

Entrecomp for transition



EntreComp4Transition: a market analysis and learning outcomes recommendations



Project Name	Building upon the EntreComp Framework for a green and digital transition
Project Acronym	EntreComp4Transition
Work Package	3
Document Title	Deliverable 3.1 Final report on market analysis and learning outcomes recommendations.
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MARCH 2023

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CHAPTER 1:

Introduction

The EntreComp4Transition ambition

The twin green and digital transition is expected to bring benefits to all parts of the European society. However, for it to successfully happen, education, vocational education and training (VET) providers, and businesses need to join forces. EU citizens are called upon to upskill and re-skill themselves in the domain of entrepreneurship, which will work together with digital and green skills to ensure they can contribute with sustainable solutions to a stronger and more resilient Europe. Citizens with skills in these areas are crucial to achieve EU policy goals such as the Green Deal or the EU Digital Strategy. Indeed, entrepreneurial skills – as described by the European Entrepreneurship Competence Framework, EntreComp – are the most important basic requirements to enable this change.

The [EntreComp4Transition](#) project aims to develop new, innovative, multidisciplinary approaches to teaching and learning, paving the way for the future “Green Transition Facilitator” by fostering an entrepreneurial mindset, facilitating co-creation, and ensuring recognition of learning outcomes. The project, co-funded by the European Union, is an alliance between SMEs (represented by the Chambers of Commerce), Higher Education/Vocational Education and Training (HE/VET) Institutions in 5 different country clusters: Austria, Belgium, Italy, Spain and Türkiye.

Activities include an **in-depth analysis of skills gaps**, the development of a **dual blended methodology** with innovative learning content delivered via a MOOC in line with ECVET and EQAVET frameworks, pilot sessions, a mobility scheme, and the creation of open badges to support Higher Education/Vocational Education and Training (HE/VET) and enable businesses to verify acquired competencies.

Underpinning these actions, the project will also produce a **sustainable Artificial Intelligence (AI)-based tool** to support companies in identifying skill gaps, to raise their competitiveness and to support them to adapt to the needs of the digital and green transition in Europe.

About this report

This report refers to the in-depth analysis of skills gaps in these key areas of **entrepreneurial, digital and sustainability skills**. It provides a market analysis whose target is to contribute to defining the learning outcomes required to enable students and professionals to move forward to the green and digital transition.

Building on the recommendations and goals of the competence frameworks developed by the European Commission – GreenComp¹, EntreComp² and DigComp³ -, the overall objective of this research is to identify **skills mismatches** between education and training, on the one hand, and on the other, the labour market regarding digital and green soft skills required by the future “**green transition facilitator**”.

In order to identify the adequate learning outcomes and pave the way to new learning pathways, it is fundamental to make sure that the respective actors are properly involved in defining actual challenges

¹ GreenComp – GreenComp is a reference framework for sustainability competencies, released by the European Commission in 2022 [for more information, visit: [JRC Publications Repository - GreenComp The European sustainability competence framework \(europa.eu\)](#)].

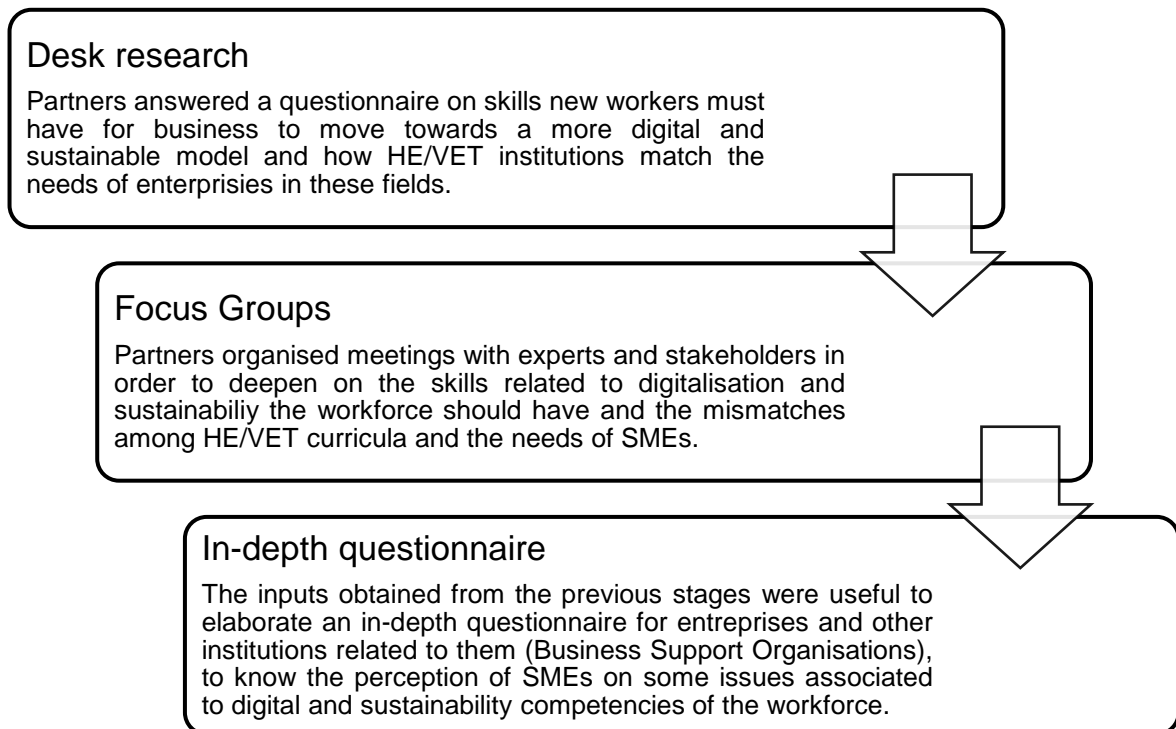
² EntreComp – The European Entrepreneurship Competence Framework is a reference framework developed by the European Commission to explain what is meant by an entrepreneurial mindset [for more info, visit [The European Entrepreneurship Competence Framework \(EntreComp\) - Employment, Social Affairs & Inclusion - European Commission \(europa.eu\)](#)].

³ DigComp – The Digital Competence Framework for Citizen (DigComp) provides a common understanding of what digital competence is [for more information, go to: [DigComp 2.2: The Digital Competence Framework for Citizens - With new examples of knowledge, skills and attitudes \(europa.eu\)](#)].

and needs to develop the basis for future entrepreneurial, green and digital skilled workers and entrepreneurs.

The research methodology

The research developed was based on three inputs which were provided by the project partners sequentially:



The structure of the report

The main insights gathered from the desk research and the conclusions of the focus groups organised by the partners of the project are provided in Chapter 2⁴. It has been deemed appropriate to join both inputs, as the main ideas and the conclusions reached in desk research and focus groups are complementary. Also, focus groups' guidelines are based on the desk research main insights.

Chapter 3 illustrates the aggregated results from questionnaires. Statistical analysis of responses has been done using aggregated answers from the five countries instead of focusing on one country at a time. A country breakdown has been included for each question; however, this should be seen as indicative, due to the small sample of responses per country.

Chapter 4, the final section, brings together conclusions and recommendations, based on the information provided by partners, SMEs and stakeholders across the detailed stages.

Annex 1 provides the sample of the questionnaire used, while Annex 2 provides a series of detailed examples of inspiring practices sourced from within all partner countries.

⁴ Chapter 1 refers to the introduction of the market analysis.



CHAPTER 2:

Desk research and focus groups

Main insights

This section summarises the relevant findings from the desk research and the focus groups.

The **desk research** aimed to retrieve information from each country about the skills that new workers must have for companies to move towards a more digital and sustainable business model, and to know how HE/VET institutions are aligning their training programmes towards entrepreneurship, digitalisation and sustainability.

In turn, **focus groups** explored the current training methodologies, materials and skills mismatches between education and labour market in the context of green and digital transition.

The main insights are included in the section “Conclusions and recommendations” of this report.

2.1. Desk research

OBJECTIVE: Evaluating the situation in the different countries regarding the educational gaps in terms of digitalisation, sustainability and entrepreneurship that should be addressed.

2.1.1. Austria

In terms of the efforts being made by companies towards a more digital and sustainable business model in the country, a study with qualitative in-depth interviews and quantitative surveys with company managers⁵ reveals that many companies do not consider digitalisation to be important for their businesses and therefore make little effort to increase the use of digital technologies. The results indicate that some companies fail to see how concrete digital technologies can enhance their productivity and thus bring real added value.

Furthermore, when it comes to the challenges faced by companies in the fields of digitalisation and sustainability, in-depth interviews show that industries that traditionally maintain close and direct customer contact, such as catering or insurance, fear that the unique nature of their business will be lost through digitalisation.

Other challenges in digitalisation and sustainability are identified as a lack of time in the day-to-day business, a lack of knowledge about specific applications, and fears of unforeseeable acquisition costs, reliance on providers, or customers aversion.

Additionally, broader challenges faced by companies are categorised into internal factors (such as process optimisation, company growth, innovation development and personnel bottlenecks) and external factors (such as the company’s sustainable orientation, pressure from customers and trade). It could be argued that in Austria, some companies are sceptical about digitalisation, while others are keen on increasing the use of digital technologies. The motivation for digitalisation tends to be greater in larger companies and with higher levels of education.

2.1.2. Belgium

Belgian companies are facing several challenges in their transition towards digital and green practices. In agriculture, the main challenges include reducing environmental impact, adapting to climate change, and recognizing the value of non-productive functions such as carbon storage and biodiversity. In the construction industry, challenges include improving the built environment and adapting to new behaviours of users, as well as developing renewable energies. Industries are focused on energy efficiency and producing heat from renewable sources. Other challenges across sectors include achieving carbon neutrality, implementing circular economy practices, conserving biodiversity, and adapting to climate

⁵ Gangl, K. und Sonntag, A. (2020): Digitale Kompetenzen in österreichischen KMUs. Institut für Höhere Studien (IHS). Wien.

change impacts⁶. Various prospective studies from a qualitative point of view are trying to analyse skills that companies are demanding from applicants in the near future⁷. For instance, two different studies, focused on the value chain in the food industry⁸ and in the construction sector⁹, were published, giving a panorama of the new trends expected within five years and their impact on jobs and competencies. Digital technologies occupy a cross-functional position and, in the background, contribute to achieving environmental, social and economic objectives. The need of the development of basic skills or a digital culture has been mentioned for many professions, at different stages in the value chain.

On the one hand, this need arises from technological developments, which often require such skills to carry out a wide variety of activities: selling, producing, communicating, analysing production, controlling quality or managing logistics. On the other hand, this need aims to make up for a deficit in these skills on the part of certain workers. The health crisis has acted as a wake-up call: some employers, funds and some employers, training funds and operators launched distance learning, which some members of the public were unable to access.

Skills to be developed are generally those formalised in the DigComp framework. More specifically, the ability to interact with a digital interface skill also appears to be developed. Finally, among future transversal competencies, it must be noticed that the studies mention the following entrepreneurial competencies: being accurate, acquire a global vision, teamwork, communication, flexibility, creativity, etc. As such they must be understood as anticipation and change management tools.

A quick look at the universities' curricula identifies that neither digital nor sustainable training is included in the more traditional subject areas such as law, medicine, nursing, history, philosophy, political sciences, engineering, educational sciences and translation. Nevertheless, in some curricula, it is possible to get some specific (not general) training/education related to computer science, but this is less evident for sustainable development. There is also a necessity to specialize in order to access a learning path that develops green and/or digital competencies within higher education curricula.

