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RECENTRE

# D.1.2.1 - Report on how to improve workers' resilience to the SMEs' twin transition

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## ABBREVIATIONS

| Abbreviation | Definition |
|---|---|
| SME | Small and Medium-sized Enterprise |
| AT | Advanced Technology / Technologies |
| AI | Artificial Intelligence |
| AI Act | Artificial Intelligence Act |
| OHS | Occupational Health and Safety rules |
| IOT | Internet of Things |
| IT | Information Technology |
| GDPR | General Data Protection Regulation |
| ERP | Enterprise resource planning |
| WP | Work Package |
| LP/PP | Lead partner/project partner |
| ASP | Alpine Space Programme |
| ROI | Return on Investment |
| XR | Extended Reality |

# Introduction

The RECENTRE project is a transnational initiative aimed at strengthening the resilience and adaptability of workers in Alpine SMEs as they undergo the triple transition — the simultaneous shift toward digital transformation, green sustainability, and social responsibility. In EU policy, this transition is framed under the industry 5.0 paradigm, where digital technologies (AI, IoT, data sharing, digital twins) are seen as key enablers of decarbonization, circular economic practices, and low-carbon production, while the social dimension ensures that these changes are inclusive, fair, and supportive of worker wellbeing and skills development.

The triple transition refers to this dual transformation of Europe's economy and society. It highlights how digital innovation and environmental sustainability are not separate agendas but mutually reinforcing. Digital tools can reduce emissions, optimize resource use, and enable greener production models, while sustainability imperatives drive demand for smarter, more efficient technologies. As described in EU strategies, the twin transition is therefore more than a technological shift: it is a structural and social transformation that requires new skills, inclusive job opportunities, and resilience from workers and organisations alike.

For Alpine manufacturing SMEs, these changes bring opportunities for innovation and competitiveness, but also challenges such as skill gaps, loss of global competitiveness, job transitions, and risks of social exclusion. Workers' resilience in this context means the ability to acquire new digital and green skills, adapt to changing roles, and benefit from inclusive organizational support.

RECENTRE therefore places workers at the centre of the transition, promoting human-centric innovation and well-being alongside technological progress. This deliverable (D1.2.1) contributes to that mission by identifying strategies to support workers in building skills, navigating job transitions, and ensuring inclusiveness as SMEs embrace sustainable and digital transformation.

# Chapter 1: Methodology

To explore the needs and expectations of workers in Alpine manufacturing SMEs undergoing the green and digital transition, RECENTRE employed a mixed-method approach centered on qualitative engagement and structured reporting. Two transnational webinars provided a collaborative platform for workers and stakeholders to exchange perspectives across regions, while targeted interviews captured in-depth insights on skills development, social inclusion, and job transition. This combination enabled a better understanding of how to strengthen workers' resilience in the context of SMEs' twin transition (see Annex 1 for the dates and titles of the webinars).

To complement these perspectives, special attention was given to capturing the concerns, expectations, and resilience strategies of workers, ensuring that human-centric dimensions were systematically integrated alongside managerial viewpoints. All qualitative inputs were documented using standardized reporting templates, which ensured comparability across sources and facilitated the extraction of recurring themes. Within these templates, a SWOT analysis framework was applied to structure findings into strengths, weaknesses, opportunities, and threats, allowing for a balanced view of both barriers and enablers of the green transition.

By cross-referencing CEO interviews with webinar outcomes and synthesizing worker-related observations, this methodology produced results that are both representative and actionable, offering a solid evidence base for identifying concrete support measures and capacity-building priorities for Alpine SMEs (see Annex 2 for the number of interviews conducted, with details by partner and country).

### 1.1. Data Collection

The data collection process for this report was designed to capture both strategic insights from SME leadership and practical perspectives related to worker resilience in the face of the twin transition, with a strong focus on the green transition. To achieve this, two complementary methods were applied:

- Transnational webinars: Two online events — *Future-Proof Your Skills: Embracing the Green and Digital Transition* (04.06.2025) and *The Role of Advanced Technologies in Improving Workers' Well-being* (25.06.2025) — served as open platforms for dialogue among stakeholders from Italy, Austria, Germany, France, and Slovenia. With a combined participation of over 100 attendees, these sessions provided a diverse pool of insights, capturing regional differences while also surfacing common concerns. Discussions were facilitated with guiding questions to ensure comparability across events, while interactive elements (polls, Q&A, open floor exchanges) enriched the qualitative depth of the findings.

- CEO interviews: To complement the broad stakeholder exchange of the webinar's, targeted semi-structured interviews were conducted with SME leaders across key sectors such as mechatronics, automotive, and bioeconomy. The interview template was standardized across all sessions, ensuring consistency while allowing space for company-specific experiences and reflections. Questions addressed technology integration, sustainability practices, workforce development, leadership strategies, and regulatory challenges. This format allowed the capture of both high-level strategic visions and concrete operational barriers (see Annex 2 for the number of interviews conducted, with details by partner and country).

All collected material was documented through pre-defined templates, including participant lists, interview transcripts, and structured notes. This ensured systematic comparability and traceability of data across countries and activities. By combining the wide reach of transnational webinars with the depth of individual interviews, the data collection process created a robust foundation for a nuanced understanding of both worker and leadership perspectives.

## 1.2 Data Analysis

The analysis of collected data followed a structured and multi-layered approach to ensure that the findings were both representative and actionable. The process consisted of three key steps:

1. **Thematic synthesis of webinar outputs:** Notes, poll results, and Q&A sessions from both webinars were coded and grouped into thematic clusters (e.g., skills gaps, training formats, regulatory challenges, well-being). This enabled the identification of recurring patterns as well as the recognition of outlier perspectives that may represent emerging or niche concerns.

2. **SWOT analysis of CEO interviews:** A structured SWOT (Strengths, Weaknesses, Opportunities, Threats) framework was applied to the interview data. This tool enabled systematic mapping of internal enablers and barriers (such as workforce adaptability, leadership culture, and in-house training capacity) against external drivers and risks (such as regulatory pressure, technology diffusion, or societal sustainability demands). The SWOT framework provided clarity on the interplay between organizational strengths and external pressures, serving as the analytical backbone for deriving targeted support measures.

3. **Cross-comparison between leadership and worker-related perspectives:** Finally, a cross-analysis was conducted to align CEO visions with worker needs and expectations voiced during the webinars. This comparison highlighted areas of alignment (e.g., shared concern about training availability and resource constraints) as well as gaps (e.g., leadership emphasis on strategic positioning vs. worker emphasis on immediate well-being and inclusion). This triangulation step ensured that the results are not only descriptive but also capable of pointing to actionable measures that bridge the perspectives of different stakeholder groups.

Through this layered methodology, the analysis was able to move beyond descriptive findings and generate a coherent set of insights that reflect the realities of SMEs in the Alpine region. The combination of SWOT-based structure and thematic synthesis provided robustness, while the cross-comparison guaranteed that both managerial and worker dimensions of resilience were adequately represented.

## 1.3 Cross-Analysis Findings

The cross-analysis of webinar and interview data revealed several key insights:

1. **Shared concerns:** Both CEOs and workers identified training and upskilling as critical to navigating the triple transition. Resource constraints and the pace of technological change were consistently highlighted as barriers.

2. **Divergent priorities:** CEOs emphasized strategic positioning, competitive advantage, and long-term sustainability, while workers prioritized well-being, inclusiveness, and immediate support mechanisms to cope with change.

3. **Emerging opportunities:** The adoption of advanced technologies and sustainable practices was seen as a pathway to enhance organizational efficiency, create safer work environments, and foster new skill development.

4. **Resilience strategies:** Workers demonstrated proactive coping strategies, including peer learning, continuous self-development, and adaptability to flexible work arrangements, while CEOs highlighted the importance of leadership support and structured capacity-building programs.

5. **Actionable gaps:** Findings suggest the need for targeted interventions that bridge strategic goals with human-centric approaches, such as tailored training programs, participatory change management, and mechanisms to ensure well-being and inclusion during technological adoption.

The cross-analysis of webinar and interview data identified recurring themes, shared challenges, and common needs across Alpine SMEs. This evidence provides a strong foundation for actionable recommendations to enhance both organizational and worker resilience during the green and digital transition, ensuring that proposed measures address widespread, real-world issues.

# Chapter 2: Activities of Action 1.2

Activity 1.2 was designed to foster resilience among SME workers by combining transnational learning opportunities with direct company-level insights. Its activities were structured around interactive events and structured data collection, ensuring both breadth and depth of engagement. These activities included:

## 2.1. Transnational Webinars (June 2025)

Two online webinars were organized to raise awareness, provide knowledge, and stimulate discussion around the challenges and opportunities of the twin transition. Both events featured expert speakers from across the joint project region, ensuring that diverse national perspectives and experiences were represented.

