

**RECENTRE** 

# D1.3.1 – Report on manufacturing SMEs investments attitude and needs



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## Introduction

Overall objective of the **ALPINE Space project RECENTRE** (ASP0500348), co-funded by the **Interreg Alpine Space Programme** is to improve framework conditions to enhance the transformation of the manufacturing sector especially the automotive, mechatronics and bioeconomy sectors in the Alpine Space according to the <u>Industry 5.0 strategy</u><sup>1</sup>, to make SMEs more intelligent, sustainable and resilient and assure necessary financial system for its implementation.

The project addresses three dimensions of transition:

#### > <u>Digital transition</u>:

Enabling SMEs to adopt **advanced technologies (AT)** such as artificial intelligence, digital twins, Internet of Things (IoT), robotics, and automation. This transition enhances operational efficiency, data-driven decision-making, and smart production systems.

#### Green transition:

Supporting the shift toward **low-carbon**, **resource-efficient**, **and circular business models**, helping SMEs align with EU climate goals and societal demand for sustainability.

#### **Human-centric transition:**

Rooted in the principles of **Industry 5.0**, this transition places **people and society at the heart of innovation**, ensuring that technology serves human needs, protects worker well-being, and fosters inclusive, meaningful work environments.

The manufacturing sector in the Alps is facing several challenges in its transition, including reducing the environmental impact of production processes, advancing digitalisation, and ensuring the well-being of workers. SMEs face a pressing need to transform to safeguard environmental sustainability, protect workers' well-being, and contribute positively to society. Cause climate change has a significantly greater impact in the Alpine region than the global average, green transformation is as important as technological progress.

**Manufacturing transformation** refers to profound and comprehensive changes in industries triggered by the introduction of new technologies, innovative practices and changed strategies to increase efficiency, sustainability and competitiveness. This transformation often involves a fundamental realignment of the organisation, including its culture, structure and strategy, resulting in the company no longer being the same at its core as it was before. The transformation also requires **human centric elements** adapting the

<sup>&</sup>lt;sup>1</sup> https://research-and-innovation.ec.europa.eu/research-area/industrial-research-and-innovation/industry-50\_en





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roles of employees through further training, networking and transparent employee involvement to alleviate fears and secure the future viability of the company.

In addition, increasing efficiency and productivity using new technologies and optimised processes, promoting sustainability by switching to more climate-friendly technologies and processes is a key aspect.

RECENTRE addresses the technological, green and social transformation by developing region-specific models and involving decision-makers in this process. By drafting a transformation strategy and testing it in SMEs across various countries, RECENTRE provides expertise, technologies, and tools for transforming the manufacturing sector.

#### General framework conditions

Based on the above-mentioned activities we clearly want to state that due to external factors the current investment climate is clouded in the in the economy. Below we list a few reasons:

- ✓ The geopolitical volatility causes economic uncertainties for SMEs
- ✓ SMEs perceive the current economic situation as unfavourable and are therefore very cautious with investments.
- ✓ Although the green and digital transformation (including within the financial sector) is underway—for instance through requirements such as CO₂ certificates for bank loans—the pace of change remains slower than is necessary, desirable, or politically expected.

All this causes restraints in the transformation.

## Activities and methodology

The report on manufacturing SMEs investments attitude and needs will summarise both SMEs barriers and needs for transformation and its benefits. The expectations for and the contribution of the public support systems to help SMEs in their investments in green and advanced technology transformation will be touched upon because they cannot always be clearly separated in the context of investments. The related report D1.3.2 will give a detailed analysis on that topic.

Our report on manufacturing SMEs investments attitude and needs summarises information from several sources, the partnership gained by carrying out the following activities:





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#### > International survey

Partnership conducted an international survey where SMEs in the sectors of mechatronics, automotive and bioeconomy were asked to identify bottlenecks, needs and barriers faced by companies. Answers concerning to financial and investment matters are included in this report.

- > Survey on investment attitude and on public support systems
  - 12 project partners answered a survey on investment attitude and public support systems in their regions
- > Bullet points concerning financial issues from Deliverable 1.1.1 Report on SMEs needs and expectations

The report summarises lessons learnt, barriers, bottlenecks and needs entrepreneurs and employees from manufacturing sector are meeting for sustainable production processes

#### 20 CEO interviews

The interviews have been conducted from 9 partners in all partner countries to identify potential needs, barriers as well as good practices.