From the government perspective, Walloon public programmes supporting digitalisation mainly focus on primary/basic digital competencies acquisition and equipment.

In Flanders, different programmes¹⁰ guide companies toward becoming "Factories of the Future" with a focus on transformation related to human capital. SMEs face challenges in the digital transformation process due to limited resources, though they are more agile than larger organisations. The Flemish government's 2019-2024 policy letter emphasizes the need to support SMEs in innovating and incorporating artificial intelligence into their business models. The Social and Economic Council of Flanders recommends updating education and training programmes to include digital education and promote lifelong learning. Sustainability is also a key issue, with the Flemish government's fourth policy note outlining 7 transition priorities to achieve sustainable development goals. In 2022, a Circular State of The Union was signed between the Flemish Government, business organisations, civil society and academia, counting 6 working agendas. The hub for circular economy in Flanders, Vlaanderen Circulair, highlights several examples of circular economy initiatives, including those in construction, textiles, and water treatment. Finally, the Flemish government has launched a call to encourage the academic world to integrate green and digital competencies into education and training programmes. Examples of revised

⁶ http://etat.environnement.wallonie.be/files/Infographie_2021/L%27environnement%20wallon%20en%2010%20infographies-2021.pdf

⁷ DigComp Framework is used in some analyses of skills need: [Métiers d'avenir et compétences pour le futur \(leforem.be\)](#)

⁸ [Anticipation des besoins en compétences et formations dans la chaîne de valeur agro-alimentaire - De la fourche à la fourchette \(leforem.be\)](#)

⁹ [Anticipation des besoins en compétences et formations dans la chaîne de valeur de la construction \(leforem.be\)](#)

¹⁰ E.g., Made-Different programme (coordinated by Agoria and Sirris). More information at the following link: [SustAIIn.brussels - Shifting companies to think more digital & sustainable | Sirris](#)

programmes include interdisciplinary innovation for sustainable design and problem-driven practical courses that incorporate sustainability throughout the construction process.

2.1.3. Italy

In Italy, the pandemic has accelerated the adoption of digital technologies by businesses, but many small companies still have low levels of digitalisation. Among the firms that have invested in digital technologies, the most common areas of investment are digital marketing, customer behaviour analysis, and the use of digital channels for promotion and sales.

The main challenges that businesses in the country face in terms of digitalisation and sustainability are related to the need for professionals with digital skills. Additionally, the green transition will have a greater impact on certain sectors such as construction, automotive, and tourism, so intervention will be prioritised in these areas.

When it comes to new graduates and their role in digitalisation and sustainability, companies are interested in candidates with higher education, ideally at least a tertiary degree, as they are expected to have stronger digital skills. In addition, companies expect graduates with higher grades to have advanced digital skills, including proficiency in mathematical languages and the ability to manage industry 4.0 solutions. In terms of sustainability, green skills are important regardless of the worker's level of education.

It is worth noting the skills that firms are seeking from applicants in Italy in relation to digitalisation and sustainability. Italian companies typically require candidates to possess basic digital skills, IT skills, or skills related to industry 4.0. Moreover, businesses value the ability to use internet technologies and create digital tools for visual and multimedia communication. In terms of sustainability, energy preservation and reducing the environmental impact of economic activities are considered crucial for most professional roles.

In higher education institutions, graduates are expected to be proficient in using internet technologies and producing visual and multimedia communications. Specifically, at the university level, the possession of digitalization skills is considered most important for graduates in disciplines such as electronic and information engineering. Additionally, there is a growing demand for green skills in all fields of study.

Despite the training provided by educational institutions, companies face significant challenges in finding professionals with specific digital competencies in the labour market. Electrotechnical engineers, IT equipment maintainers, and technical programmers are the professionals that are most difficult to find. Additionally, companies generally find it more challenging to fill green job positions due to a lack of qualified candidates in the labour market.

New Italian businesses are seeking employees who possess both practical skills and the ability to understand content, challenges, and future trends. These businesses require collaborators who can effectively market products and organize daily activities, and higher levels of education are increasingly required compared to established businesses.\

2.1.4. Spain

In Spain, companies often prioritise acquiring new technological equipment over incorporating human resources with good digital skills when transitioning to a more digital and sustainable business model. While when it comes to sustainability, SMEs, which are the most common type of business, still face challenges.

A major barrier to the development of digitalisation and sustainability is the mindset of companies. A significant share of companies considers these challenges (especially sustainability) as a cost more than an investment.

Additionally, companies must comply with the new legal regulations implemented by the governments to stimulate the transformation within the business sector. These regulations establish a timeframe for implementing changes, and non-compliance can result in sanctions. Therefore, it is important for companies to stay well-informed about these regulations and incorporate them into their strategic direction.

Furthermore, one of the difficulties associated with these topics is that the transformation requires technologies that are not easily available in the market, either because of their novelty or because they address specific needs. This means that companies require access to technological developments and professionals in engineering, technology, consulting firms, etc., who can implement or adapt these technologies to their specific needs. It is also worth mentioning that companies are not isolated entities; they need to find suppliers that meet sustainability requirements, which can be challenging.

Companies are actively seeking graduates with digital and sustainability skills, particularly in fields such as engineering and computer sciences, as well as those professionals working on technological solutions that increase energy efficiency. While companies prioritize proficiency in 4.0 technologies, sustainability is less emphasized in their hiring criteria, with workers simply expected to adhere to company rules in this regard.

At national level, there is no homogeneity in terms of the skills included in the educational curricula. Formal education is starting to incorporate sustainability and digital skills to a greater extent, but institutions face challenges in adapting as quickly as companies need them to.

While new Spanish entrepreneurs recognize the importance of integrating technologies into their businesses, some lack the necessary skills and others perceive it as merely a trend. However, sustainability is perceived with certain urgency among them, and studies showing the advantages of sustainable transformation are helping a lot in increasing their awareness.

2.1.5. Türkiye

In Türkiye, businesses are increasingly adopting digitalisation and sustainable practices, with different units or departments within the same business independently managing these aspects. Moreover, companies are embracing renewable resources by installing solar panels on their rooftops.

Nevertheless, companies are also facing challenges. The foremost obstacles are the lack of skilled workforce and a limited understanding of the importance of digitalisation. Additionally, concerns about the reliability and security of technological infrastructures exist. In terms of sustainability, budget constraints hinder some firms from investing in green technology, as they do not see immediate returns.

Turkish companies require new graduates to possess essential skills such as digital literacy, internet proficiency, software knowledge and communication skills. More precisely, they demand the use of AI, computer programming, software proficiency, robotics and machine learning. Waste management and renewable energy expertise are crucial green skill sets that firms expect from graduates.

To address these challenges, institutions are adding courses to their curricula to raise awareness about digital transformation and enhance digital literacy.

Among the various challenges faced by Turkish businesses, the most significant problem is the lack of knowledge and skills among the current workforces. Another crucial concern is the brain drain resulting from the pursuit of better working conditions elsewhere.

Entrepreneurs in the country show great interest in e-commerce and the future looks promising with an emphasis on digitalisation in the field of education. This focus on education is preparing a generation of entrepreneurs who are more knowledgeable in the digital realm.

2.2. Focus groups

OBJECTIVE: The purpose of the focus groups is to assess the current training methodologies and supporting materials to detect skill mismatches between formal education and the labour market.

Focus groups were organised by partners in each participating country and were comprised of experts and stakeholders who discussed about: digitalisation and sustainability in SMEs, level of workforce in digital and sustainability skills, detection of mismatches between the training that HE/VET institutions provide and needs of SMEs. Special attention is paid to the existing gap between these two areas in the fields of digitalisation and sustainability.

In this section, key contributions from the participant countries are displayed.

2.2.1. Austria

The focus group was organised by Wirtschaftskammer Österreich (WKÖ) – WIFI International in December 2022. The group was comprised of experts from Wrap Innovation OG, RCE Vienna Star – Competence Centre for Sustainability Transformation and Responsibility (Vienna University of Economics and Business) and professionals belonging to the departments of WKO (Education Policy Dept., Innovation and Digitalisation Dept., Federal Division of Trade and Crafts).

- **How companies are moving towards a more digital and sustainable business in the country.**

Firstly, participants were asked about the degree of digitalisation of SMEs in their country. The group indicates that in Austria, there are approximately 545,000 SMEs registered, which is 99.8% of all businesses in the country. In addition, SMEs account for 60% of total employment.

Digitalisation among SMEs is going well, depending on the sector. It has a very high priority among companies, which is reflected in their investments, training of employees, and the development of applications. Besides, it permeates all business areas, from customers to suppliers and public authorities. Overall, in the country, there is a great need for education and training. Especially against the backdrop of the disappearance of many professions due to technological progress and automation.

Criticism is being voiced about the handling of data, which is given too little importance. Furthermore, there is a lack of resources for the development of new business models and, for example, coding and data skills. Some companies want to digitise even more, but they cannot because, on the one hand, they do not have the skilled workers and, on the other hand, they do not know how to proceed.

- **Measures to foster business digitalisation for firms.**

In order to further anchor digitalisation in companies, subsidies such as [KMU.DIGITAL](#) are necessary.

KMU.DIGITAL provides individual consulting services for Austrian SMEs. It offers certified experts on the topics of business models and processes, e-commerce and online marketing, IT and cybersecurity, and digital administration. KMU.DIGITAL also supports the implementation of digitalization projects through

investments. This initiative is a collaboration between the Federal Ministry of Labour and Economic Affairs (BMAW) and the Austrian Federal Economic Chamber (WKÖ) and is funded by the European Union.

One major challenge is the high demand for funding, which exceeds the available budget. To promote comprehensive and widespread digitalisation, it is crucial to increase the budget of such initiatives. It is also important to implement selective and targeted measures, as the current funding budgets are spread across all areas of digitalisation.

Industrial companies are particularly focused on digitalisation due to competition and the need to remain competitive in the international environment in order to survive. New acquisitions and investments are generally state of the art. However, there are sector-specific differences in Austria, with industries tending to digitize more than service providers. This is partly because new machines in industries are already equipped with the latest digital standards. Industry sectors also face greater competition, which necessitates investments to maintain competitiveness.

- **High prices of energy and energy self-consumption.**

Participants argue that new types of machines, for example, tend to have lower energy consumption and are more efficient, and therefore can be seen as green products that are profitable for companies as costs decrease in the life cycle.

They also state that the market does not regulate sustainability, because some photovoltaic companies were outsourced from Austria to China due to too few subsidies. Sometimes, sustainability targets may not always be feasible due to high costs, time constraints, and limited resources (staff, materials).

Government incentives could be implemented to encourage companies to adopt more sustainable practices. As companies strive to reduce costs, incentives that promote sustainability could be appealing.

The circular economy system in Austria is not well developed yet, particularly in trade and commerce. For instance, the repair bonus incentivises the repair of old appliances rather than buying new ones. However, promoting longer life cycles and repairs may result in reduced energy efficiency compared to newer, more efficient appliances. Closing the cycles, such as through effective waste management, is crucial to advancing the circular economy.