- *Future-Proof Your Skills: Embracing the Green and Digital Transition (04.06.2025)*
  This session examined the competencies required for workers to thrive in the era of AI,

automation, IoT, and green technologies. Drawing on success stories from mechatronics, automotive, and bioeconomy sectors, it provided practical strategies for reskilling and upskilling. Interactive polls and Q&A segments helped to map the most pressing skill needs, such as adaptability, data literacy, and human-machine collaboration.

Speakers from Italy, Austria, and Slovenia shared their expertise, giving concrete examples of how SMEs are addressing skills gaps in different national contexts.

- *The Role of Advanced Technologies in Improving Workers' Well-being (25.06.2025)*
  This webinar showcased how human-centric digitalization can directly improve workplace safety, health, and job satisfaction. Examples included wearable technologies, cobots, and AI-based workload management systems. The session highlighted the importance of aligning innovation with employee needs to reduce burnout and increase engagement.

  Speakers from Germany, Italy, and France contributed, underlining the variety of approaches within the project region to promoting well-being through digital tools.

Together, these webinars attracted more than 100 participants from across the Alpine region, including policymakers, SME managers, researchers, and employee representatives. They served as a platform for transnational knowledge exchange and contributed to awareness-building, as foreseen in the application form.

## 2.2. CEO Interviews

To complement the broader stakeholder discussions from the webinars, a series of **CEO interviews** were conducted across the Alpine region. These interviews followed a structured template developed under RECENTRE, ensuring consistency and comparability across companies while allowing for open discussion.

Each interview lasted on average 30 minutes and was divided into seven thematic sections:

1. **Technology and Digital Readiness** – use of digital tools, AI adoption, challenges in technology uptake.

2. **Industry 5.0 and Digital Transformation** – integration of advanced technologies and balancing automation with human-centric innovation.

3. **Sustainability and Green Transition** – strategies, goals, and alignment with circular economy principles.

4. **Human-Centric Approach** – employee well-being, upskilling/reskilling, and engagement in transformation.

5. **Leadership in the Age of Innovation** – leadership strategies for guiding SMEs through change.

6. **Challenges and Barriers** – obstacles such as regulatory frameworks, skills gaps, and financial constraints.

7. **Finance and Public Support Systems** – needs and expectations regarding public funding for SME transformation.

This structure enabled a systematic exploration of how SMEs are navigating Industry 5.0, while ensuring space for company-specific insights.

A total of **18 SMEs** participated in the interviews, representing diverse sectors such as mechatronics, automotive, and bioeconomy. The distribution of companies was as follows:

- Austria: 4 companies
- France: 4 companies
- Germany: 4 companies
- Italy: 4 companies
- Slovenia: 2 companies

*Table 1- Number of CEOs vs country*

| Country | Companies |
|---|---|
| **Austria** | • KOWE-CNC<br>• Ritz Messwandler GmbH<br>• SEMA Maschinenbau GmbH<br>• RAUCH Furnace Technology GmbH |

| | |
|---|---|
| **France** | • Dollfus & Muller<br>• Socomec Group<br>• PONANT TECHNOLOGIES<br>• ADDI-DATA |
| **Germany** | • Alfred Kiess GmbH<br>• Assemblio GmbH<br>• Vitesco Technologies Group<br>• Iba AG |
| **Italy** | • Smartmetal Srl<br>• Manica S.p.A.<br>• Biobamboo – Carte del Gallo<br>• Lucchese Industria |
| **Slovenia** | • Mikrovent<br>• Ubiquity Robotics |

The interviewees were predominantly CEOs and senior managers directly responsible for strategy, innovation, and workforce development, ensuring a leadership perspective on resilience and transformation.

The findings revealed both shared and country-specific challenges. Common issues included skills shortages, resistance to change, regulatory complexity, and training constraints. At the same time, opportunities were identified in human-centric innovation, circular economic initiatives, peer-to-peer learning, and leveraging public support systems.

All activities under A1.2 were designed to be complementary:

- The webinars provided collective awareness-raising and capacity building;
- The interviews enabled in-depth company-level analysis;
- Together, they laid the groundwork for integrated strategies to balance digital and green innovation with social responsibility.

By combining these activities, A1.2 contributed to:

- Promoting worker inclusion in the triple transition through targeted learning opportunities;
- Showcasing advanced technologies as tools for empowerment and well-being;
- Providing a transnational exchange platform within the EUSALP region;
- Establishing a basis for further pilot measures under RECENTRE.

These materials offer a transparent and comprehensive view of the engagement process and support the validity of the conclusions drawn in this report.

# Chapter 3: Key Challenges and Lessons Learned Affecting Worker Resilience in SMEs

The resilience of workers in Alpine SMEs during the twin transition is shaped by multiple interrelated factors: evolving skills requirements, leadership practices, organizational cultures, and regulatory frameworks. To explore these issues, two complementary sources of evidence were gathered: transnational webinars with experts and practitioners (representing the worker perspective) and in-depth interviews with SME CEOs (representing the leadership perspective). This chapter synthesizes those insights, presenting lessons from both sides before offering a cross-analysis that highlights convergences, divergences, and implications for action.

## 3.1 Lessons Learned from Webinars

*Table 2- Lessons learned from Webinars*

| **Barriers and bottlenecks** | **Identified needs / challenges as a:** |
|---|---|
| • Rapid innovation outpaces worker adaptation.<br>• Emotional resistance and fear toward | • Continuous skill development combining technical and soft skills.<br>• Resilience and mindset coaching to |

| | |
|---|---|
| AI and automation.<br>• Cognitive overload from digitalization and constant notifications.<br>• Technology implemented without worker input, reducing usability and acceptance.<br>• Blurred work-life boundaries from remote/hybrid setups.<br>• Inadequate ongoing training and support. | handle stress.<br>• Active worker involvement in co-designing technologies.<br>• Frameworks and clear guidance for AI adoption.<br>• Recognition of well-being as a key business metric. |
| **Opportunities / Expectation**<br>• Growth opportunities through new green and digital skills.<br>• Human-technology collaboration improves work quality.<br>• Wearables, cobots, and smart environments enhance safety and comfort.<br>• Development of a culture of continuous learning. | **Recommendations / Best practice**<br>• Encourage adaptability and a culture of "positive failure."<br>• Combine technical and soft skills in modular, continuous training.<br>• Keep humans in the decision-making loop.<br>• Engage workers early in technology adoption.<br>• Design tools that prioritize stress reduction and well-being.<br>• Establish boundaries for digital use and ensure ethical data handling. |

## 3.2 Lessons Learned from CEO Interviews

*Table 3- Lessons learned from CEO interviews*

| | |
|---|---|
| **Barriers and bottlenecks**<br>• Persistent digital and technical skill shortages.<br>• Resistance to change among staff. | **Identified needs / challenges as a:**<br>• Structured upskilling and reskilling programs.<br>• More inclusive approaches to involve |

| | |
|---|---|
| • Limited resources for training.<br>• Overwhelming regulatory burdens.<br>• Leadership challenges in guiding transformation. | workers in decisions.<br>• Practical, SME-tailored solutions instead of generic ones.<br>• External guidance for regulatory and compliance complexity. |
| **Opportunities / Expectation**<br>• Human-centric innovation that integrates well-being.<br>• Technologies as enablers when framed as simplifying work.<br>• Peer learning and cross-sector knowledge exchange.<br>• Public funding and incentives to support investments and workforce development. | **Recommendations / Best practice**<br>• Embed worker well-being into transformation strategies.<br>• Offer modular, flexible, and co-designed training programs.<br>• Strengthen leadership communication linking vision to worker benefits.<br>• Provide SMEs with compliance guidance and advisory support.<br>• Create platforms for peer learning across regions and sectors. |

### 3.3 Challenges Identified from CEO Interviews

The interviews with SME leaders revealed a set of recurring challenges:

- **Well-being and Inclusion Gaps:** High stress, burnout, and insufficient attention to vulnerable groups (e.g., low-skilled, older, migrant workers).
- **Skills Gaps:** SMEs face shortages in digital, green, and transversal skills. Workers often lack digital literacy, sustainability knowledge, and adaptability, while training systems remain too generic and slow to respond to evolving needs.
- **Regulatory Complexity:** SMEs struggle with overlapping, complex EU and national regulations (e.g., the General Data Protection Regulation [GDPR], the Artificial Intelligence Act [AI Act], and Occupational Health and Safety [OHS] rules).
- **Leadership Gaps:** Some leaders lack clear communication and strategies to align technological change with employee needs and market demands.
- **Resistance to Change:** Employees—especially older staff—often show reluctance toward AI and automation due to complexity, distrust, or “change fatigue.” Importantly, this

resistance is not limited to employees. Many CEOs and SME leaders also hesitate to embrace transformation, fearing that changes could be costly, disruptive, or risky for their business models. In some cases, leaders deliberately "wait" for more favorable conditions, such as government funding or clearer policy incentives, before committing to significant steps. For example, local workshops in Germany revealed that a number of CEOs are postponing digital and green investments until such support becomes available.