Together, these activities build the basis of the present report. The findings are not validated but reflect the individual opinions of Alpine SMEs.

## SME needs and barriers

Transformation of the SMEs is a prerequisite for remaining competitive.

The key needs and barriers of local SMEs for their investments on green and high-tech transformation can be grouped in three categories: **technological, green transition and human capital needs**. In addition to that, **regional specifics** play a significant role in SMEs needs and barriers. (e.g., border regions face cross-border regulatory and cultural challenges.)

#### Technological needs and barriers

The **technological needs** of SMEs include digitalization (e.g., AI, IoT, cybersecurity, automation), modernization of production tools and Integration of Industry 4.0 (5.0) technologies. These needs are closely connected to the current technological barriers. High initial investment costs remain a primary obstacle for SMEs in meeting their technological needs. Another barrier to meeting technological needs can be **limited strategic vision**, difficulties in **evaluating ROI** (Return on Investment) or **fragmentation of ecosystems**. in many cases, for example, even if a new technology is available, companies often **lack internal skills** to adopt and manage these technologies. In addition to





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that, **teams may be reluctant** to adopt new tools or practices. The **lack of suitable technical infrastructure** also plays a significant role.

SMEs are grappling with significant internal and external **financial constraints** as they strive to innovate and adopt advanced technologies such as automation, AI, and next-generation IoT solutions. The **high upfront costs** associated with these advancements are a major hurdle, compounded by the limited internal financial capacity of many SMEs to invest in necessary digital infrastructure.

Additionally, navigating the **complex landscape of regional, national and European public funding mechanisms** and innovation grants presents further challenges, making it difficult for these smaller businesses to secure the public financial support needed for growth and modernization, which usually requires investments. SMEs across regions expressed a strong preference for short-term, flexible financial instruments over complex grant schemes, emphasizing the need for accessible and incremental funding options. A widely supported approach was the use of vouchers to cover early-stage activities such as diagnostics, expert consultations, or testing/developing new technologies before committing to full-scale investments. Innovation vouchers and agile funding mechanisms were particularly recommended in Slovenia and Italy, while affordable and adaptable financing tools were consistently prioritized over large, high-risk grants. The importance of subsidies and vouchers was universally highlighted, especially in Slovenia, Italy, and Austria, due to the significant capital expenditures associated with innovation and technology adoption.

SMEs (e.g., Austria, France and Slovenia) reported on the widespread lack of awareness regarding available regional and EU-level support mechanisms, including initiatives such as Testing and Experimentation Facilities (TEFs) and Digital Innovation Hubs (DIHs). This knowledge gap significantly hinders SMEs' ability to access essential resources for funding, training, and consultancy. To address this issue, participants—particularly CEOs—advocated for the development of consolidated platforms or intermediary bodies that provide a streamlined, single-entry point to relevant support services. In Slovenia, companies emphasized the need for simplified access to information and the organization of regular training events, ideally facilitated through established institutions such as chambers of commerce and innovation hubs.

**Limited strategic vision** can hamper transformation projects, which can be viewed as isolated technical upgrades rather than integral parts of a comprehensive business strategy. This lack of long-term roadmaps and insufficient alignment with business goals hampers their ability to fully leverage green and high-tech transformation. Additionally, there is often a **low integration of customer or market needs** into their strategies, further limiting their effectiveness and impact.





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**Fragmentation of ecosystems**<sup>2</sup> presents another significant barrier. SMEs frequently experience limited collaboration with local startups, research centres, or digital solution providers, making it difficult to navigate the regional innovation ecosystem and support structures. This fragmentation leads to an uneven diffusion of best practices, particularly between large corporations and smaller enterprises, thereby stifling innovation and growth within the SME sector.

SMEs are facing a critical **shortage of internal expertise**, which is hindering their ability to innovate and adopt new technologies. Many existing staff members lack the necessary digital or technical skills, and there is a notable shortage of IT and data professionals who are familiar with industrial applications. Additionally, recruiting talent with hybrid profiles that combine engineering and digital expertise is proving to be a significant challenge. A discrepancy between the availability, willingness and the monetary demands of highly qualified people with experience is existing in some cases.