- **Challenges that firms are facing in digitalisation and sustainability.**

In Austria, companies with direct customer contact often fear digitalisation and the potential impact on their jobs. However, the level of concern varies depending on the industry and whether digitalisation is central to the company's operations. Some business areas are fully digitalised, others operate in hybrid model and some still rely heavily on in-person interactions. Tourism, for example, is experiencing significant digitalisation in terms of customer orientation.

It is not clear whether digitalisation could eliminate the essence of some businesses. It depends on how digitalisation is implemented. In some sectors, the costs of digitisation are higher than the outcomes. It is important to identify the best practices that will effectively bring digitalization strategies to companies.

Infrastructure and cybersecurity remain persistent challenges in the digitalization process. Enhancing infrastructure and cyber defences would require substantial investments. Internet fraud is a prevalent issue due to a lack of awareness and preventive measures by companies and individuals.

Cybersecurity is particularly critical as any failures in the system can lead to significant difficulties, especially in industries and IT. We can anticipate even greater security challenges in the future. Companies often hesitate to fully embrace digitalisation due to concerns about mishandling data. While

customers and suppliers generally accept the accelerated digitalization of processes, security concerns and issues only become apparent when problems arise, and they can have a severe economic impact on companies.

Security problems are not a big deterrent for customers, but awareness of data security, cybercrime needs to be included in curricula. Customers usually act unconcerned about their data security, which is a problem. The responsible handling of data is essential, but both the education system and companies are ill-prepared to map this responsibility.

In general, investing in education and training is widely recognized as important in Austria. There is also a need for qualified immigration to meet the demand for skilled workers.

With respect to the information that firms must know, it is not feasible for companies to be fully aware of all the rules and regulations regarding sustainability and digitalisation. Therefore, easy access to information and streamlined bureaucracy are vital in ensuring companies can navigate these complexities effectively.

Lastly, regarding the sectors that are becoming more sustainable in the country, in the automotive industry, production companies are pressuring suppliers to become more innovative and sustainable. In tourism, on the contrary, a lot of catching up must be done in Austria, not only regarding winter tourism.

- **Needs of new graduates related to digitalisation and sustainability.**

In Austria, there is a noticeable mismatch between the skills of the new graduates and the needs of companies in both commercial and administrative areas. To address this issue, in the country the course “Certified Manager & Assistant for Digital Innovation” was launched and has only been held once since its existence due to the lack of demand and the requirement for companies to cover the cost.

Encouraging dual education can support companies improving their digitalisation level, advancing the twin transition and integrating important current issues into education. However, there is a shortage of skilled labour in the market, particularly in digitalisation expertise, which is in high demand. It is crucial to increase the number of students and ensure a higher graduation rate, as some students do not complete their studies.

Usually, green skills training takes place in teaching, but it is important to have a programme for sustainability. Connection with other courses and understanding of different disciplines, competencies and backgrounds is essential in sustainability training. Currently, transdisciplinary processes are limited, and training must align with the 17 Sustainable Development Goals (SDGs) with sustainability criteria being incorporated into every course. Sustainability skills should also be introduced earlier, including in school education.

- **Kind of skills SMEs demand to applicants in Austria, related to digitalisation and sustainability.**

Participants of the focus group believe that companies should have specific training tailored to their digitalization needs and improve their understanding of the subject. In Austria, there are universities and universities of applied sciences that offer digitalisation topics. VET providers also offer digital courses.

However, finding human resources with sufficient digital skills can be challenging and expensive. On-the-job training could be a viable solution to address this issue. Developing curricula that align closely with the labour market and teach systemic and critical thinking is also vital.

- **Extent to which the training of these skills is included in HE/VET institutions curricula.**

The focus group has highlighted the fact that every career and every profession tie in with digitalisation and sustainability, but there is great diversity of intensity and degrees.

- **Barriers related to the labour market that companies must be dealt with to move towards a more digital and sustainable business.**

Austrian companies are facing a shortage not only of skilled workers, but also of workers in general. The demand for suitable and qualified personnel is high, and the shortage is already causing a competitive disadvantage and resulting in intense competition among companies. The most sought-after profile is one that combines professional knowledge with strong social skills. Additionally, further education should be provided for those already integrated into the labour market, with curricula adapting to market needs and demonstrating flexibility to keep up with the rapidly changing times.

- **Extent to which new entrepreneurs are aware of the need to move toward a digitised and more sustainable business.**

Generally, the awareness of digitalisation is higher among new entrepreneurs than in traditional companies that have existed for years.

SMEs are generally aware of the benefits of digital and sustainable transition. However, the introduction and implementation of this transformation implies a long process, once digitalisation and sustainability have reached the awareness of decision-makers.

- **Skills of Austrian entrepreneurs to develop a more sustainable and digital business.**

Entrepreneurs require expertise in digitalisation and sustainability mechanisms. Among new entrepreneurs, there is already a growing awareness of these topics.

To improve digitalisation and sustainability skills, the education sector should revise curricula, provide demand-oriented further education for companies, prioritise flexibility, raise awareness and emphasize the importance of these topics and set an example for effectively addressing them.

Besides, the earlier, the better. The introduction of these topics has to start already in primary school, if not in kindergarten. Digitalisation and sustainability should be mandatory subjects, and curricula revision should reflect this need for flexibility and agility to remain up to date.

2.2.2. Belgium

The Belgian focus group, organised in December 2022, is comprised of experts belonging to relevant institutions and stakeholders in the country: CCI of Brabant Walloon, Wallonie Entreprendre, APRICO, POSECO, University of Namur and University of Louvain, FOREM, Eurochambres, ELLUGA, La Ressourcerie, Circular Wallonia.

- **How companies are moving towards a more digital and sustainable business in the country.**

First, the group highlighted the importance of underscoring the different types of companies in Belgium, as many of them are self-employed or microbusinesses. The group also noticed that there is a trade-off between sustainability and digitalisation, as digitalisation consumes a significant number of resources.

High-tech solutions are becoming less sustainable compared to low-tech options, making it a challenge to make digitalisation as green as possible. To address how companies are moving towards a more digital and sustainable business, webpages providing information on the degree of digitalisation of companies have been cited¹¹.

- **High prices of energy and energy self-consumption.**

The high energy prices can foster the need to find new methods and strategies to transition to a greener society. In Belgium, as it occurred through Europe, while the rise in raw materials prices has posed challenges for businesses, it also highlights the urgency to seek alternative energy sources. The focus group mentioned that for some professions, such as plasterers, profitability takes precedence over ecological considerations when it comes to material purchases. Additionally, for many self-employed individuals, their primary concerns are survival rather than profitability. Nevertheless, in recent times, survival and sustainability are becoming interconnected.

- **Challenges that firms are facing in digitalisation and sustainability.**

There are several challenges faced by firms in terms of digitalization and sustainability. One important issue is the digitalization gap between small companies and larger ones, particularly in terms of electronic payment methods. Many IT and digital tools are designed for large companies and are not suitable for self-employed individuals. Companies want digital tools that save time. However, the opposite is often the case, and for this reason digital literacy is very important.

Generation Z is increasingly concerned about sustainability, and there has been an investment by entrepreneurs in sustainability efforts such as building transformation or renovation. It is worth noting that European and Belgian laws are becoming more stringent regarding sustainable development.

The opinions of CEOs and shareholders play a crucial role in driving digitalization and sustainability within large companies, and subsidies often motivate action. However, it is important to find additional ways to mobilize individuals and provide meaning to the use of green and digital tools in daily life. Different professions have varying degrees of dependence on digital tools, and the availability of suitable software is an issue. Cybersecurity and data security are also important considerations.

Another issue of relevance is that sustainability challenges differ across sectors. For instance, in agriculture, a transition towards new paths of producing is necessary and a recognition and reinforcement of its non-productive functions. In the energy sector, buildings should be adapted, industries need to rely on sustainable energy sources, mobility ought to include technical developments, and energy consumption should be reduced and decarbonized. In the industrial sector, technical innovation is also a key issue, as well as the circular economy and carbon neutrality.

- **Needs of new graduates related to digitalisation and sustainability.**

It is mentioned that students must be the actors of their own learning, and that teachers must feed their lessons with ideas from students. Digital tools are not adapted to very small businesses, which are the majority of the Belgian entrepreneurial tissue. Considering that the green and digital transition is a

¹¹ [Baromètre 2020 de maturité numérique des entreprises | DigitalWallonia.be](#) and [Indice relatif à l'économie et à la société numériques pour 2022 \(europa.eu\)](#)

technical competence, even if social awareness is very important, there are not enough students in the STEM field. Sustainable development should be taught in any type of teaching/curricula, especially in the IT sector. Interdisciplinary teaching and should be one of the basic issues of modern education and not a separate topic somewhere on the side-lines of the curriculum. Circular Economy education should not only be a transfer of theoretical knowledge but should ensure the development of attitudes and practices.

- **Kind of skills that are demanded of applicants in Belgium, related to digitalisation and sustainability.**

The skills demanded of applicants in Belgium, related to digitalization and sustainability, require multidisciplinary and transdisciplinary profiles. Although there are no statistics nor precise specific figures about it, digitalisation and sustainability have recently been analysed in Wallonia thanks to various prospective studies from a qualitative point of view.

- **Extent to which training of these skills is included in HE/VET institutions curricula.**

The inclusion of training for these skills in HE/VET institutions' curricula varies depending on individual teachers' awareness and passion for the subject. For instance, [Le Forem](#) (the public service for employment and vocational training in Wallonia) has set up a training to become a circular economy facilitator through the Environment Competence Centre¹². However, digital and sustainable training is often not included in traditional curricula. Further than that, there is no digital/entrepreneurial/sustainable training concerning the basic skills in these fields included in such curricula. The market analysis also indicates that it seems (an in-depth analysis is needed in order to assure the matter) there is no specific training path regarding sustainable development in the academic curricula. Nevertheless, in some curricula, it is possible to get specific (not general) training/education, mainly in computer science, less regarding sustainable development. Students are supposed to master digital basic digital skills.

The Walloon public programmes regarding digitalisation mainly focus on primary/basic digital competencies acquisition and equipment.

- **Barriers related to the labour market that companies must deal with to move towards a more digital and sustainable business.**

Barriers in the labour market for companies looking to transition to a more digital and sustainable business include the digital divide among the population and resistance to change. Policy tools should address these barriers and promote job transitions and skills development.

It should also be mentioned that there are large uncertainties surrounding the future labour intensities in the waste sector due to increased automation, product material enhancement (to ease recycling) and technology. Policies should therefore promote new skills to support the implementation of new technologies.

- **Extent to which new entrepreneurs are aware of the need to move towards a digitised and more sustainable business.**

There is no specific data on the extent to which new entrepreneurs are aware of the need to move towards a digitized and more sustainable business. However, various Walloon and governmental organizations

¹² [Facilitateur/trice en économie circulaire | Agenda \(leforem.be\)](#)

provide information on guidelines, strategies, and legal frameworks for sustainability and digitalisation. In addition, companies can assess their level of digitalisation on a separate webpage¹³.

2.2.3. Italy

The focus group (organised in December 2022) is comprised of stakeholders belonging to 7 relevant institutions in the country: Unioncamere, FISTel CISL (Trade Union) Verona, Guglielmo Tagliacarne Institute, Dintec (Consortium for technological innovation of the Chamber of Commerce and ENEA), ITS (Istituti Tecnologici Superiori – Higher Technological Institutes), ISRE (Salesian International Higher Institute of Educational Research), IUSVE (Salesian University Institute Venice).