- **Training Constraints:** SMEs cannot afford long training interruptions and often lack awareness of flexible training providers or formats.

- **Data Privacy and Cybersecurity Concerns:** As AI and digital tools spread, data protection and compliance with GDPR are major challenges.
- **Lack of Worker Involvement:** Transformation is often driven top-down, with insufficient worker participation in decision-making.

### 3.3.1 Well-being and Inclusion Gaps

High stress, burnout, and neglect of vulnerable groups are frequent challenges in SME transformations. "Well-being and inclusion skills" refer to employees' and managers' abilities to maintain physical and mental health, foster inclusion, and design work processes that are human-centric.

**Stress Management and Resilience Skills**, helping employees cope with continuous technological and procedural changes.

**Empathy and Inclusion Skills**, ensuring awareness of diverse needs, including low-skilled, older, migrant, or female workers.

**Process Design and Human-Centric Thinking**, enabling managers to implement technology that supports rather than replaces employees.

These skills safeguard workforce engagement, productivity, and equity. CEOs provided examples: *RAUCH Furnace Technology GmbH* emphasized "people at the centre." *Ritz Messwandler GmbH* stated that AI should "ease workload and support decision-making." *Smartmetal Srl* introduced measures like music, summer clothing, and recreational activities. *Manica S.p.A.* adopts new technologies "only when they demonstrably improve workers' daily operations." *Alfred Kiess GmbH* stressed a "long-term focus on inclusion," ensuring diverse teams are supported.

Most CEOs acknowledged stress, burnout, and the neglect of vulnerable groups as pressing issues. *Socomec Group* emphasized that human expertise remains central to operations, with technology framed as an enabler rather than a replacement. *Dollfus & Muller* stressed maintaining a culture of trust and recognition to support employees in adapting to new roles, confirming that well-being is both a strategic and cultural priority.

In summary, well-being and inclusion skills are vital to maintain motivation, reduce burnout, and ensure equitable participation. SMEs need strategies and processes that integrate human-centric design with technological change.

### 3.3.2 Skills Gaps:

One of the most pressing barriers identified by CEOs is the shortage of skills required to navigate the twin transition. In the SME context, "skills" encompass three complementary dimensions:

- **Digital skills**, such as the ability to manage IT tools, cybersecurity protocols, enterprise resource planning (ERP) systems, and emerging AI applications.
- **Green skills**, including knowledge of sustainability reporting, resource efficiency, circular economy practices, and environmental compliance.
- **Transversal skills**, which refer to broader cognitive and social abilities like adaptability, critical thinking, creativity, problem-solving, teamwork, and communication.

These skills are critical because they enable workers not only to perform technical tasks but also to adapt to new technologies, comply with evolving regulations, and contribute to innovation. Yet SMEs face persistent gaps: workers often lack basic digital literacy, environmental awareness is limited, and resilience-related soft skills are unevenly developed.

Several CEOs emphasized that formal education systems remain too slow and too generic to respond to SMEs' rapidly evolving needs. The CEO of AlpineTech Solutions (Italy) noted that "workers still struggle with basic digital skills such as managing online platforms, which delays the implementation of ERP systems." Similarly, the CEO of EcoPack GmbH (Austria) explained that "staff are committed, but most don't understand the requirements of sustainability reporting, which makes compliance difficult."

The lack of in-house training capacity further aggravates the problem. As *Smartmetal Srl* highlighted, companies need to "identify qualified figures in the IT sector" and deliver "ongoing training programs conducted by the company's own staff" to develop the necessary competencies. *Manica S.p.A.* reinforced this point, observing a "strong willingness to learn and collaborate within teams," which needs to be matched with targeted training opportunities.

Other CEOs underscored the importance of a lifelong learning mindset. *SEMA Maschinenbau GmbH* pointed to adaptability, open-mindedness, and lifelong learning as essential for the future. *RAUCH Furnace Technology GmbH* added that companies must evaluate whether candidates "want to learn new things," since in many cases "nobody can do what I need in the company [at that level of detail], everyone would have to learn it." Similarly, *KOWE-CNC* stressed the need for employees to be flexible and willing to change, echoing the broader requirement for resilience in the face of uncertainty.

Some SMEs have already made progress in addressing these gaps. For instance, Mikrovent has introduced internal and continuous learning programs, emphasizing structured upskilling and reskilling initiatives. Such efforts reflect a broader recognition that future competitiveness depends not only on technical mastery but also on the cultivation of adaptability, collaboration, and innovation-oriented mindsets.

Skills shortages remain a common barrier. Both companies addressed this differently: *Socomec* invests in attracting highly specialized AI and digital experts while maintaining a global learning center and e-learning platform. *Dollfus & Muller*, struggling to attract external talent, compensates by focusing on internal development, assigning responsibilities and building skills within the workforce. This confirms that while the skill gap is universal, solutions differ by size and resource availability.

In summary, skills gaps weaken SMEs' competitiveness and resilience by slowing technology adoption, hindering sustainability efforts, and placing strain on workers. Addressing them requires a combined approach: faster adaptation of formal education systems, SME-tailored training formats, and a cultural shift toward continuous learning.

### 3.3.3 Regulatory Complexity

SMEs often struggle with overlapping EU and national regulations, such as GDPR, the AI Act, NIS 2, and occupational health and safety rules for new technologies. "Regulatory skills" encompass knowledge and abilities required to interpret, implement, and comply with these rules.

**Legal and Compliance Skills**, covering awareness of relevant regulations and understanding operational impact.

**Process Adaptation Skills**, enabling SMEs to adjust workflows and procedures to maintain compliance.

**Monitoring and Risk Management Skills**, ensuring that regulatory changes are anticipated and addressed proactively.

These skills are vital to avoid fines, delays, or operational disruptions. CEOs reported the burden of regulatory complexity. *Manica S.p.A.* noted that "compliance… is a long, costly, and complex process." *Smartmetal Srl* relies on external Health and Safety Managers and legal consultants. *SEMA Maschinenbau GmbH* highlighted "inconsistency of decisions on standards and regulations." *Alfred Kiess GmbH* described multi-level regulation and supply chain reporting laws as significant barriers.

Many SMEs reported regulatory overload as a heavy burden, citing GDPR, the AI Act, and OHS requirements. Yet, the new interviews illustrate that this challenge is not universal. *Socomec Group* described regulations as providing useful benchmarks and guidance for sustainable and digital practices, thanks to its strong compliance capacity. *Dollfus & Muller* indicated that regulatory demands were currently minimal in their textile sector, with ROI and customer acceptance posing bigger obstacles than compliance. This variation suggests that regulatory barriers weigh most

heavily on resource-constrained SMEs, while larger firms and traditional industries may face different, more operational challenges.

In summary, regulatory skills help SMEs navigate complex legal landscapes and ensure compliance while enabling innovation. Solutions include external expert support, structured monitoring, and internal capacity building.

### 3.3.4 Leadership Gaps in Driving Transformation

Effective leadership is critical to guide SMEs through technological and sustainability transformations. "Leadership skills" include strategic, communicative, and interpersonal competencies necessary to align change initiatives with employee capabilities and market needs.

**Vision and Strategic Planning Skills**, enabling leaders to set clear goals and anticipate future challenges.

**Communication and Motivation Skills**, helping leaders convey the purpose of change and inspire employees.

**Decision-Making and Adaptive Skills**, allowing leaders to balance pace, continuity, and flexibility during transitions.

These skills are essential because weak leadership can undermine transformation efforts, reduce employee engagement, and create operational instability. CEOs emphasized this need. Assemblio GmbH stressed being explicit with goals and working with teams. Alfred Kiess GmbH highlighted aligning change with customer needs. Manica S.p.A. noted balancing pace to maintain continuity. SEMA Maschinenbau GmbH highlighted "clear communication, strategic foresight, and resilience." RAUCH Furnace Technology GmbH emphasized motivation, initiative, and conveying the vision. KOWE-CNC underlined the importance of understanding changes and showing their meaning to employees.

In summary, leadership skills are essential to drive transformation, build employee trust, and ensure strategic alignment. Developing these competencies requires training, mentorship, and active engagement with teams throughout the change process.

### 3.3.5 Resistance to Change

A significant barrier for SMEs is employees' reluctance to adopt AI, automation, and other digital or sustainability-related changes. In the SME context, "change-related skills" encompass cognitive and emotional capacities that allow workers to adapt effectively to new technologies and processes. These include adaptability, openness to innovation, problem-solving, resilience, and trust-building.

**Psychological and Cultural Skills:** Older employees may feel threatened by automation, and repeated top-down reforms can generate distrust or "change fatigue." SEMA Maschinenbau GmbH observed that "the older ones potentially have fears to take from them, and the younger ones have to be restrained in their activism."

