEs in the leather and footwear sectors, particularly concentrated in regions like the Valencia and La Rioja, are already implementing internal training programs focused on machinery operation, digital tools, and sustainable practices. These initiatives can be further strengthened through co-financing from regional authorities (such as the Generalitat Valenciana – Valencian Region –), national industry promotion schemes, or European programs like Erasmus+, InvestEU, and the European Social Fund Plus (ESF+). By developing training that is directly aligned with their specific production processes, companies ensure workers

acquire practical, job-ready skills that improve both competitiveness and product quality.

- **Short-cycle specialized training:** Spain's network of sectoral training centres (such as the Centro Tecnológico del Calzado in La Rioja or INESCOP in Alicante) offers modular courses and workshops to help reskill production workers. Topics include eco-leather production, advanced manufacturing techniques, 3D printing, and circular economy models. These short, focused trainings allow workers – especially in small family-run businesses – to update their skills without leaving the workplace for extended periods, supporting continuous learning across the sector.
- **Dual education systems:** Spain is undergoing a major transformation of its vocational education and training (VET) system through the new Vocational Training Law (Ley Orgánica 3/2022), which makes Dual Vocational Training (Formación Profesional Dual) compulsory starting in the 2024/2025 academic year. This system integrates formal education in vocational schools with hands-on experience in partner companies, ensuring that young learners acquire technical skills aligned with real labour market demands. Dual FP not only supports reskilling and upskilling efforts by introducing new professional profiles (e.g., digital designers, sustainability specialists) but also addresses generational renewal in a sector where many highly skilled workers are nearing retirement.
- **Public-private partnerships (PPPs):** Strong collaboration between Spanish industry associations (such as AVECAL, FICE – Federation of Spanish Footwear Industries –, or AEC – Spanish Association of Footwear and Leather Goods Components and Machinery Companies –), public administrations, universities, and training centres is critical to align educational content with the fast-changing needs of the sector. PPPs can foster regional innovation ecosystems, facilitate EU-funded projects, and help design sector-specific training curricula that anticipate future trends. They also ensure that smaller companies, which often lack internal training capacity, can benefit from shared resources and expertise.
- **Mentorship and peer-learning networks:** Spain's footwear and leather sectors are rooted in deep local know-how and family traditions. Establishing structured mentorship programs allows experienced artisans and technicians to pass on their skills to younger workers, safeguarding valuable intangible knowledge. Meanwhile, peer-learning initiatives (such as industry cluster networks, local innovation forums, or cross-company working groups) create spaces for sharing best practices on digitalisation, eco-innovation, and circular strategies, accelerating collective learning and sector-wide adaptation.

4.3. Educational Programs and Training Initiatives

In Spain, both public and private educational institutions are beginning to respond to the needs of the green and digital transformation, though greater coordination and investment are required. Currently, the following initiatives are gaining relevance:

- **Vocational Education Training:** VET programs are incorporating modules on sustainability, CAD design, and digital tools. However, these programs need continuous updating and tighter collaboration with industry to remain relevant.

- **Occupational training through SEPE:** The Spanish Public Employment Service (SEPE) offers courses for unemployed or transitioning workers, including in digital marketing, automation, and environmental management.
- **Specialized industry programs:** Footwear technology institutes in regions like Valencia region and La Rioja (key leather and footwear clusters) are piloting short courses in 3D modelling, eco-material innovation, and leather recycling techniques.
- **EU-supported initiatives:** Through programs like Erasmus+, Next Generation EU, and Digital Europe, SMEs and training centres can co-create innovative curriculums for green and digital competences, offering apprenticeships, exchange programs, and certification schemes.
- **Online and blended learning:** Platforms such as Coursera, edX, and Spanish alternatives like Miríadax are making continuous learning more accessible. SMEs should be encouraged to integrate these into their professional development plans.