- **Manners in which companies are moving towards a more digital and sustainable business in the country.**

In order to determine if Italian companies are moving towards a more digital and sustainable dimension, participants highlighted how green and digital technologies can help firms to react to the shocks we have been witnessing in the last two years. However, for this to happen, it is necessary that they are combined with internal and organizational flexibility and improving the business model of the company.

Data from 2021¹⁴ show how investments in green products and technologies have increased and companies are committed towards environmental sustainability in Italy.

At the same time, the participants highlighted that the offer for new qualifications is coming not only from university but also from higher technical institutes (both for digital and green skills). In addition, companies prefer to hire new staff (already trained with new skills) rather than train the existing members of their team.

A good final remark is that the combination of the two transitions with investment in human capital, especially with managerial skills, gives companies a certain security in terms of productivity growth.

- **High prices of energy and energy self-consumption.**

The shock of the Russian aggression against Ukraine has accelerated the green transition. Companies say that will have invested in both digital and green transitions by 2024. Increasing costs are an issue for companies. A third of the companies that have not invested in the green sector highlight a main difficulty linked to costs: non-investment is mainly due to lack of financial resources and therefore cost represents a barrier for these companies.

- **Challenges that firms are facing in digitalisation and sustainability.**

Regarding the challenges companies face in the twin transitions, the participants of the focus group summarised them as cultural and awareness challenges. This has led to low investments in digital and environmental innovation and skills. There is also a technological challenge, particularly in the area of data management and the issue of networks and ecosystems. SMEs are struggling to generate critical mass by coming together and forming strong networks.

¹³ [Baromètre 2020 de maturité numérique des entreprises | DigitalWallonia.be](#)

¹⁴ Based on the outcomes of the [Tagliacarne Institute](#) multipurpose survey on 5000 Italian SMEs

- **Needs of new graduates related to digitalisation and sustainability.**

This question has brought attention to the lack of training for trainers in higher education, especially in the field of new technologies. Participants also highlighted the need to involve companies in training processes. A noteworthy point is the reference to transdisciplinary and cross-fertilisation, which implies that digital and green skills (as well as other soft skills) should be part of a common path.

- **Kind of skills that demanded to applicants in Italy, related to digitalisation and sustainability.**

Italian companies are demanding for soft and transversal skills to be developed in a dual system, with part of the learning path taking place in the company and the rest happening externally.

- **Extent to which the training of these skills included in HE/VET institutions curricula.**

Participants agreed that the Italian VET system lacks relevant offers for both digital, green and soft skills training. An interesting exception is the Istituti Tecnologici Superiori (ITS) system, which is aligned with EU standards and offers a qualitative VET approach and direct access to the job market. A reform is underway to improve this system.

- **Barriers related to the labour market that companies must deal with to move towards a more digital and sustainable business.**

Regarding the barriers related to labour market, participants in Italy identified two types: cultural and bureaucratic. While the former is common in many employer situations, the latter should be overcome as it is caused by systemic elements that hinder the companies' ability to fully engage in digital training activities. Another significant issue is the lack of human capital due to the migration of talented individuals seeking better opportunities elsewhere in Europe.

- **Extent to which new entrepreneurs are aware of the need to move toward a digitised and more sustainable business.**

Young entrepreneurs in Italy are demonstrating the relevance of higher education for running a business, particularly in the service sector, where over 40% of entrepreneurs have a university degree. This factor directly impacts their awareness of the importance of new skills for the twin transition and the need to hire a workforce with specific skills to enable innovation and growth. Participants shared interesting data on the challenges that small enterprises will face investing in what will be needed to navigate the digital and green transition. Smaller companies may struggle to stay competitive and keep up with the requirements.

- **Skills of country entrepreneurs to develop a more sustainable and digital business**

Participants agree that the capacity and vision to develop more digital and sustainable businesses lies with the management of companies. While digital technologies can facilitate business model innovation, this can only happen if top managers are aware of their importance and companies have the right skills to embrace such changes.

In general, in the country, the small and medium-sized firms likely have entrepreneurs who are aware of the importance of being ready and equipped with right skills. The challenge lies in having the internal human resources to drive innovation.

2.2.4. Spain

The focus group (organised in November 2022) is comprised of several relevant experts in the country: Junta de Extremadura (Regional Government of Extremadura), Spanish Chamber of Commerce, CISE (Entrepreneurship Santander International Centre), University of Extremadura, University of Cantabria, ANPROFOL, Campus Cámara FP (Chamber of Commerce of Valencia), Fundación Tomillo, Mainjobs, Clúster TERA.

In the case of Spain, the responses to the questions in the focus group were not provided in the same manner as in the previous countries. For this reason, the information here is organised based on the question that this focus group responded.

- **To what extent are companies aware of the need to move towards a digitised and more sustainable business? What about the education sector?**

The focus group findings indicate that there is a low level of awareness regarding digitalisation among SMEs. Generally, there is little orientation towards digital transformation unless the owner already expresses a high level of interest. This digital awareness is not linked to the training level of entrepreneurs, and it is not a problem of one Spanish province or autonomous community either.

Some entrepreneurs have declared that they want a strong presence in social media to sell more. This implies that they know that digitalisation is necessary for them.

It is also indicated that there is a need to refocus the digital transformation plans. They should be more closely linked to the sector of consultancy and training and the programme should be customised to the needs of SMEs.

In Spain, every sector has different requirements, and therefore, the first step is to analyse what are the gaps. Besides, the education sector should innovate and renovate itself. For this purpose, one fruitful practice would be to bring companies into the classroom.

An area of concern highlighted by SMEs and micro-SMEs with less than 5 employees is their lack of knowledge and uncertainty regarding how to initiate the process of digitalisation and incorporating sustainability practices into their businesses. They do not have knowledge, they do not know where to start, what they must do or what advantages digitalisation can bring to them. For this reason, any programme to boost business digitalisation is positive for companies so that they move forward, although sometimes they are not well focused.

It is crucial to consider the different levels of digitalisation within companies, as each level brings a unique perspective. This includes the digitalisation of services or products, the commercialisation channels or the entire business model. Currently, most companies either digitalize certain products while maintaining their physical base or focus on digitalizing their commercialization channels. However, the real revolution lies in the development of new business models that are conceived and designed digitally. Unfortunately, it is challenging to make entrepreneurs aware of the potential of these digital business models.

While companies are quick to embrace digitalization due to the perceived link with competitiveness, sustainability initiatives lag behind.

The perception is that education and training should catch up both in digitalisation and sustainability. Formal education institutions face challenges in incorporating new content and competencies into curricula, resulting in slow adaptation. Graduates often acquire digital and green competencies through additional training rather than their formal education. To include more contents on sustainability, we

should begin with activities that permit some flexibility. At the university level, for example, specific content on sustainability could be added to the final study project that students present to finish their degree. An inspiring practice/similar initiative, called “Sustainability in Final Projects”, is implemented by Campus Càmara Valencia FP. This initiative trains vocational education students on how to approach a final project related to sustainability.

- **Do all SMEs and micro-SMEs need the same minimum training to achieve the green and digital transition or is it sector-specific? What minimum skills should the employees of each company have to accompany them in this transition?**

When considering the minimum training required for SMEs and micro-SMEs to achieve a successful transition to digitalisation and sustainability, it is important to tailor the training to specific sectors and the size of the company. Additionally, transversal training should cover concepts related to product and sustainable business design as well as those related to product or service lifecycle analysis. Companies often struggle to find the digital talents they need, highlighting the need for companies to provide training on the specific skills they are looking for while education institutions support these processes in parallel. It is very clear that this training must take place within the company. The training of workers must be different according to size and sector.

Students should have a versatile skill set that prepares them for any company. The role of formal education is to plant that seed, which will then grow inside the company. It would be impossible to train students for very specific needs. Graduates from university or vocational training must be aware of the need for lifelong training/learning, and that they will have to specialise within a company/sector.

Formal education sector must listen to companies, but companies must also look at VET, because sometimes they do not know what is done in VET. There should be a link, but a broad link so that students have freedom and options.

Formal education sector feels the responsibility to sow the seed for students’ curiosity (part of these transversal skills), an essential part for future workers so that they can then continue their training beyond their formal studies.

- **What barriers do you observe from the business sector to achieve this digital and sustainable transformation of companies?**

For a long time, training and consultancy companies have provided already designed advice, and their recommendations were to improve processes or buy specific digital programmes without considering the specific situation or needs of the companies in question. However, the implementation of low-cost consultancy practices, incorporating free or simple tools, has been positively impactful in reducing barriers to digitalisation. For instance, complex registration systems and training platforms (Moodle) can deter companies from participating in training programs. A good practice is to ask consultants to prioritise the use of WhatsApp as a tool for resolving doubts and queries to companies (it is a question of making it easy and accessible). “I don’t know from where to star” is a common quote made by entrepreneurs. It can be solved by connecting digital skills with productivity. From the “you can do the same with less effort” approach with some digital tool that probably has a very easy or fairly easy smartphone version.

Digital talent is everywhere. It is not about training everyone in all digital skills. It is about sparking their curiosity, their minds. Showing that technology does not come to replace people, but to complement them (e.g., that a student coming out of Fine Arts should not be afraid of content-generating AI, which creates covers, of the kind that are so fashionable now, because what they should do is learn how to use it to incorporate it into their work).

When 95% of people have a (smart) telephone, we have a barrier down. The barriers that exist are more linked to mindset, rather than technological. The use of technology, such as video calls, derived from the pandemic, now offers us an excellent opportunity to understand that these barriers do not really exist, they are mental.

- **Which competencies do you consider basic and necessary to incorporate into the EC4T transversal training pathway?**

To specify the competencies to be included in the training pathway, the participants had to reflect on the competencies referenced in the three frameworks addressed in the project to jointly identify which ones they considered a priority in the training of students and workers.

Creativity, Vision and Motivation and perseverance were identified as the most important competencies within the framework of the entrepreneurial competence framework (EntreComp).

In relation to DigComp, the competencies identified as priorities when designing a training pathway were: Managing information and digital content; Protecting devices, identifying needs and technological responses; Creatively using digital technologies; and creatively using digital technologies.

Although the participants were less familiar with GreenComp they agree on the need to include these competencies in a comprehensive training for twin transition. Valuing sustainability, Critical thinking, Problem framing, Exploratory thinking and Collective action have been the most voted options of the expert group.

2.2.5. Türkiye

The focus group in Türkiye was organised in November 2022 and it is comprised of 7 relevant institutions in the country: TUBITAK Marmara Research Centre, TOBB Software Assembly, Istanbul Technical University, TEPAV (The Economic Policy Research Foundation of Türkiye), Economic Development Foundation, AIPA TÜRKIYE (Artificial Intelligence Policy Association Türkiye, Stellantis Group.

- **Manners in which companies are moving towards a more digital and sustainable business in the country.**

According to TOBB SMEs bulletin, Türkiye has 3.2 million registered SMEs, which make up 99,8% of all the enterprises in the country. These SMEs account for 73.8% of the total employment, 64.5% of the total turnover of the enterprises in Türkiye and 56.3% of the total exports.

Although there is a certain amount of awareness and effort towards digitalisation, considering the contribution of SMEs to the economy, it is necessary to determine the areas to be improved at key points, especially from the point of view of flexibility, speed, quality and efficiency to have more shares from the developing supply chains.