**Acceptance and Trust in New Technologies:** Employees need the ability to understand and trust digital tools. KOWE-CNC highlighted that resistance often stems from perceived complexity, such as "another password to remember, another piece of paper to fill in." Assemblio GmbH described a general "restrictiveness in SMEs in actually accepting new solutions," while ADDI-DATA noted that SMEs are often slower than larger firms to adopt innovations due to unclear benefits and an overwhelming number of options. Smartmetal Srl emphasized that solutions must simplify work to gain acceptance; otherwise, they risk being counterproductive.

**Problem-Solving and Initiative:** Employees must be able to assess when and how to apply new tools effectively. Including all workers in the transformation process fosters motivation and mitigates resistance.

Resistance to change continues to be a central barrier. At Dollfus & Muller, reluctance to adopt digital tools was closely tied to human factors: both managers and workers were accustomed to paper-based processes, making cultural change slow and difficult. Conversely, Socomec Group, with advanced digital adoption, faced leadership challenges of another kind: ensuring smooth scaling of innovations, managing fragmented data, and attracting experts. This confirms that leadership challenges vary by company maturity — some SMEs must focus on communication and change management, while others must strengthen talent pipelines and governance.

In summary, resistance to change slows technology adoption, hinders sustainability initiatives, and limits innovation. Addressing requires developing adaptability, trust-building, and problem-solving skills alongside inclusive change management and clear communication of benefits.

### 3.3.6 Training Constraints

SMEs face challenges in providing training that is both effective and feasible. In this context, "training-related skills" involve employees' capacity to acquire, apply, and continuously update knowledge in response to evolving technologies, processes, and regulations.

**Learning Agility**, including the ability to grasp new concepts quickly and apply them to work tasks.

**Digital and Technical Skills Acquisition**, referring to mastering specific tools, software, or sustainability-related processes.

**Self-Directed Learning and Lifelong Learning Mindset**, encompassing the capacity to engage with learning proactively, identify knowledge gaps, and pursue skill development continuously.

These skills are essential because they enable SMEs to adapt to rapid technological and regulatory change. Yet gaps remain: SMEs often cannot afford long off-site courses, many employees lack structured opportunities to upskill, and awareness of flexible or modular training providers is low.

Several CEOs illustrated these challenges. *Smartmetal Srl* stated that "training is carried out internally, as the in-house staff possesses a deeper understanding of the company's reality, ensuring more targeted and less generic training programs." *SEMA Maschinenbau GmbH* affirmed

that “we offer ongoing training programs, both in-house and via external partners.” *RAUCH Furnace Technology GmbH* highlighted the need for practical, short, and accessible training modules.

Training challenges remain visible in both companies. *Socomec* has addressed them through a dedicated learning center, while *Dollfus & Muller* relies on on-the-job development. Both highlight the importance of flexible and continuous training, adapted to organizational size and financial capacity.

In summary, training constraints limit SMEs’ ability to develop the skills necessary for digital and sustainability transitions. Solutions require modular, SME-tailored programs, integration into daily work, and strong internal or external support.

### 3.3.7 Data Privacy and Cybersecurity Concerns

As AI and digital tools become more prevalent, ensuring data privacy and cybersecurity is a major challenge. “Data-related skills” include technical, analytical, and compliance capabilities necessary to handle sensitive information securely.

**Data Security Skills**, covering safe handling, storage, and transfer of information.

**Compliance and Legal Awareness**, including knowledge of GDPR and other relevant regulations.

**Critical Thinking and Risk Assessment**, enabling employees to evaluate data sources, identify vulnerabilities, and make informed decisions.

These skills are critical because lapses can result in regulatory penalties, security breaches, and loss of trust. CEOs highlighted several challenges. ADDI-DATA listed “Data & Cybersecurity Concerns” as a top barrier. RAUCH Furnace Technology GmbH stressed checking sources and understanding where data goes. Smartmetal Srl emphasized secure handling with external consultant support. SEMA Maschinenbau GmbH noted risks associated with AI tools like ChatGPT. KOWE-CNC highlighted data protection as critical to AI deployment. At *Socomec*, cybersecurity is seen as a growing strategic risk due to its complex IT ecosystem and sovereign cloud infrastructure. *Dollfus & Muller* relies on external advisors for data privacy and compliance. These perspectives reinforce the finding that cybersecurity is increasingly critical but addressed differently depending on internal resources.

In summary, data-related skills are essential for secure and compliant digital transformations. SMEs require ongoing training, robust protocols, and external guidance to manage data and cybersecurity risks.

### 3.3.8 Lack of Worker Involvement

Many SMEs design transformation initiatives without sufficient employee input. In this context, “participation skills” refer to employees’ ability to engage in decision-making, provide feedback, and contribute ideas to improve processes.

**Communication and Feedback Skills**, enabling employees to express concerns, propose improvements, and ask questions.

**Collaborative and Teamwork Skills**, which allow employees to work across departments and contribute to shared goals during transitions.

**Analytical and Innovation Skills**, helping employees evaluate processes, identify inefficiencies, and suggest innovative solutions.

These skills are critical because they bridge the gap between top-level strategy and frontline implementation. Without them, employees may feel disengaged, reducing motivation and buy-in.

KOWE-CNC emphasized the importance of "communicating changes in a low-threshold manner" and balancing employee involvement during the process. SEMA Maschinenbau GmbH highlighted that "all of the workers are involved in the decision-making process." RAUCH Furnace Technology GmbH added, "It is important that no ideas are suppressed. There are regular workshops with employees."

In summary, insufficient worker involvement limits transformation success. Developing communication, collaboration, and innovation skills, alongside inclusive processes, enhances employee engagement and transformation outcomes.

*Table 4- Table number of CEOs' mentions by challenge and country*

| Challenge | Number of CEOs' Mentions | Specific CEOs' Mentions (with Country) |
|---|---|---|
| **Well-being & Inclusion Gaps** | 12 | - Mikrovent (SL)<br>- Alfred Kiess GmbH (DE)<br>- KOWE-CNC (AT)<br>- Ritz Messwandler GmbH (AT)<br>- SEMA Maschinenbau GmbH (AT)<br>- Smartmetal Srl (IT)<br>- Manica S.p.A. (IT)<br>- RAUCH Furnace Technology GmbH (AT)<br>- Dollfus & Muller (FR) |

| | | |
|---|---|---|
| | | - Socomec Group (FR)<br>- Biobamboo (IT)<br>- Lucchese Industria (IT) |
| **Skills Gaps** | 12 | - ADDI-DATA (FR)<br>- Mikrovent (SL)<br>- KOWE-CNC (AT)<br>- Smartmetal Srl (IT)<br>- Manica S.p.A. (IT)<br>- SEMA Maschinenbau GmbH (AT)<br>- RAUCH Furnace Technology GmbH (AT)<br>- Dollfus & Muller (FR)<br>- Socomec Group (FR)<br>- PONANT (FR)<br>- iba AG (DE)<br>- Lucchese Industria (IT) |
| **Regulatory Complexity** | 12 | - ADDI-DATA (FR)<br>- KOWE-CNC (AT)<br>- RAUCH Furnace Technology GmbH (AT)<br>- Manica S.p.A. (IT)<br>- Smartmetal Srl (IT)<br>- SEMA Maschinenbau GmbH (AT)<br>- Alfred Kiess GmbH (DE)<br>- Dollfus & Muller (FR)<br>- Socomec Group (FR)<br>- UbIQUITY ROBOTICS (SL) |

| | | |
|---|---|---|
| | | - Lucchese Industria (IT)<br>- Biobamboo (IT) |
| **Resistance to Change** | 11 | - KOWE-CNC (AT)<br>- Assemblio GmbH (DE)<br>- ADDI-DATA (FR)<br>- Smartmetal Srl (IT)<br>- SEMA Maschinenbau GmbH (AT)<br>- Dollfus & Muller (FR)<br>- Socomec Group (FR)<br>- iba AG (DE)<br>- Vitesco Technologies (DE)<br>- Lucchese Industria (IT)<br>- Biobamboo (IT) |
| **Data Privacy & Cybersecurity Concerns** | 11 | - ADDI-DATA (FR)<br>- RAUCH Furnace Technology GmbH (AT)<br>- Smartmetal Srl (IT)<br>- SEMA Maschinenbau GmbH (AT)<br>- Dollfus & Muller (FR)<br>- Socomec Group (FR)<br>- KOWE-CNC (AT)<br>- iba AG (DE)<br>- Vitesco Technologies (DE)<br>- Lucchese Industria (IT)<br>- Biobamboo (IT) |

| | | |
|---|---|---|
| **Leadership Gaps in Driving Transformation** | 8 | - Assemblio GmbH (DE)<br>- Alfred Kiess GmbH (DE)<br>- Manica S.p.A. (IT)<br>- SEMA Maschinenbau GmbH (AT)<br>- RAUCH Furnace Technology GmbH (AT)<br>- KOWE-CNC (AT)<br>- iba AG (DE)<br>- Lucchese Industria (IT) |
| **Training Constraints** | 6 | - Mikrovent (SL)<br>- KOWE-CNC (AT)<br>- RAUCH Furnace Technology GmbH (AT)<br>- Smartmetal Srl (IT)<br>- SEMA Maschinenbau GmbH (AT)<br>- Biobamboo (IT) |
| **Lack of Worker Involvement** | 4 | - KOWE-CNC (AT)<br>- SEMA Maschinenbau GmbH (AT)<br>- RAUCH Furnace Technology GmbH (AT)<br>- Lucchese Industria (IT) |