Integration of new technologies requires a **suitable technical infrastructure**. Often there are gaps in this field (e.g., reliable internet, modern hardware, and IT systems, broadband connectivity, especially in rural areas). As a result, the use of cloud-based services and remote access to production data is restricted, limiting innovation and reducing competitiveness. Fragmented IT architecture and lack of interoperability between departments may cause high costs and resistance to technology transformation. In addition to that, many smaller companies, especially those without dedicated IT security experts, perceive digitalization as increasing their vulnerability to cyber threats. The rising complexity of digital systems and evolving regulatory requirements create additional uncertainty. As a result, worries about IT security can discourage businesses from adopting digital technologies, slowing down transformation and innovation.

#### Green transition needs and barriers

The need for green transformation is widely acknowledged, but SMEs do not always perceive a direct causal link to their own operations.

There is a need for greater awareness the low hanging fruits of the green transition. It is primarily driven by compliance with environmental regulations (e.g. EU Green Deal), investments into green technologies represent a significant barrier. With regard to public funding support, SMEs face insufficient subsidies and unclear incentive structures to support their transitions. Additional challenges stem from the technological

<sup>&</sup>lt;sup>2</sup> innovation ecosystem is a network of geographically concentrated entities—including local governments, businesses, universities, and investors—that collaborate to foster innovation and economic growth within a specific region. These ecosystems aim to support businesses, scale up technologies, attract talent, and increase global competitiveness by creating an environment where knowledge, skills, and best practices can spread rapidly among interconnected actors.





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complexity of solutions, a limited internal capacity to understand and apply green technologies, a lack of clarity on the long-term benefits of ecological and/or sustainable transformation, and the intricate regulatory environment.

**High investment** costs pose a significant barrier for SMEs aiming to adopt sustainable practices. Although many SMEs are interested in green transition, **substantial upfront expenses** required for decarbonizing processes, upgrading equipment, or installing renewable energy systems can be daunting. The perceived costrisk ratio is high, especially for small firms that cannot afford failed investments. SMEs (e.g., in Baden-Württemberg, Treviso, and Slovenia) are delaying green investments, waiting for clearer governmental support.

Many SMEs face **limited access to internal and external financing,** particularly those without dedicated sustainability budgets, making it challenging to fund these initiatives. The **long-term return on investment** further discourages short-term decision-making, as businesses are often hesitant to commit to projects that do not yield visible (e.g., monetary evaluation of climate risks) and immediate financial benefits. The internalisation of previous negative external effects, especially for SMEs, is a very difficult process. SMEs need more transparency, risk mitigation, and examples reflecting real-world application and outcomes (e.g., ROI calculators, access to case libraries, CO<sub>2</sub> footprint calculators and green transition planning templates).

SMEs that are taking their first steps towards a **circular economy** are often overwhelmed by its **complexity**, with the number of issues ranging from material selection and return logistics, to product design for recycling or remanufacturing. Internally, the companies often struggle with a lack of internal resources and appropriate training programs to support these efforts as still only few of them have dedicated staff for sustainability or environmental strategies or activities. Additionally, many SMEs **struggle to identify sustainable suppliers** or to understand how to environmentally optimize their product designs or production processes in order to reduce waste and/or extend product lifecycles. Without the necessary **knowledge and tools**, implementing circular economy principles can be a daunting challenge for smaller businesses, hindering their ability to fully capitalize on the potential economic and environmental benefits. In addition to that, the **lack of pressure from clients** or markets to shift to sustainable production in some sectors makes it harder for SMEs to justify investments in greener processes or product redesign, especially when competing against cheaper, conventional alternatives from international competitors.

Frequent updates of the **EU and national legislations** (e.g., EU Green deal, Omnibus Regulation) and its effects (e.g., CSRD, EU taxonomy) challenges for long-





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term business planning. Companies often struggle with compliance due to changes in such regulations. The **regulatory landscape** is often perceived as complex, inconsistent, and subject to frequent changes. SMEs frequently cite a lack of clarity and guidance on how to comply with emerging standards, such as environmental reporting, circular economy mandates, or green procurement rules. Legal certainty is essential for companies of all sizes when planning long-term investments. However, the **rising compliance costs** place additional financial strain on businesses, with smaller firms being disproportionately affected in their green transition efforts

#### Human capital needs and barriers

**Human capital needs** include recruitment and retention of skilled workers, upskilling and reskilling in digital and green topics and addressing demographic shifts and generational gaps. Here again the financial part is a significant barrier: there are **insufficient investments** in employee development, which partially might be related to the **lack of HR capacity and strategic vision**. On the other hand, **SMEs often see employee training, in these areas, as a burden** as they have limited time and resources for comprehensive training.