According to the results of the Artificial Intelligence Perception Research¹⁵ conducted this year, 49.9% of SMEs want to be more digital in the future, but they struggle with low levels of knowledge and high costs. However, the level of knowledge of companies is higher than the society average. There is also a need for simplification or reduction of hierarchy, which is necessary for creating a more digital working environment.

¹⁵ <https://aipaturkey.org/arastirmalar/Gelecek-Arastirmalari/AIPA-Artificial-Intelligence-Perception-Establishments.pdf>

SMEs are particularly interested in digitalisation when it comes to sales and marketing, including website usage, reaching customers through e-commerce channels, and performing advertising and promotional activities through social media.

Overall, although there is considerable uncertainty regarding method and cost, SMEs in Türkiye are generally more enthusiastic about digitalisation due to their flexible structure and critical position in the European Union supply chains.

With respect to the measures that could be implemented to improve digitalisation of SMEs, it is essential to have reliable data and accurate analysis for transforming the production processes in the most efficient and correct way.

For this reason, companies should analyse their own competencies in accurate way and create their roadmaps accordingly. In addition, the public should develop support programmes that encourage both qualified workforce and infrastructure improvements and financing.

Support programmes for software that will maximize production efficiency can be designed for SMEs that supply materials and manufacture to large domestic buyers.

At this point, it is possible to design programmes for the priority areas of the United Nations Development Programme (UNDP), the European Bank for Reconstruction and Development (EBRD) and European Investment and Development Banks, and to offer global funds to the benefit of Turkish SMEs.

Among these measures are government support and incentives, special interest rate loans and similar financing opportunities for SMEs. Additionally, training and awareness raising activities (reskill-upskill) should be supported, which will also contribute to the workforce planning of the future, specific to the changing professions of the future. Lastly, low-interest loan programmes should be designed for the digitalisation of micro and small-scale companies, which have problems in accessing credit, by public banks.

In Türkiye, digital marketing software is the most preferred by companies as it contributes to profit maximization and customer reach. In particular, for industrial companies, Material Requirement Planning (MRP) and Enterprise Resource Planning (ERP) software come to the fore, which will enable more efficient production and stock planning.

- **High prices of energy and energy self-consumption.**

Due to the global energy crisis, both input and energy costs in production were significantly affected. All these developments reveal the need to establish a more resilient energy system against possible crises in the upcoming period. Currently, 54% of the existing installed power in the country is proceeds from renewable energy. Accelerating renewable energy system investments to be established in suppliers and the leading industry for self-consumption will increase the competitiveness of the country.

Unfortunately, there are legislative barriers to these investments. The public sector should work with the private sector to guide it in the green transformation. In Türkiye, SMEs plan to use a loan provided by the World Bank through KOSGEB (Small and Medium Enterprises Organisation) and TUBITAK (Scientific and Technological Research Council of Türkiye) in their green and digital transformation studies. It is crucial to receive such support from public institutions because financial resources are the biggest obstacle for companies to navigate the green transformation processes, especially with the recent increase in energy prices. Furthermore, Turkish companies that are within the scope of carbon regulation at the border are trying to switch from coal-based fuels to fuels with less greenhouse gas emissions.

- **Challenges that firms are facing in digitalisation and sustainability.**

In Türkiye, there has not been much success in adapting the workforce and applying the technology required by digitalisation, especially at SME level, despite the impact of the pandemic. Besides, according to the results of a well-attended survey in 2021, 27% of companies revealed that they think digital technologies will not contribute to their companies in the near future.

Therefore, an important issue is that firms do not have clear information about how new digital technologies will affect their business processes. As a consequence, a possible solution would be to develop campaigns in line with the needs of companies that could be prone to digitalisation.

Besides, one of the biggest problems in the end-to-end digitalisation of the establishments is still the security vulnerability. While the establishments are digitalising so fast, the rate of investment in cybersecurity infrastructure is very low with 35.2%.

Moreover, it is an important fact that SMEs have problems in triggering the digitalisation process due to young people leaving Türkiye for reasons such as digital migration. Another major obstacle for digitalisation is the cost of the digital transition.

- **Needs of new graduates related to digitalisation and sustainability.**

In the context of digitalisation, it would be wrong to consider only new graduates. This process can only be beneficial with the collaboration of all human resources.

Apart from that, the education system needs to be seriously redesigned. Problem-solving and analytical thinking skills should be developed in all courses and how to support this with digital and data analysis should be taught. A different type of education based on a more holistic approach and group work is necessary. Case studies are also useful to improve creativity.

Many issues which need to be regulated range from revising the length of the lesson hours to integrating digital elements into the lessons. This situation is not only for computer science or engineering departments, but the whole education system needs to evolve.

Most of the companies in Türkiye avoid hiring new graduates. Therefore, programmes such as internships and cooperative education cannot only increase the employability of people but also provide benefits for people to develop the required skills.

Regarding sustainability, employment in this field is mostly graduated from chemical and environmental engineering. There should be support provided with certificate programmes on raw materials, recycling, environment and supporting technologies whom people with chemical and environmental engineering education.

- **Skills that are demanded of applicants in Türkiye, related to digitalisation and sustainability.**

These skills can be problem-solving, group work, ethical and sustainable thinking, creating a strategy, and planning company policies (especially for Sustainability Reporting) to change the existing system and adopt innovations.

The concept of sustainability entered our lives to a greater extent 10 years ago and it could not be analysed in detail with the technological level of the time.

However, it has reached a point where experience can be shared as a result of both technological developments and research in the field of sustainability.

- **Extent to which the training of these skills included in HE/VET institutions curricula.**

The environmental engineering curriculum is now being used at 35 institutions due to the prevalence of “Chemical Engineering and Environmental Engineering” degrees in Türkiye. The curriculum includes subjects such as environmental management and protection as credit courses.

Regarding, digitalisation, it is important to include it in different degrees, and not only those related to engineering and computer science.

- **Barriers related to the labour market that companies must deal with to move towards a more digital and sustainable business.**

Companies that produce technology and attach importance to digitalisation in their processes are faced with skill mismatch due to the low digital literacy among new graduates and the fact that the technologies learned at the university need to meet the expectations and demands of the companies.

For this reason, universities and employers must jointly work and produce projects to realise talent transformation. Guiding companies to employ new graduates, interfaces that will ensure university-industry cooperation should be designed, and mechanisms that will harmonize expectations between universities and companies should be developed.

Another important problem is the brain drain. The removal of borders in business life, remote working options, and various economic difficulties cause more openness to abroad. This situation creates a severe problem in triggering the digitalisation process of SMEs in Türkiye.

- **Extent to which new entrepreneurs are aware of the need to move toward a digitized and more sustainable business.**

Turkish entrepreneurs have started to acquire the necessary skills for these areas. Undoubtedly, the unlimited educational opportunities offered in the digital environment allow entrepreneurs to access the information they need quickly.

In fact, in the last three years, the most invested sector in the world has been the software and game sectors. In the case of Türkiye, for the first time, a game company was sold abroad with a value of over 1 billion dollars.

In addition, in recent times it has been of great importance for the consumer that the product/service is sustainable and environmentally friendly, especially when purchasing a product or service on the consumer side. As a consequence, new entrepreneurs are motivated to do more sustainable businesses and try to direct their initiatives in this area.

- **Skills of country entrepreneurs to develop a more sustainable and digital business.**

Common traits found in most successful entrepreneurs are effective use and marketing of social media, effective use of digital marketing tools, digital applications for measuring customer satisfaction, storing and analysing all data related to business processes in a digital environment, and industry-specific productivity-enhancing digital applications.

In the green transformation area, several skills that could be highlighted are recyclable packaging, developing services with a low carbon footprint or recycled, and skills that will contribute to the development of production and service processes in line with the circular economy philosophy, such as knowledge of technology for the generation or supply of energy from renewable sources.



CHAPTER 3:

Analysis of the results of the survey

Based on the information collected in previous stages, an [in-depth questionnaire](#) was developed to conduct a survey on the digitalisation and sustainability needs of companies, specifically focusing on SMEs. The questionnaire aimed to gather information on the following topics:

1. The level of digitalisation and sustainability in SMEs, including their evolution in these areas.
2. The obstacles that SMEs face in improving their digitalisation and sustainability efforts.
3. The competencies of the workforce related to digitalisation and sustainability.
4. Identifying any mismatches between the competencies required by SMEs and the training available.
5. Assessing the entrepreneurial skills of the workforce.
6. Evaluating the level of training provided by Higher Education/Vocational Education and Training (HE/VET) institutions.

Firms, experts and relevant stakeholders from the 5 participating countries were invited to complete the questionnaire. The final sample consisted of a **total of 102 responses**. The breakdown of responses by participating country and respondent type is provided below.

	Company	Association	Higher Education institution (HE)	Vocational Education Training provider (VET)	Public institution (other than HE or VET)	Other	No data	TOTAL
Austria	12	0	2	0	0	1	0	15
Belgium	10	3	0	0	0	1	0	14
Italy	6	11	0	3	0	1	3	24
Türkiye	22	4	0	0	0	1	0	27
Spain	20	0	0	0	1	1	0	22
TOTAL	70	18	2	3	1	5	3	102

Table 1. Breakdown of the sample by country and respondent type.

According to the table above, the majority of the responses received were from companies (70 out of 102). The remaining respondents were experts from associations, stakeholders from HE/VET institutions and others. Most of the companies which answered the questionnaire belong to “Other services” and “Industry” sectors. Moreover, 18 firms with 250 or more employees participated in the survey, meaning they do not qualify as SMEs according to the EU definition. In these cases, the responses provided reflect the firm’s opinion on the current state of SMEs in their respective country:

	Industry	Construction	Wholesale and retail	Other services	TOTAL
0 employees	0	0	0	6	6
1 – 9 employees	1	0	1	15	17
10 – 49 employees	2	1	1	7	11
50 – 249 employees	9	0	2	7	18
250 or more employees	14	1	1	2	18
TOTAL	26	2	5	37	70

Table 2. Breakdown of the sample by number of employees and sector.

The questionnaire, which is provided in Annex I of this document, is structured into three main blocks:

1. Digitalisation and sustainability in SMEs;
2. Digital and sustainability competencies of the workforce;

3. Training in entrepreneurial, digital and sustainability competencies.

Consequently, the analysis of the responses follows the same framework.

However, it is crucial to acknowledge the limited number of responses at both aggregated and country level. As a result, the statistical significance of the results is compromised, and the margin of error is considerable (greater than $\pm 10\%$). Despite this, a breakdown by country is provided after each graph for descriptive purposes. Therefore, the results presented in the following sections should be considered as indicative rather than definitive. The sample size (and its composition) is insufficient to extrapolate the findings to the entire population of SMEs, either globally across participating countries or individually within each country.

3.1. Digitalisation and sustainability in SMEs

3.1.1. Digitalisation in SMEs

This section focuses on SMEs. First of all, the current level of digitalisation of these entities has been measured¹⁶.