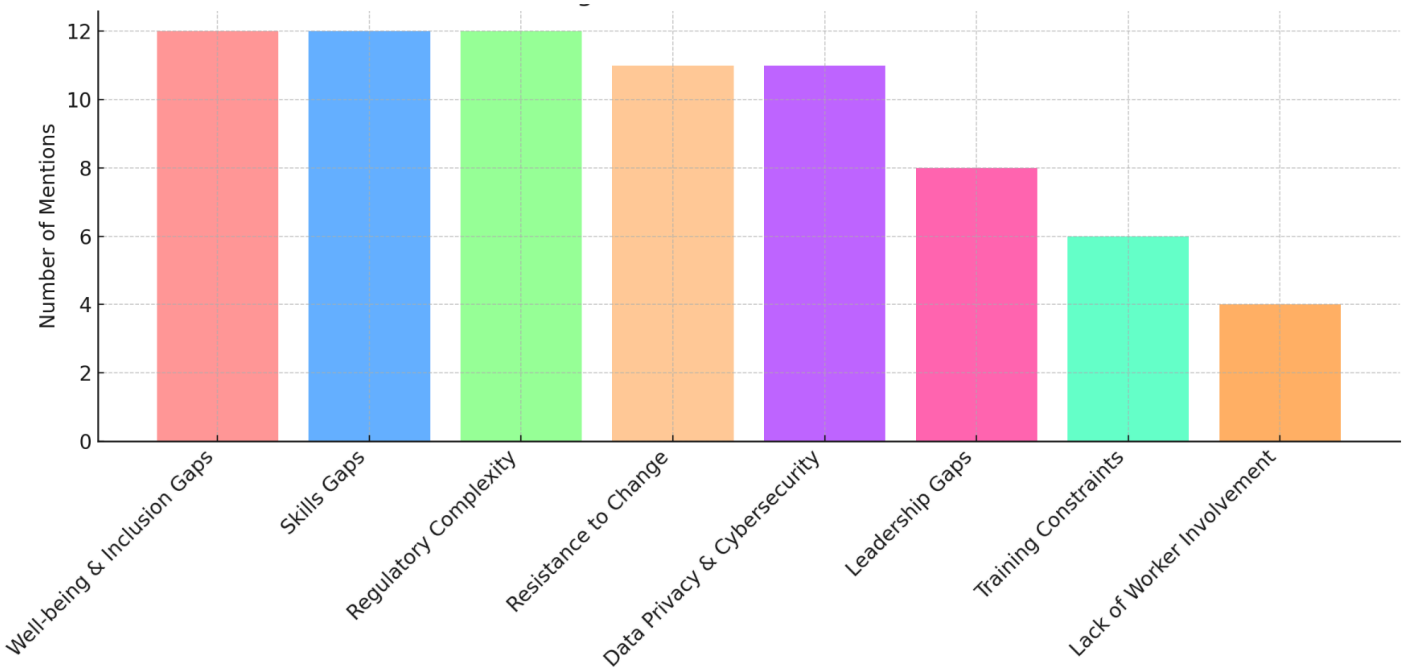


*Figure 1 - CEO challenges mentioned in CEO interviews*

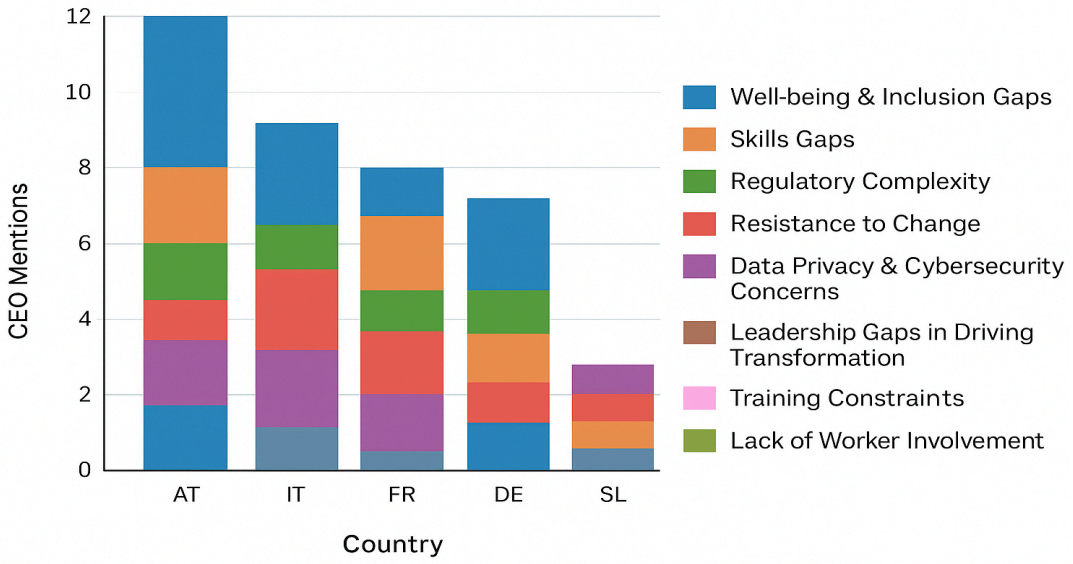


*Figure 2 - CEO mentions by Country and Challenge*

## 3.4 Challenges Identified from Webinars

The two transnational webinars provided an open forum for workers, managers, policymakers, and experts to share how the twin transition is affecting skills and well-being. While many concerns overlapped with those of CEOs, the discussions also revealed additional worker-centered insights.

**New dimensions highlighted by workers included:**

- **Psychological toll of rapid innovation**: constant change creates stress, cognitive overload, and fatigue.
- **Blurred work–life boundaries**: hybrid and remote setups intensified pressures on balance and well-being.
- **Technology without worker input**: tools introduced top-down were often poorly adapted to daily workflows.
- **Well-being as a measurable business outcome**: employees called for mental health, stress management, and inclusion to be treated as core performance indicators.

**Overlap with CEO perspectives:** workers echoed challenges already raised by CEOs, including resistance to change, limited training opportunities, and insufficient involvement in transformation processes.

In summary, while both groups identified structural barriers such as training and regulatory complexity, the webinars underscored the human and emotional dimensions of digitalization, particularly stress, fatigue, and the demand for well-being as a central business metric.

## 3.5 Cross-Analysis of Webinars and CEO Interviews

The comparison between CEO and worker perspectives shows both alignment and divergence.

### 3.5.1 Areas of Alignment

- **Continuous Learning**: Both groups agree that ongoing upskilling and reskilling are essential, combining technical and soft skills.
- **Human-Centric Focus**: Both groups highlighted the importance of placing people at the center of transformation, but from different vantage points. Workers primarily stress well-being and inclusion as values, emphasizing mental health, stress reduction, and equal treatment as essential for a sustainable working life. CEOs, by contrast, tend to frame well-being as a strategic factor—valuing it for its impact on productivity, retention, and employer attractiveness. In other words, workers view well-being as an end goal, while CEOs often see it to strengthen competitiveness.

- **Resistance to Change**: Both recognize resistance as a major barrier, though workers frame it as fear and overload, while CEOs see it as reluctance among older staff.

- **Regulatory Burdens**: Regulations create barriers for both sides of stress for workers and costs/delays for SMEs.

- **Peer Learning**: Both workers and CEOs see strong value in cross-company and cross-regional knowledge exchange.

### 3.5.2 Diverging Perspectives

- **Focus of Training**: Workers emphasize resilience and mindset coaching, while CEOs emphasize digital and technical skills.

- **Perception of Technology**: Workers fear overload and poorly designed tools; CEOs see technology as a productivity and efficiency enabler.

- **Worker Involvement**: Workers demand greater participation in decisions; CEOs focus more on leadership vision.

- **Well-being**: Workers see well-being as an end goal, while CEOs link it to productivity and retention.

The divergence on regulation becomes more complex with the additional interviews. Many SMEs had earlier described regulations as overlapping and costly. However, Socomec viewed EU frameworks as helpful benchmarks and as a source of competitiveness, while Dollfus & Muller reported limited regulatory impact in their sector. This suggests that regulatory burden is not uniformly perceived: it depends on sector, size, and compliance capacity. Similarly, differences remain in technology perception: workers often fear poorly designed tools, while Socomec emphasizes technology as an enabler of human expertise, and Dollfus & Muller favors gradual, incremental improvements.