SMEs might be more willing to invest into employee upskilling when they receive additional financial support. Thus, **financial support** is crucial not only for technological investments but also for upskilling and reskilling the workforce. Some SMEs noted that while subsidies should be a "bonus," a higher investment subsidy would significantly encourage companies to invest. Other SMEs listed "Training Vouchers" and "Work-Based Learning Support" as key elements for a support system kit. However, the absence of a dedicated budget on staff development can be related to the **lack of HR capacity and strategy vision**. Many SMEs lack dedicated HR staff who can drive change and workforce development, and in some industrial cultures, HR is viewed more as an administrative function rather than a strategic one. This perspective leads to an absence of long-term workforce planning, such as mapping future skills needed for transitions, which hampers their ability to adapt and grow effectively.

**Employees might resist training or changes** in their roles, often perceiving automation or AI as threats to their perceived job security. The absence of a digital culture and fears of job losses due to automation can hinder digital transformation efforts within organizations. Without clear communication and active involvement of staff in the change process, the full potential for innovation remains untapped. On the other hand, innovation projects often rely on a few internal "drivers". When these individuals are absent or change, projects come to a halt.





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Finally, **SMEs find it difficult to recruit qualified employees**. The shortage of skilled labour is a major hurdle. SMEs need to invest in training and development to build a workforce capable of using new technologies.

In regions with a high concentration of industry companies are highly competitive in attracting qualified personnel. At the same time, technological transformation requires new skill sets, such as in software development, simulation, or data analysis.

With resources tied up in daily operations, many companies have little capacity left for strategic transformation. Modular, short, and accessible learning formats can help bridge this gap.

#### **Regional specifics**

This chapter refers to responses from the internal survey among partner regions. Examples, cited here from certain partners regions or countries may in most cases also apply to others, but were not specifically mentioned by the partners in the questionnaire.

Finally, **regional specifics** play a significant role in SMEs needs and barriers since border regions face cross-border regulatory and cultural challenges. For instance, **Alsace, as a French border region** with Germany and Switzerland, illustrates the challenges of coordinating with differing environmental standards in a transnational industrial context. While different legal standards can be challenging, the region profits from participation opportunities in trinational projects with different technical and cultural background and access to multiple European financing programmes.

Geographical proximity also impacts the ability to retain skills and talent within the region of **Auvergne-Rhone-Alp.** This is why working on improving working conditions and employee retention is crucial for industrial companies. Furthermore, technological, Industry 5.0, and environmental levers are major strategic priorities for this territory. These dimensions are essential to ensure competitiveness, sustainability, and attractiveness for both businesses and workers.

Export-oriented regions, such as **Upper Austria** with its concentration of SMEs in mechanical engineering and mechatronics, face the dual challenge of complying with national and international standards. At the same time, strong international competition compels these firms to secure differentiation through distinctive technological advantages, including digital services and sustainable product features.

Additionally, the rapid pace of technological transformation requires new training formats (e.g., apprenticeship as mechatronics technicians with digital expertise), but the development of these programs is lagging. Furthermore, the EU CSDDD is compelling many SMEs to adapt their processes, as they are indirectly affected through their roles as suppliers.





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In most regions (mentioned in **Italian regions and Germany**, but probably applying in all involved partner regions), current demographic trends (incl. an aging workforce and the region's limited ability to attract young professionals and highly skilled talents) combined with the discrepancies between qualifications/skills of job seekers and open positions for candidates, particularly in technical, digital, and innovation-driven roles results in a labour market imbalance where demand and supply fail to align. This is ultimately hindering business competitiveness and employment growth.

An **additional regional barrier** is the lack of culture and strategic mindset toward embracing innovation, sustainability, and long-term change. This cultural gap slows down the adoption of new technologies and hinders collaboration with educational and research institutions.