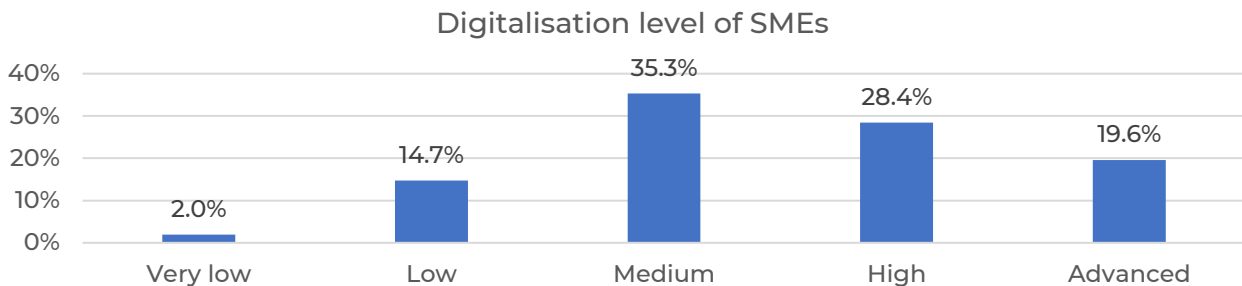


Figure 1. Source: Based on data from in-depth questionnaire.

48% of respondents stated that the level of digitalisation of SMEs is “high” (~28%) or “advanced” (~20%).

	Very Low	Low	Medium	High	Advanced
Italy	4,2%	25,0%	37,5%	12,5%	20,8%
Spain	0,0%	0,0%	36,4%	31,8%	31,8%
Türkiye	3,7%	22,2%	44,4%	22,2%	7,4%
Austria	0,0%	13,3%	6,7%	66,7%	13,3%
Belgium	0,0%	7,1%	42,9%	21,4%	28,6%

Table 3: Digitalisation level of SMEs per country. Source: Based on data from in-depth questionnaire.

A vast majority of respondents (81,4%) reported that the degree of digitalisation of SMEs has increased in their country since the start of the pandemic.

¹⁶ As already mentioned, respondents that are not SMEs have answered with their opinion about the digitalisation of SMEs in their respective country.



Figure 2. Source: Based on data from in-depth questionnaire.

Among the respondents, 16,7% did not refer any changes in SMEs digital level, and only 2% considered it has become worse.

It is important to mention that in all countries analysed, most respondents think that SMEs’ digitalisation level has improved.

	It has improved	No change	It has become worse
Italy	75,0%	25,0%	0,0%
Spain	77,3%	22,7%	0,0%
Türkiye	92,6%	7,4%	0,0%
Austria	93,3%	6,7%	0,0%
Belgium	64,3%	21,4%	14,3%

Table 4: Evolution of SMEs digital level per country. Source: Based on data from in-depth questionnaire.

In-depth questionnaire identified several obstacles to the digitalisation of SMEs related to different scopes. In each field, participants in the survey selected those that seemed most important to them. The first scope refers to **barriers related to the business environment**.

Main obstacles to digitalisation of SMEs: Business environment



NB. Percentages add up to more than 100% because each respondent could select more than one option.

Figure 3. Source: Based on data from in-depth questionnaire.

Among the proposed barriers, **the most common option for respondents has been “increase in the cost of investments required for digitalisation”**, since 54,9% selected it.

In addition, another relevant answer has been “level of digital knowledge of customers”, which has been indicated by 47,1% of the interviewees.

As far as concerns the country breakdown, there is an important degree of variety as it can be observed in the next table.

	Digital knowledge of customers	Digital knowledge of suppliers	Digital security and privacy	Lack of international harmonization	Increase in the cost of investments
Italy	62,5%	29,2%	29,2%	25,0%	37,5%
Spain	18,2%	18,2%	9,1%	13,6%	63,6%
Türkiye	22,2%	14,8%	7,4%	14,8%	74,1%
Austria	66,7%	33,3%	40,0%	20,0%	26,7%
Belgium	42,9%	14,3%	21,4%	14,3%	64,3%

NB. Percentages add up to more than 100% because each respondent could select more than one option.

Table 5: Main obstacles to digitalisation of SMEs: business environment, per country. Source: Based on data from in-depth questionnaire.

Nevertheless, these are not the only elements that can hinder the digitalisation of SMEs. There are also **internal factors** that can pose difficulties.

Main obstacles to digitalisation of SMEs: Internal factors



NB. Percentages add up to more than 100% because each respondent could select more than one option.

Figure 4. Source: Based on data from in-depth questionnaire.

“Lack of time to dedicate to digitalisation tasks” is the most frequent answer (40,2%). “Insufficient advice on the type of digitalisation that companies need”, “Lack of knowledge about the effects of digitalisation” and “Company staff training” are also common answers, since around 30% of agents have selected each of them.

When analysing the results by country, it becomes evident that the most popular answer varies significantly in almost every country.

	Company staff training	Lack of knowledge about its effects	Insufficient advice	Lack of necessary resources	Difficulties finding skilled personnel	Lack of time
Italy	37,5%	33,3%	50,0%	4,2%	25,0%	33,3%
Spain	22,7%	18,2%	27,3%	31,8%	13,6%	68,2%
Türkiye	22,2%	29,6%	22,2%	51,9%	44,4%	11,1%
Austria	26,7%	53,3%	46,7%	6,7%	6,7%	33,3%
Belgium	42,9%	14,3%	0,0%	28,6%	14,3%	71,4%

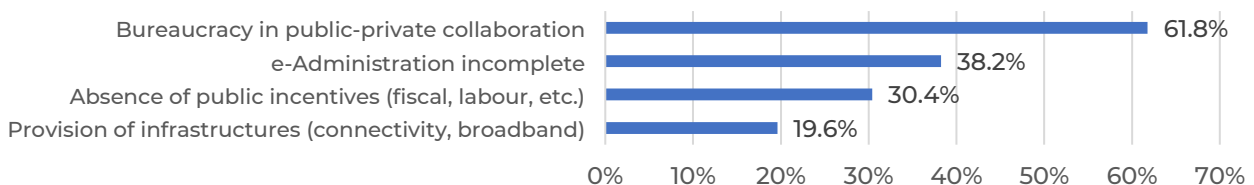
NB. Percentages add up to more than 100% because each respondent could select more than one option.

Table 6: Main obstacles to digitalisation of SMEs: internal factors of SMEs, per country. Source: Based on data from in-depth questionnaire.

Furthermore, a third type of barrier that SMEs can face in their process of digitalisation are **those linked to their relationship with the public administration**. Within this subfield, **most respondents (61,8%) indicated that “Bureaucracy in public-private collaboration” is an obstacle**. This percentage represents the highest of any barrier of the three types analysed.

Other relevant barriers of this kind are “e-Administration incomplete” and “Absence of public incentives (fiscal, labour, etc.)”. However, their percentages are substantially lower than the first option.

Main obstacles to digitalisation of SMEs: Relation with public administration



NB. Percentages add up to more than 100% because each respondent could select more than one option.

Figure 5. Source: Based on data from in-depth questionnaire.

Regarding country-level data, bureaucracy in public-private collaboration is the main obstacle for respondents in Italy, Spain, Türkiye, and Austria. However, in Belgium the most of survey participants selected “e-Administration incomplete”.

	Provision of infrastructures	Bureaucracy in public-private collaboration	Absence of public incentives	e-Administration incomplete
Italy	20,8%	70,8%	16,7%	45,8%
Spain	4,5%	77,3%	27,3%	45,5%
Türkiye	40,7%	44,4%	44,4%	22,2%
Austria	6,7%	73,3%	40,0%	33,3%
Belgium	14,3%	42,9%	21,4%	50,0%

NB. Percentages add up to more than 100% because each respondent could select more than one option.

Table 7. Main obstacles to the digitalisation of SMEs: relation with the public administration, per country. Source: Based on data from in-depth questionnaire.

3.1.2. Sustainability in SMEs

Once the main barriers to digitalisation have been analysed, survey participants answered questions on the **level of sustainability in SMEs**.

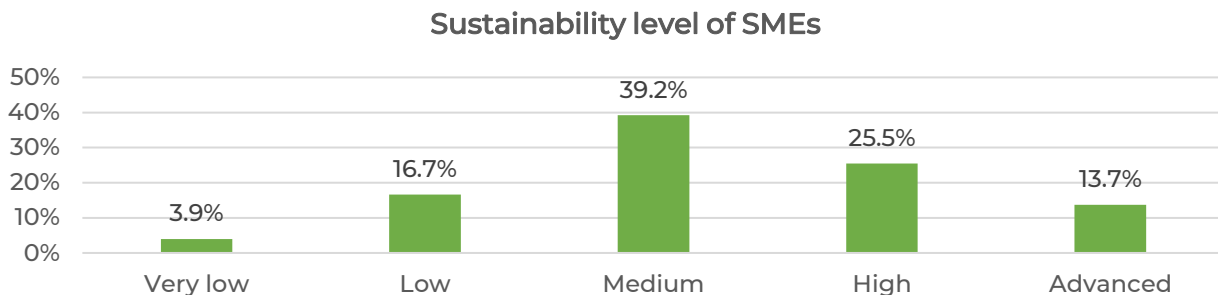


Figure 6. Source: Based on data from in-depth questionnaire.

39,2% of respondents indicated that SMEs sustainability level is “high” or “advanced” (25,5% high and 13,7% advanced), the same percentage than those that think this level is “medium”.

The proportion of “high” and “advanced” levels of sustainability is greater than the one of “very low” and “low” levels (20,6%).

Below, the response rate by country.

	Very low	Low	Medium	High	Advanced
Italy	0,0%	33,3%	41,7%	12,5%	8,3%
Spain	0,0%	4,5%	45,5%	27,3%	22,7%
Türkiye	11,1%	18,5%	37,0%	25,9%	7,4%
Austria	0,0%	6,7%	53,3%	26,7%	13,3%
Belgium	7,1%	14,3%	14,3%	42,9%	21,4%

Table 8: Sustainability level of SMEs per country. Source: Based on data from in-depth questionnaire.

Concerning the evolution of sustainability since the start of the pandemic, **64,7% of participants claim that it has improved**, and only 4,9% of them consider that it has become worse.

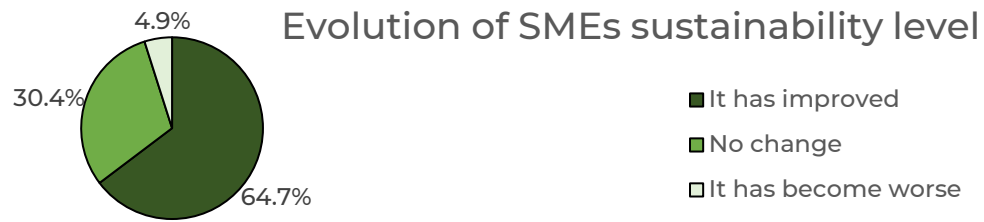


Figure 7. Source: Based on data from in-depth questionnaire.

Concerning data per country, in all participant countries most of respondents claim that sustainability has improved.