### 3.5.3 Cross-Analysis Matrix

| Theme | Webinars (Worker Focus) | CEO Interviews (Leadership Focus) | Alignment / Gap |
|---|---|---|---|
| **Skills & Training** | Continuous learning, resilience training, soft skills, mindset coaching | Technical upskilling (digital, IT, AI) and adaptability | Align on training need; diverge on focus (soft vs. technical skills) |

| | | | |
|---|---|---|---|
| **Human-Centric Transformation** | Stress on well-being, work-life balance, inclusion | Well-being embedded as business strategy | Align on importance; different framing |
| **Resistance to Change** | Emotional resistance, fear of AI, overload | Resistance from older staff, lack of trust in tech | Shared concern, different manifestations |
| **Technology Perception** | Tech seen as disruptive if poorly designed | Tech seen as productivity enabler | Gap: Workers fear disruption; CEOs see potential gains |
| **Worker Involvement** | Demand for active co-design and participation | Leadership focus, less emphasis on empowerment | Gap: Workers want more inclusion |
| **Well-being & Inclusion** | Mental health, stress reduction, supportive environments | Well-being as retention/performance factor | Align on importance, diverge on framing |
| **Regulation & Compliance** | Complexity creates stress, uncertainty | Complexity creates cost and delays | Align on barrier; different impacts |
| **Peer Learning & Exchange** | Value in exchanging ideas across borders and sectors | Value in cross-company learning and "test-before-invest" | Strong alignment |

**Table 5. Alignment and Gaps between Worker and CEO Perspectives**

*(Color coding: green = strong alignment, yellow = partial alignment, red = divergence)*

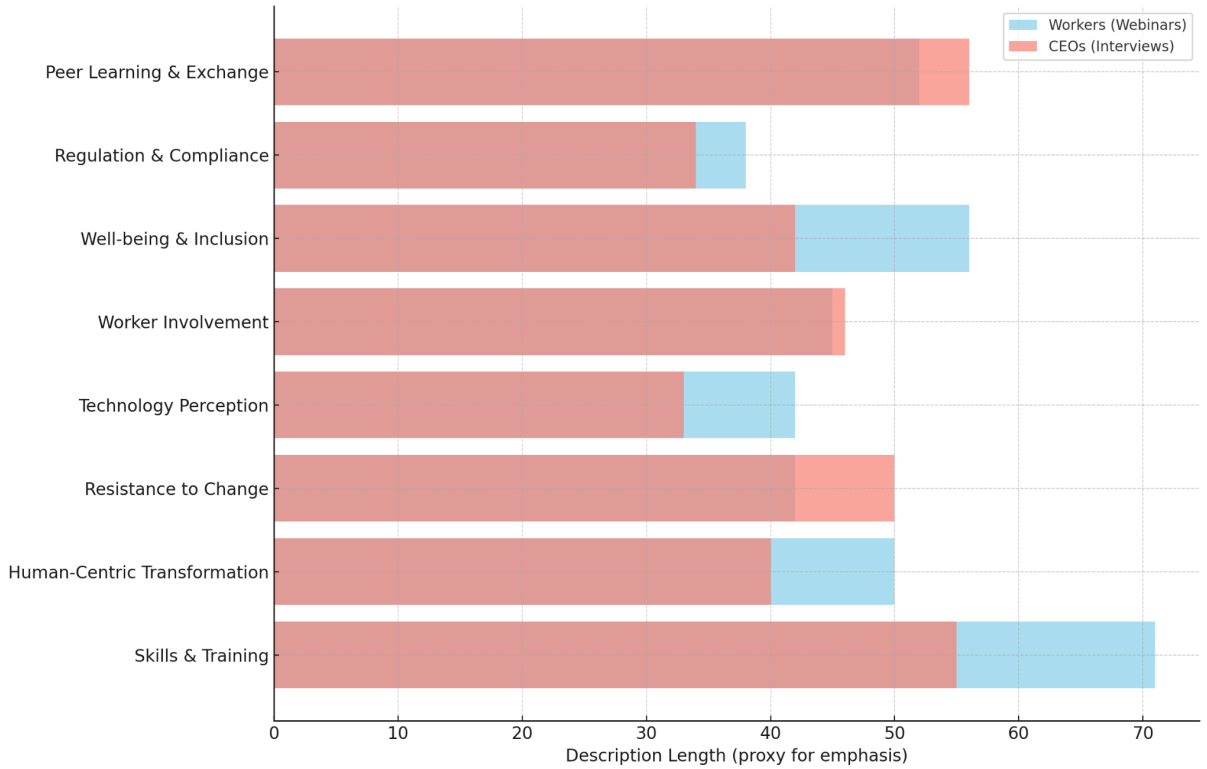


*Figure 3- Workers vs CEOs Perspective by Theme*

The side-by-side comparison chart illustrates how workers and CEOs view the same themes of the twin transition differently. While both groups agree on the importance of areas like skills development, well-being, and regulatory challenges, their emphasis diverges: workers highlight resilience, soft skills, and active participation, whereas CEOs focus more on technical upskilling, leadership strategies, and productivity outcomes. This visual contrast makes clear where perspectives align and where gaps remain, providing a basis for designing interventions that balance technical demands with human-centric needs.

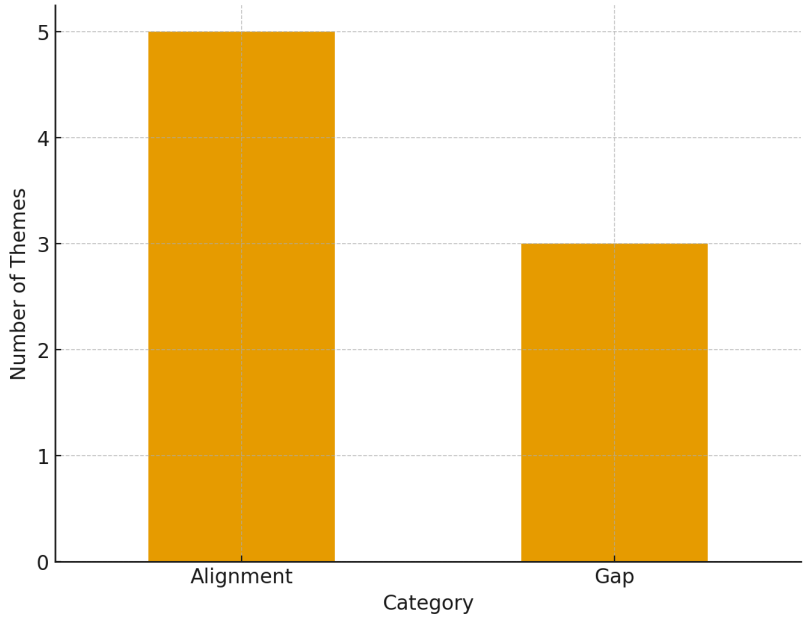


*Figure 4- Alignment vs Gaps in Cross-Analysis*

The chart summarizes how many themes from Table 3.5.3 show alignment versus gaps between workers (webinars) and CEOs (interviews). It highlights that while there is strong agreement on several issues, significant gaps remain in areas such as training focus, technology perception, and worker involvement.

### 3.5.4 Key Takeaways for Action

- Bridge the perception gap with transparent leadership communication and worker participation.
- Build balanced training programs that integrate technical and soft skills.
- Promote human-centered technology design to reduce stress and support inclusion.
- Translate rhetorical commitment to well-being into concrete practices and metrics.
- Tailor regulatory support: interventions should distinguish between resource-constrained SMEs, larger groups with compliance teams, and traditional sectors with limited exposure.
- Recognize company size effects: smaller SMEs face ROI trade-offs and cultural resistance, while larger firms focus on cybersecurity, talent attraction, and scaling complex ecosystems.
- Sustain the human-centric focus by embedding well-being, inclusion, and active worker

involvement into transformation strategies.


*Figure 5- Balancing Worker and CEO Perspectives*

The figure shows a balance scale comparing workers' and CEOs' perspectives on the twin transition. Workers emphasize resilience, participation, and well-being as an end goal, while CEOs focus on technical skills, productivity, and leadership vision. The balanced scale highlights the need to integrate both viewpoints to achieve a human-centric and effective transformation.

By placing both perspectives on a scale, the figure highlights the tension but also complementarity between human-centered needs and strategic business goals. It suggests that resilience during the transition will require balancing emotional and participatory needs of workers with the strategic and technical priorities of leadership.

# Chapter 4: Conclusions

Deliverable 1.2.1 has played a foundational role in the RECENTRE project by capturing the real-world needs, challenges, and expectations of workers and SMEs in the Alpine manufacturing ecosystem regarding the triple transition. Through qualitative engagement activities — including interviews, webinars, and stakeholder discussions — the report has surfaced critical insights into how technological and green innovations are impacting workplaces, and what is required to build resilience among employees.