# Public support systems

The partnership analysed public support systems (see also D1.3.2) by looking at EU and national and regional funding and service opportunities and past projects and collecting information on existing and past support systems. Current funding can be summarized in 4 categories with some examples:

- Digital: BPI Digital Loan, ADEME Responsible Digital, EDIHs, Digital Campus...
- Green: ADEME, Innov'R, Circular 4.0, GreenTech BW, Smart Industrial Parks.
- Human: OPCO 2i, VTE Vert, Just Transition Action Plan, Alsace Tech.
- Cross-border: Interreg projects (e.g., Regio Lab, Clim'Ability Care, Robot Hub Transfer...).

The support organisations for public funding offer e.g., diagnostics, funding access, training, innovation support, networking. Here are a few examples from partner countries:

- France: CCI Alsace Eurométropole, Grand Est Developpement, ADEME, Alsace Tech, OPCO 2i.
- Austria: Business Upper Austria, FFG, UAR, Cleantech and Mechatronics Clusters.
- Germany: Chambers of Commerce, e-mobil BW, Umwelttechnik BW, regional clusters, Bayern Innovativ, Cluster Mechatronics & Automation and Umweltcluster Bayern
- Italy: Trentino Sviluppo, Veneto Innovazione, Unioncamere Veneto, t2i
- Slovenia: chambers of commerce, technology parks, tech transfer offices

The partners identified some best practices related to public funding such as collaborative innovation hubs (e.g., KMØ- France, COMET - Austria), integrated support (technical, financial, human) and cross-sector and cross-border cooperation. The main conclusion is that although there are numerous funding opportunities for companies from the abovementioned sectors, funding access needs to be simplified so that more companies / SMEs can use it.





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## SMEs' benefits from transformation

**Technological and green transformation** offer significant benefits for SMEs, provided these processes are accompanied by measures that ensure workers' well-being. In the context of technological transformation, automation—particularly for repetitive tasks in assembly or manufacturing—can play a crucial role in reducing lead times, minimizing waste, and generating productivity, efficiency gain and improving workers safety. Furthermore, technological transformation leads to more informed decisions in product development, maintenance, and manufacturing by using digital twins (AI and IoT), simulation and AI-supported data analysis. In addition to that, SMEs can respond more quickly to customer demands using modular, digital engineering tools – for example, in custom machine manufacturing. Finally, data-driven services (e.g., predictive maintenance, pay-per-use models) unlock additional value creation potential and create new business models.

**Green transformation** is driving significant benefits for businesses across various sectors. With an increasing demand for sustainable products, companies are committing to substituting environmentally materials, higher recycled content in packaging and production, opening up new market opportunities. Additionally, sustainability is becoming **a key criterion for market access**, where original equipment manufacturers (OEMs) prefer suppliers who can demonstrate sustainable practices. This shift is advantageous for SMEs that prioritize sustainability, as it enhances their chances of securing contracts.

Moreover, **green transformation is paving the way for new business models**, such as remanufacturing, refurbishment services, and product-as-a-service systems, which attract new customer groups, including international markets. Companies are also experiencing cost reductions through resource efficiency measures like energy management systems, process optimization, and circular strategies. Furthermore, the emphasis on sustainability strengthens regional value creation by promoting partnerships with local suppliers, thereby fostering a more resilient and interconnected local economy.

The **human capital aspects of transformation** are proving to be highly **beneficial for companies**. Organizations that invest in development, purpose orientation, and sustainability are becoming more attractive employers, successfully drawing in new talent and retaining existing employees. This focus on sustainability not only enhances the company's reputation but also fosters **a positive work environment**.

Moreover, **involving employees in transformation** processes boosts their sense of agency, leading to a more **motivated and innovative culture**. Employees who feel empowered are more likely to actively contribute to problem-solving and drive the company forward.





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Additionally, the adoption of new digital tools and ecological requirements is prompting companies to develop comprehensive internal training programs and approach further education in a more structured manner.

This commitment to skill and knowledge development ensures that employees are well-equipped to meet the evolving demands of the industry.