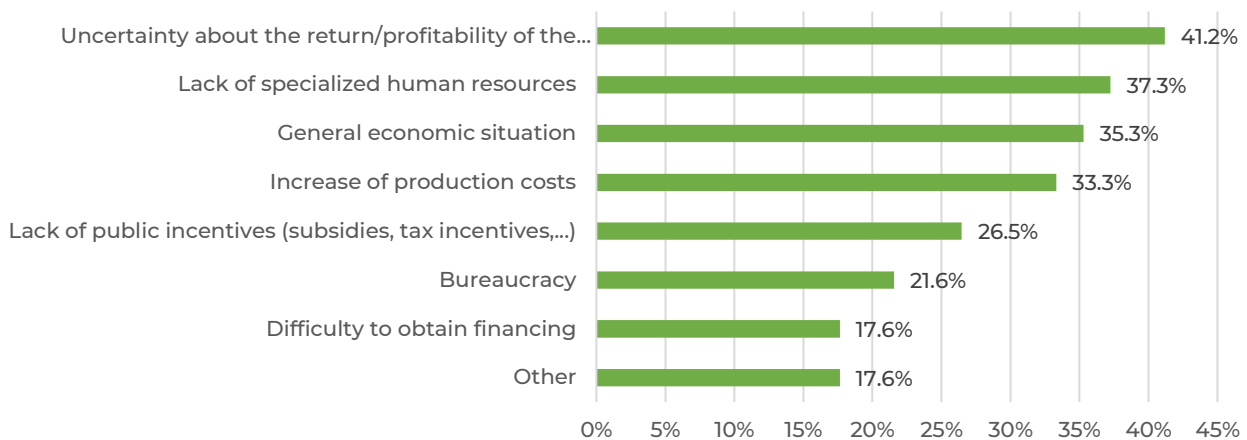
	It has improved	No change	It has become worse
Italy	66,7%	33,3%	0,0%
Spain	54,5%	40,9%	4,5%
Türkiye	63,0%	29,6%	7,4%
Austria	66,7%	33,3%	0,0%
Belgium	78,6%	7,1%	14,3%

Table 9: Evolution of sustainability level of SMEs per country. Source: Based on data from in-depth questionnaire.

There are barriers that hinder the implementation of measures to improve SME sustainability. In the in-depth questionnaire some of them were detailed.

41% of the respondents claim that “Uncertainty about the return/profitability of the implementation of measures to improve sustainability” is one of the main obstacles to improve sustainability in SMEs. More than 41% of respondents chose this option. “Lack of specialized human resources” and “General economic situation” are also common barriers selected by more than 35% of survey participants.

Main obstacles to improve sustainability in SMEs



NB. Percentages add up to more than 100% because each respondent could select more than one option.

Figure 8. Source: Based on data from in-depth questionnaire.

In this case, “Uncertainty about returns and profits” is the most common answer among the Italian and Spanish respondents. Nevertheless, in Türkiye the main obstacle for the respondents is the “Increase of production costs”, whereas in Austria the “Lack of specialized human resources” is the most chosen option among survey participants.

	General economic situation	Difficulty to obtain financing	Bureaucracy	Lack of specialized human resources	Lack of public incentives	Increase of production costs	Uncertainty about returns and profits	Other
Italy	41,7%	25,0%	20,8%	41,7%	16,7%	25,0%	45,8%	20,8%
Spain	31,8%	9,1%	18,2%	22,7%	27,3%	22,7%	40,9%	31,8%
Türkiye	22,2%	33,3%	33,3%	44,4%	33,3%	48,1%	37,0%	0,0%
Austria	40,0%	6,7%	13,3%	46,7%	33,3%	20,0%	40,0%	13,3%
Belgium	50,0%	0,0%	14,3%	28,6%	21,4%	50,0%	42,9%	28,6%

NB. Percentages add up to more than 100% because each respondent could select more than one option.

Table 10: Main obstacles to improve sustainability of SMEs per country. Source: Based on data from in-depth questionnaire.

3.2. Digital and sustainability competencies of the workforce

3.2.1. Digital competencies of the workforce

This section focuses on the workforce and their skills related to digitalisation. The first relevant result to undermark is that **41,1% of the sample considered that level of digital knowledge of the workforce is either “high” (22,5%) or “very high” (18,6%)**. On the contrary, only 24,5% of survey participants answered that workforce have “low” (21,6%) or “very low” (2,9%) level of digitalisation.

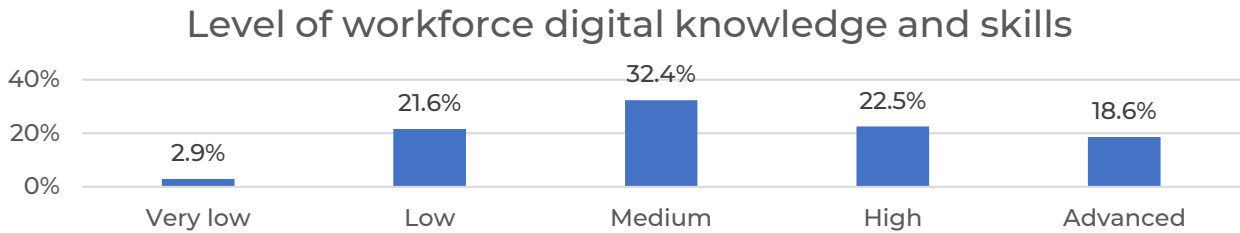


Figure 9. Source: Based on data from in-depth questionnaire.

Below is shown the analysis per country.

	Very low	Low	Medium	High	Advanced
Italy	8,3%	25,0%	37,5%	12,5%	16,7%
Spain	0,0%	9,1%	22,7%	27,3%	40,9%
Türkiye	3,7%	22,2%	44,4%	29,6%	0,0%
Austria	0,0%	20,0%	26,7%	13,3%	33,3%
Belgium	0,0%	35,7%	21,4%	28,6%	7,1%

Table 11. Level of workforce digital knowledge and skills per country. Source: Based on data from in-depth questionnaire.

Regarding the needs of employers, **55,3% of SMEs responding the in-depth questionnaire indicated that they need workers with digital skills**. On the contrary, 44,7% of them stated that they do not demand this type of workers. It is important to mention that this question was only addressed to SMEs. The rest of agents were not required to answer it.

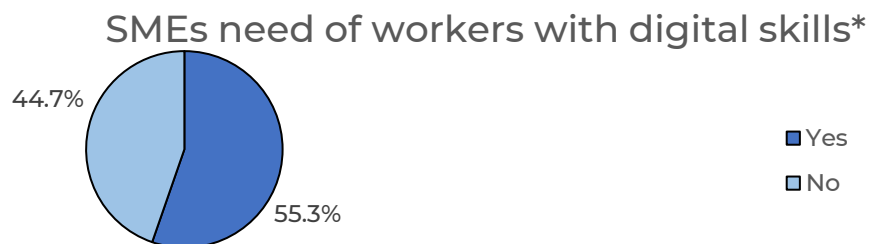


Figure 10. Source: Based on data from in-depth questionnaire. * Question only answered by SMEs (SMEs sample of 52).

Individually, there are few SMEs in the sample by country.

	Yes	No	Sample
Italy	25,0%	75,0%	4
Spain	55,6%	44,4%	18
Türkiye	56,6%	44,4%	9
Austria	85,7%	14,3%	7
Belgium	44,4%	55,6%	9

Table 12. SMEs need for workers with digital skills, per country. Source: Based on data from in-depth questionnaire.

Besides, among those who have looked for workers with digital skills, **64,0%** of them encountered difficulties in finding them:

SMEs difficulties in finding workers with digital skills

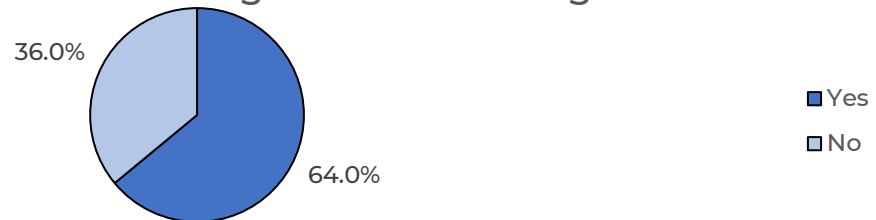


Figure 11. Source: Based on data from in-depth questionnaire. * Question only answered by SMEs needing workers with digital skills (SMEs sample: 25 as 1 of them did not answer).

This question was replied only by SMEs answering “Yes” to the previous one. Merely those who needed workforce with digital skills were demanded about their difficulties to find them.

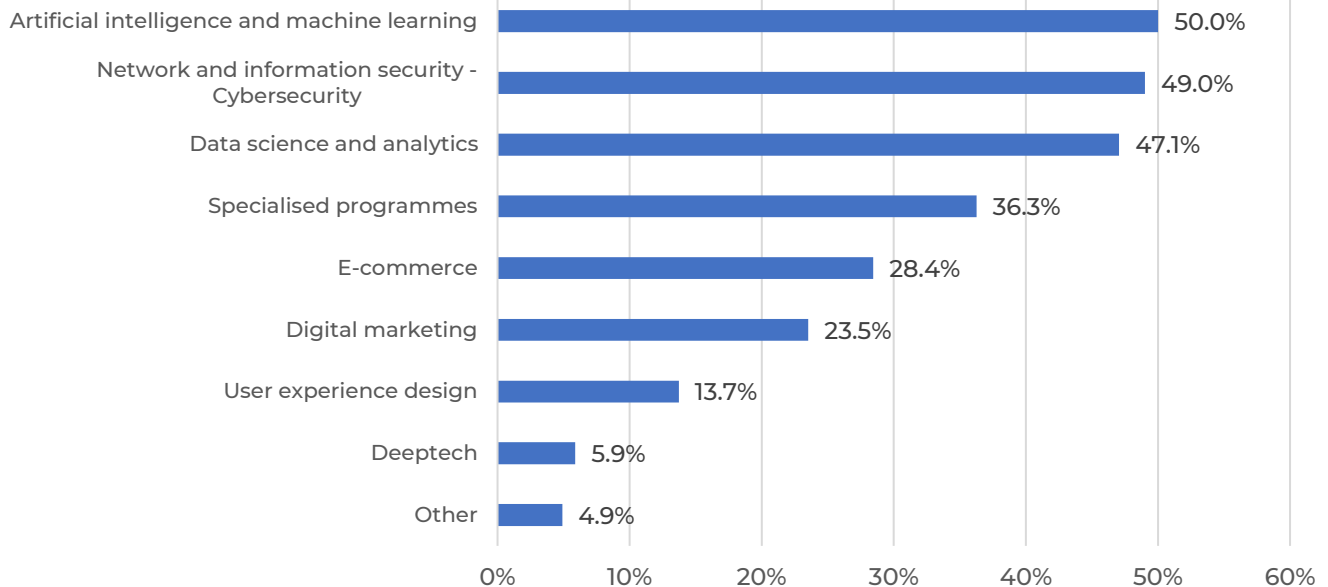
The breakdown by country is shown in the next table. Considering the small size of the sample, obviously, figures are not explanatory of the situation in each country.

	Yes	No	Sample
Italy	0,0%	100,0%	1
Spain	80,0%	20,0%	10
Türkiye	80,0%	20,0%	5
Austria	50,0%	50,0%	6
Belgium	33,3%	66,7%	3

Table 13. Difficulties in finding workers for SMEs who need them, per country. Source: Based on data from in-depth questionnaire. * Question only answered by SMEs needing workers with digital skills (SMEs sample: 25).

Regarding digitalisation, it is interesting to consider the areas of knowledge that respondents think SMEs will require in the future. In this regard, the **field that has been selected by survey participants to a greater extent is “Artificial intelligence and machine learning”** (50,0% of respondents). Furthermore, “Network and information security – Cybersecurity” and “Data science and analytics” present percentages near 50% (49,0% and 47,1%, respectively).

Digitalisation areas of knowledge will be important for SMEs in the future



NB. Percentages add up to more than 100% because each respondent could select more than one option.
Figure 12. Source: Based on data from in-depth questionnaire.