These findings underscore the central tenet of Industry 5.0: that technological and ecological transformation must go hand-in-hand with human-centric innovation. The success of such transitions depends not only on the uptake of digital and green technologies, but also on the capacity of workers to adapt, thrive, and contribute meaningfully within these new paradigms.

Considering this, the RECENTRE project is now equipped to design a worker-oriented support system that responds to the real and diverse conditions of Alpine SMEs. The Key conclusions drawn from the CEO interviews and Worker's webinars are as follows:

## 4.1 Key Conclusions from CEO and Worker Perspectives

- **People-Centricity is Paramount:** Despite varying levels of technological adoption, there is strong consensus that the human element is central to Industry 5.0. Worker well-being, inclusiveness, and skill development are indispensable for acceptance and motivation. This also includes addressing modern workplace risks such as blurred work–life boundaries, digital overload, and the psychological toll of rapid change.

- **Need for Pragmatic and Accessible Solutions:** SMEs are overwhelmed by complexity and seek simple, practical tools and support mechanisms with clear benefits and measurable return on investment. "Test-before-invest" environments, modular training, and advisory support for compliance are highly valued.

- **Secure and Trustworthy Digital Adoption:** Concerns about data privacy, cybersecurity, and compliance with evolving regulations (e.g., GDPR, AI Act, OHS) underline the need for ongoing training, robust protocols, and simplified guidance to build trust in digital tools.

- **Leadership's Role in Culture Change:** Effective leadership is critical to guide SMEs through transformation. Leaders must communicate vision clearly, balance pace with stability, and inspire adaptability and resilience in their teams. Yet transformation cannot be top-down alone: sustainable change also requires active worker involvement in co-designing processes and technologies.

- **Integrated Approach to the Twin Transition:** Digital, green, and human-centric aspects are deeply interconnected. Support strategies should not be siloed but integrated into holistic solutions that address skills, well-being, sustainability, and competitiveness together.

- **Overcoming Fear and Resistance:** Employee resistance stems from anxiety over AI, distrust of new technologies, and change fatigue. Addressing this requires transparent communication, involvement in decision-making, and practical demonstrations of how technologies can simplify rather than complicate daily work.

- **Regulatory Complexity as a Structural Barrier:** Overlapping and evolving regulations remain a heavy burden for SMEs. It is not only EU-level rules but also the combination of national and regional requirements that creates complexity and uncertainty. At the same time, perceptions of this burden are not uniform: while many SMEs report overlapping frameworks as costly and confusing, Socomec viewed EU standards as useful benchmarks and a source of competitiveness, whereas Dollfus & Muller reported limited regulatory impact in their sector. This underlines that regulatory challenges depend on sector, size, and compliance capacity. Simplified compliance guidance, better coordination across levels, access to expert support, and pragmatic processes are essential to prevent regulatory overload from stifling innovation.

## 4.2 RECENTRE Action Plan:

Based on these conclusions and the expressed expectations of SMEs, RECENTRE is strategically positioned to develop and implement an intervention approach that effectively addresses the identified needs. This intervention should be designed to:

- **Provide Practical, Low-Threshold Technology Adoption Support**: SMEs require clear, understandable guidance to de-mystify advanced technologies and identify practical use cases. This includes offering tools like XR glasses for training (KOWE-CNC), filtering useful innovations (Assemblio GmbH), and focusing on solutions that simplify work (Smartmetal Srl). Support should also include initial awareness and education about technology and funding landscapes (Manica S.p.A.), and guidance on identifying reasonable use cases for AI (SEMA Maschinenbau GmbH). Public support via targeted counseling and online subsidy checks can also be beneficial (RAUCH Furnace Technology GmbH).

- **Offer Integrated Training and Skill Development**: Interventions should deliver **modular, focused, and practical learning formats** that combine both **technical skills** and **resilience-oriented soft skills**.
    - **Technical Skills**: Ongoing training programs, both in-house and through external partners (SEMA Maschinenbau GmbH, Smartmetal Srl). This includes digital upskilling (IT, AI, software training – RAUCH Furnace Technology GmbH), and structured competence models (KOWE-CNC).

- **Soft & Resilience Skills**: Training should also cover adaptability, stress management, teamwork, and mindset coaching to help workers cope with rapid technological and organizational change. This supports well-being and inclusion, as emphasized in worker webinars.
- **Innovative Formats**: Essential elements include mentorship programs, digital coaches (as noted in D1.1), peer-to-peer learning, and accessible, short training modules integrated into daily work.

By balancing **technical upskilling** with **human-centric resilience training**, the Action Plan ensures that SMEs strengthen both competitiveness and worker well-being during the twin transition.

- **Facilitate Financial Aid and Incentives for Workforce Development**: Financial support is crucial for both technological investments and upskilling. Key elements include training vouchers and work-based learning support (ADDI-DATA). While subsidies are seen as a bonus, higher investment subsidies are encouraged to stimulate investment, especially given short economic cycles (KOWE-CNC). Public financial support can significantly boost transformative projects by reducing pay-off times (Manica S.p.A.), as access to financing is a major barrier for new technologies (Smartmetal Srl). Public funding is also vital for research and innovation, as seen with projects like the digital twin (RAUCH Furnace Technology GmbH). Funding should ideally be results-dependent, as suggested by Assemblio GmbH, and address market distortions from international competitors (Alfred Kiess GmbH).

- **Emphasize Human-Centric Design and Worker Well-being**: The intervention approach must promote the design and implementation of technologies that prioritize worker well-being. This aligns with the belief that "Tech should serve people" (Mikrovent). Companies like Smartmetal Srl focus on accessible jobs and employee well-being through practical measures. Employee well-being is a high priority (SEMA Maschinenbau GmbH), and research should center on the well-being of the customer's employees (RAUCH Furnace Technology GmbH). Listening to employees and the market is crucial (KOWE-CNC), and inclusion should be a long-term focus (Alfred Kiess GmbH).

- **Provide Clear Guidance on Regulatory Compliance**: SMEs need assistance navigating complex regulations like GDPR, AI Act, and OHS. This includes compliance checklists and access to certification bodies (ADDI-DATA), simplified bureaucratic processes (Manica S.p.A.), collaboration with experts to stay ahead of regulation (SEMA Maschinenbau GmbH), and external support for regulatory checks (RAUCH Furnace Technology GmbH, KOWE-CNC). There's a call for simpler, more pragmatic bureaucracy from the EU (Alfred Kiess GmbH).

- **Foster Platforms for Peer Learning and Knowledge Exchange**: Interviewees value opportunities for cross-learning and sharing experiences. This includes working with international partners for insights (Alfred Kiess GmbH), encouraging internal team collaboration (Manica S.p.A.), and participating in initiatives for knowledge sharing and practical AI applications (SEMA Maschinenbau GmbH).

- **Offer Strategic Guidance for Leadership**: Interventions should help top management align with Industry 5.0 principles and communicate change effectively. Leaders need to be explicit with goals and engage their teams (Assemblio GmbH). Strong leadership is needed to balance change and maintain continuity (Manica S.p.A.). Key leadership qualities include clear communication, strategic foresight, resilience (SEMA Maschinenbau GmbH), and conveying vision and initiative (RAUCH Furnace Technology GmbH). Leaders must understand changes themselves and create positive perspectives for employees (KOWE-CNC), while also keeping a broad view and incorporating employee ideas (Alfred Kiess GmbH).

**Additional Nuances:**

- Differentiate support by SME profile: Resource-constrained SMEs may need strong regulatory guidance, subsidies, and hands-on training, whereas larger groups may benefit more from cybersecurity frameworks, innovation partnerships, and advanced talent pipelines.
- Acknowledge sectoral realities: Traditional industries may adopt digital tools and sustainability measures gradually, requiring targeted support to reduce resistance and ensure ROI.
- Balance universal and tailored measures: While skills development, well-being, and participation remain universal needs, interventions should allow flexibility to adapt to company size, maturity, and sectoral pressures.

This report has synthesized key insights from interviews with CEOs across Alpine Space, highlighting critical challenges and expectations related to enhancing worker resilience amidst the twin transition towards Industry 5.0. The findings underscore that while the digital and green transformations are technological imperatives, their success is fundamentally tied to a human-centric approach, prioritizing employee well-being, skill development, and active involvement.