## SMEs' Investment needs and attitudes

Geopolitical instability and ongoing economic uncertainty are making SMEs increasingly cautious about committing to new investments. Many perceive the current economic climate as unfavourable, leading to a conservative approach to spending. Additionally, following recent crises such as the COVID-19 pandemic, public sector austerity has slowed the pace of green and digital transformation—despite some progress, such as the integration of CO<sub>2</sub> criteria in financial assessments—resulting in a more complex and slower transition than politically anticipated or economically necessary.

In the abovementioned framework conditions SMEs across Europe face a complex set of challenges when it comes to investing in innovation, digitalisation, and sustainability. **Financial constraints**—both internal and external—remain a **major barrier**, particularly in adopting advanced technologies such as automation, AI, and IoT. **High upfront costs** and **limited internal financial capacity** hinder progress, while navigating the fragmented landscape of regional, national, and EU-level funding mechanisms adds further complexity.

SMEs consistently express a **preference for short-term, flexible financial tools** over complex grant schemes. Vouchers for early-stage activities (e.g., diagnostics, expert advice, or pilot testing) are widely supported, especially in Slovenia and Italy, where innovation vouchers and agile funding models are seen as very important. Subsidies and vouchers are also considered essential in Austria, Italy, and Slovenia due to the high initial costs of innovation.

In the context of the green transition, SMEs show interest but are often deterred by the **substantial investments required for decarbonisation, equipment upgrades, and renewable energy systems**. The perceived risk of low or delayed returns, especially for smaller firms, leads many to postpone action until clearer policy signals or support mechanisms emerge. Limited access to sustainability-focused financing and the absence of dedicated budgets further constrain progress.

SMEs call for greater transparency, risk mitigation tools, and practical resources—such as ROI calculators,  $CO_2$  footprint tools, and case libraries—to support informed decision-making.





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SMEs are often reluctant to invest in green transformation due to the long-term nature of returns and the lack of immediate, visible financial benefits, such as quantifiable climate risk reductions. This hesitation is compounded by the fact that meaningful environmental impact requires coordinated global and regional efforts, making individual SME actions feel insufficient in isolation. Additionally, internalising previously externalised environmental costs remains a complex and resource-intensive challenge for smaller businesses.

**Human capital development** is another critical area where investment is needed. While some SMEs view **financial support for training as a bonus**, many acknowledge that **higher subsidies would significantly boost their willingness to invest in workforce development**. Tools like training vouchers and work-based learning support are seen as valuable. However, a lack of HR capacity and strategic workforce planning—often due to the absence of dedicated HR staff—limits SMEs' ability to anticipate and prepare for future skill needs. In many cases, HR is still viewed as an administrative function rather than a driver of transformation.

Finally, a **widespread lack of awareness about existing support programs**—such as Testing and Experimentation Facilities (TEFs) and Digital Innovation Hubs (DIHs)—further impedes SMEs' ability to access funding, training, and consultancy.

This issue was particularly discussed during workshops in Austria, France, and Slovenia. To address this, SMEs advocate for consolidated platforms or intermediaries that offer a single-entry point to relevant resources, along with simplified access to information and regular training events, ideally coordinated through chambers of commerce and innovation hubs.

## Conclusion

In summary we state that geopolitical instability and ongoing economic uncertainty are making SMEs increasingly cautious about committing to new investments.

The green transformation is being undermined because politicians and downstream regulators are zigzagging. Green investments are declining because legal regulations and the pressure to implement them are being scaled.

The general trend towards digitalisation continues, digital product passes are only just emerging, and the widespread use of AI is becoming increasingly common but has not yet arrived.

Worker's well-being investments: due to demographics, the retaining and training of the own staff is essential, but investments in work force and employee training are not always seen as investments in the future.





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Many companies are facing financing bottlenecks for, skills shortages and rising operating costs, which makes investment difficult.

High Initial Investment Costs for adopting energy-efficient machinery, renewable energy sources, or resource-saving solutions are hindered by limited financial capacity. In addition, the perceived cost-risk ratio is high, especially for small firms that cannot afford failed investments. **Affordable, Flexible Financing Tools** are a top priority, with a preference for incremental funding instruments over large-scale, high-risk grants.

Green investments are delayed cause SMEs are waiting for clearer governmental support. SMEs are hesitant to invest in digital tools without a clear sense of ROI, especially in industries with tight margins.

To increase investment, support systems must provide a package of measures consisting of appropriate financial support, technology access, and skills development.