# ANNEXES

**AGENDA OF THE EVENT**

**Webinar 1: Future-Proof Your Skills: Embracing the Green and Digital Transition**

**June, 04.06.2025** (11:00 – 12:30)

Online

| Schedule | Title | Speaker |
|---|---|---|
| **11:00 – 11:15** | **Welcome & Introduction to the RECENTRE Project**<br>How the RECENTRE project supports human-centred innovation and Industry 5.0 transition in Alpine manufacturing. | **Marco Galanti** – t2i – technology transfer and innovation – Italy |
| **11:15 – 11:30** | **Young People and Technology for the Future of Enterprises**<br>New models for involving young professionals in reshaping skills and boosting SME competitiveness through technology. | **Manuel Baseggio** – Upskill 4.0, spinoff of Ca' Foscari University of Venice – Italy |
| **11:30 – 11:45** | **Bridging the Skills Gap in the Age of AI and Rapid Change**<br>How to prepare workers to actively participate in transitions, not just adapt to them. | **Ugo Bot** – Future of Work Lab – Estonia |
| **11:45 – 12:00** | **Human Skills for Digital Industry: Making Machines Work for People** | **Ulf Oberbichler** – Alphagate (CEO and founder) – Austria |
| **12:00 – 12:20** | **Q&A** | **Marco Galanti** |
| **12:20 – 12:30** | **Conclusion** | **Marco Galanti** |

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**Webinar 2: The Role of Advanced Technologies in Improving Workers' Well-being**

**June, 25.06.2025 (11:00 – 12:30)**

| Schedule | Title | Speaker |
|---|---|---|
| 11:00 – 11:15 | **Welcome & Introduction to the RECENTRE Project**<br>How the RECENTRE project supports human-centred innovation and Industry 5.0 transition in Alpine manufacturing. | **Marco Galanti** – t2i – technology transfer and innovation – Italy |
| 11:15 – 11:30 | **From Factory to Fulfillment: The Value of Human-Centric Innovation** | **Matteo De Marchi** – Free University of Bozen · Bolzano<br>Industrial Engineering & Automation (IEA)<br>Smart Mini Factory Laboratory |
| 11:30 – 11:45 | **Promoting wellbeing through learning and effective use of AI-Based Workplace Assistance** | **Alexander Mädche** – Karlsruhe Institute of Technology (KIT)<br>Human-Centered-Systems Lab |
| 11:45 – 12:00 | **Uqido srl - Technology makes us Humans** | **Pier Mattia Avesani** – Uqido srl |
| 12:00 – 12:20 | **Q&A – Panel discussion** | **Marco Galanti** |
| 12:20 – 12:30 | **Conclusion** | **Marco Galanti** |

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**LIST OF PARTICIPANTS**

## Webinar 1: Future-Proof Your Skills: Embracing Green and Digital Transition

**Total: 55**

**Italy: 30**

**Slovenia: 10**

**Austria: 3**

**France: 6**

**Germany: 6**

## Webinar 2: The Role of Advanced Technologies in Improving Workers' Well-being

**Total: 49**

**Italy: 37**

**Austria: 4**

**Germany: 8**

## STRUCTURE OF THE INTERVIEWS

**CEO Interview Template: Leadership in Industry 5.0**
This interview focuses on understanding how CEOs are guiding their companies through **Industry 5.0**, balancing **digital transformation, sustainability, and operational efficiency**. The discussion explores topics like **technology integration, environmental sustainability, business strategies, workforce development, and leadership** in the age of **AI-driven innovation**.

**Interview Details:**

- **Interviewee Name:**
- **Company:**
- Position within the company (job title and responsibilities)
- **Industry:**

**Interviewer details:**

- **Interviewer Name:**
- **Date&time:**
- **Method: in person/online**

**Demographics:**

- **What is your age:**
  - 18-29
  - 30-39
  - 40-49
  - 50-59
  - 60+
  - Prefer not to answer
- **What is your gender:**
  - Male
  - Female
  - Other
  - **o** Prefer not to answer

**Professional background:**

- **How many years of professional experience do you have?** (years on the position)
- **What is your highest level of education?**
- Which field of expertise does your education cover:
  - **Natural sciences**
  - **Social sciences**
  - **Engineering/Technology**

- **Arts**
- **Humanities**
- **Other (please specify):**

- **What are your primary areas of expertise?**
- **Personal motto?**

**Introduction: (2 minutes)**

- **Introduce yourself and the purpose of the interview.**
  - "The purpose of this interview is to gain insights into how your leadership is navigating the company through Industry 5.0. Specifically, we want to understand how digital transformation, sustainability, and operational efficiency are integrated into your business strategy."

- **Set the tone for an open, conversational exchange.**

"This will be a conversational interview, and I'll ask a few questions. Feel free to elaborate on your answers, and I may ask follow-up questions based on what you share."

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**Interview Questions:**

## Section 1: Technology and Digital Readiness (2 minutes)

🎬 Digital **Devices & Tools** (1 minute)

Which software, apps, or digital tools do you use most frequently in your work/personal life?

- *Follow-up:* What about AI tools?

What challenges do you face when using (new) technology?

---

## Section 2: Industry 5.0 & Digital Transformation (3 minutes)

**What does the term »Industry 5.0« mean for your company, and how are you, if, incorporating it into your business strategy?**

- *Follow-up (if needed):* How do you balance human-centric innovation with automation in your operations?

**Can you share any examples of technology integration or digital tools that have had a significant impact on your company?**

**What are the main challenges your company has faced in adopting AI, automation, and emerging technologies at scale?**

- *Follow-up:* How do you ensure these technologies are integrated smoothly into your operations?

**What ethical considerations do you take into account when implementing AI and automation in your business?**

**Is XR (AR/MR/VR) or digital twins part of your strategy? How do you see these technologies impacting your operations and decision-making?**

- *Follow-up:* What are the biggest barriers to widespread adoption of XR and digital twins in your industry?

## Section 3: Sustainability, green transition & Environmental Impact (3 minutes)

**How does sustainability/green transition fit into your company's (long-term) strategy?**

- *Follow-up (if needed):* Are there any specific sustainability goals or initiatives you are currently focusing on? (e.g., carbon reduction, circular economy)

**How do you ensure that sustainability efforts are aligned with operational efficiency without compromising on growth or profitability?**

- *Follow-up (if needed):* Have you faced any challenges in integrating sustainability into your business model, and if so, how have you overcome them?

**What role do government regulations and policies play in your sustainability initiatives?**

- *Follow-up:* How do you navigate compliance challenges while fostering innovation in your company?

---

## Section 4: Human-centric approach (3 minutes)

**"To what extent does your company prioritize employee well-being in the digital transformation process?"**

- **1** = Not a priority
- **2** = Low priority
- **3** = Moderate priority
- **4** = High priority

**"How would you ensure that users' (customers, employees, etc.) needs and market demands are at the core of our product development and manufacturing strategy?"**

**"How would you foster a human-centered organization where employees are engaged, upskilled, and empowered to drive innovation?"**

- *Follow-up:* What upskilling or reskilling initiatives do you have in place?

---

## Section 5: Leadership in the Age of Innovation (3 minutes)

**How do you, as a leader, balance the need for innovation and change with maintaining stability and consistency in your company's operations?**

**What leadership qualities do you believe are most important to guide a company through Industry 5.0, and how do you foster these qualities in your team?**

- *Follow-up (if needed):* How do you encourage your leadership team and employees to embrace change and stay adaptable to new technologies or market conditions?

**What strategies do you use to attract and retain top talent in an increasingly digital world?**

- What skills will companies require from workers in the future to ensure success?

---

## Section 6: Challenges and Barriers (3 minutes)

**What are the biggest barriers your company faces in adopting new technologies?**

- *Follow-up:* How do you navigate these challenges while ensuring continued innovation?
- 

**How do you navigate the regulatory landscape while staying ahead of your competitors?**

- *Follow-up:* How do you ensure compliance with data privacy and cybersecurity regulations?

## Section 7: Finance and Public Support Systems (3 minutes)

- **SMEs' Barriers, Needs, and Expectations (1 minute):**

**What are the main financial barriers that SMEs face when considering investments for their transformation into green and high-tech industries?**

*Follow-up: How do you identify the key needs and expectations of SMEs regarding financial support for these types of transformations?*

- **Public Support Systems (1 minute):**

**How do you perceive the role of public financial support systems in enabling SMEs to make the necessary investments for their green and high-tech transformation?**

*Follow-up:* Can you share any examples where public support has made a significant impact on your investment decisions?

- **Advisory Board Recommendations (1 minute):**

**In your view, what key components should be included in a support system kit to effectively address the challenges SMEs face in transitioning to green and high-tech industries?**

---

**Conclusion: (2 minute)**

1. **Final Thoughts**
   - Is there anything else you would like to share about your vision for Industry 5.0 and your company's approach to innovation, sustainability, and efficiency?
2. **Message to Future Leaders**
   - What message would you like to share with future business leaders and innovators?
3. **Vision and ambition (company, personal)**
   - "How do you envision the transformation of your company into "a Company of the Future", and what strategic priorities would you set for the next five years?

**Would you agree to be linked on social media that you have been interviewed by Interreg Alpine Space RECENTRE?**
**(Y/N)**

- **Thank the CEO for their time.**
  - "Thank you for sharing your insights today. It was a pleasure hearing about how you're leading your company into the future of Industry 5.0."

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