	Specialised programmes	Cyber security	E-commerce	Data science	User experience design	Digital marketing	AI and machine learning	Deep tech	Other
Italy	41,7%	58,3%	25,0%	50,0%	16,7%	20,8%	33,3%	0,0%	0,0%
Spain	40,9%	36,4%	22,7%	59,1%	22,7%	27,3%	54,5%	0,0%	9,1%
Türkiye	18,5%	55,6%	40,7%	55,6%	7,4%	14,8%	63,0%	11,1%	0,0%
Austria	46,7%	53,3%	20,0%	20,0%	20,0%	26,7%	53,3%	0,0%	13,3%
Belgium	42,9%	35,7%	28,6%	35,7%	0,0%	35,7%	42,9%	21,4%	7,1%

NB. Percentages add up to more than 100% because each respondent could select more than one option.
Table 14. Digitalisation areas of knowledge in the future, per country. Source: Based on data from in-depth questionnaire.

According to the Digital Competence Framework for Citizens, **DigComp**, there are **5 competence areas related to digitalisation**, each of them including various skills. Through the in-depth questionnaire, participants in the survey, including firms and other stakeholders, were asked to identify the most significant skill within each DigComp competence area. **The first competence area is “Information and data literacy”**. According to the answers collected, the **3 skills or competencies included in this**

area – “Browsing, searching and filtering data, information and digital content”, “Managing data, information and digital content” and “Evaluating data, information and digital content” – **had the same response rate.**

Digitalisation. Competencies related to information and data literacy

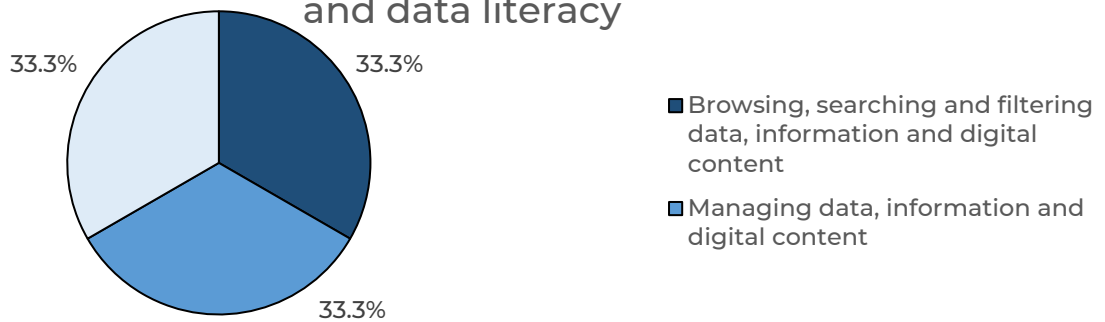


Figure 13. Source: Based on data from in-depth questionnaire.

	Browsing, searching and filtering data	Evaluating data	Managing data
Italy	20,8%	33,3%	45,8%
Spain	36,4%	36,4%	27,3%
Türkiye	48,1%	22,2%	29,6%
Austria	20,0%	60,0%	20,0%
Belgium	35,7%	21,4%	42,9%

Table 15. Digitalisation. Competencies related to information and data literacy, per country. Source: Based on data from in-depth questionnaire.

The second competence area of DigComp is “Communication and collaboration”. Among the skills related to this area, **“Sharing data, information and digital content through digital technologies” was the most important.** 32,4% of respondents selected this competence. Other important skills were “Collaborating through digital technologies” (23,5% of the sample) and “Interacting through digital technologies” (22,5%).

Digitalisation. Competencies related to communication and collaboration

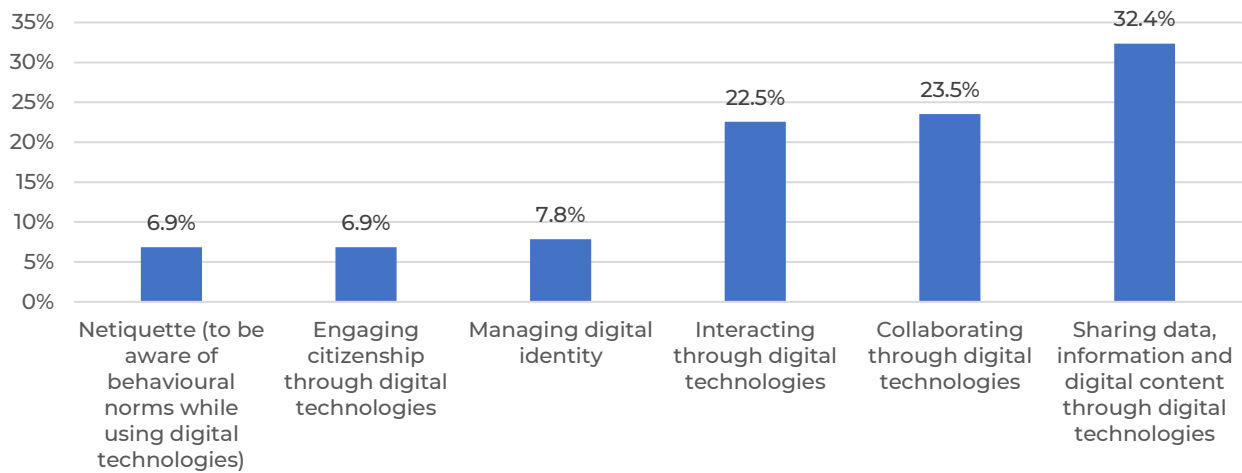


Figure 14. Source: Based on data from in-depth questionnaire.

Breakdown by country only for guidance purposes:

	Interacting through digital technologies	Sharing data, information and digital content	Engaging citizenship through digital technologies	Collaborating through digital technologies	Netiquette	Managing digital identity
Italy	16,7%	41,7%	16,7%	20,8%	0,0%	4,2%
Spain	4,5%	31,8%	4,5%	36,4%	4,5%	18,2%
Türkiye	40,7%	14,8%	11,1%	18,5%	11,1%	3,7%
Austria	26,7%	33,3%	0,0%	20,0%	13,3%	6,7%
Belgium	28,6%	50,0%	0,0%	14,3%	7,1%	0,0%

Table 16. Digitalisation. Competencies related to communication and collaboration, per country. Source: Based on data from in-depth questionnaire.

Another area of competencies described in DigComp is “Digital content creation”. Among the skills included in this area **the ones that were considered more relevant by the survey participants are “Developing digital content (to create and edit digital content)” and “Integrating and re-elaborating digital content (to create new original content from existing digital information)”**, both selected by 28,4% of the sample.

Digitalisation. Competencies related to digital content creation

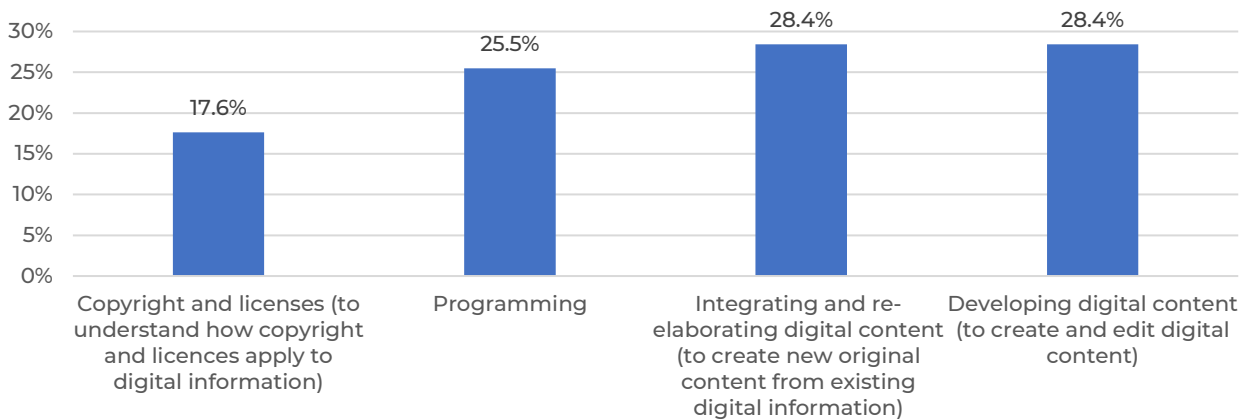


Figure 15. Source: Based on data from in-depth questionnaire.

There are differences in rates of each competence depending on the country in which the survey collaborator resides.

	Developing digital content	Integrating and re-elaborating digital content	Copyright and licenses	Programming
Italy	25,0%	45,8%	8,3%	20,8%
Spain	27,3%	18,2%	9,1%	45,5%
Türkiye	40,7%	14,8%	25,9%	18,5%
Austria	13,3%	46,7%	13,3%	26,7%
Belgium	28,6%	21,4%	35,7%	14,3%

Table 17. Competencies related to digital content creation, per country. Source: Based on data from in-depth questionnaire.

With respect to the DigComp competence “Safety”, **41,2% of employers and other stakeholders in the sample thought that “Protecting personal data and privacy in digital environments” is the most important skill** into this topic.

“Protecting devices (to protect and understand risks and threats in digital environment)” (31,4% of the sample) was the second more important competence of the “Safety” area.

Digitalisation. Competencies related to safety

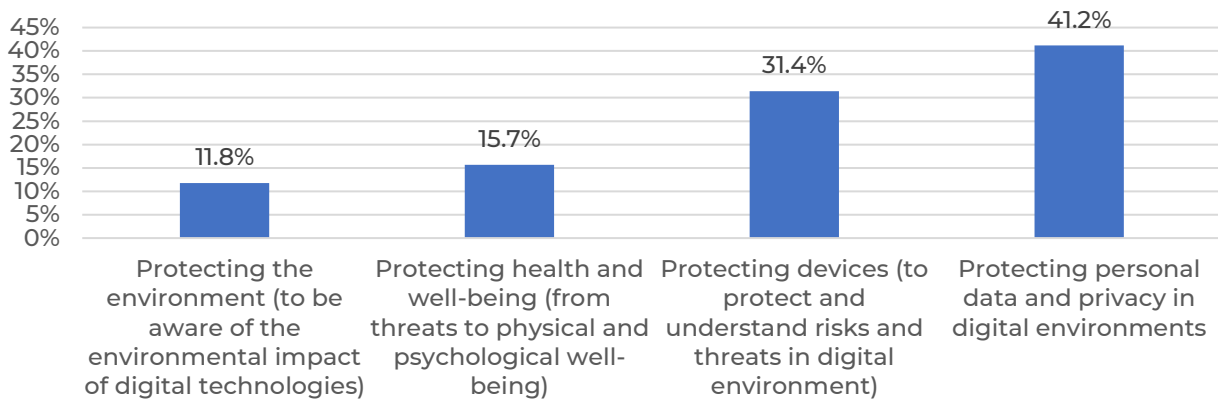


Figure 16. Source: Based on data from in-depth questionnaire.

In this case, protecting personal data and privacy was the most selected option in all countries except Belgium.

	Protecting devices	Protecting personal data and privacy	Protecting health and well-being	Protecting the environment
Italy	29,2%	37,5%	25,0%	8,3%
Spain	36,4%	50,0%	9,1%	4,5%
Türkiye	22,2%	44,4%	11,1%	22,2%
Austria	40,0%	46,7%	6,7%	6,7%
Belgium	35,7%	21,4%	28,6%	14,3%

Table 18. Digitalisation. Competencies related to safety, per country. Source: Based on data from in-depth questionnaire.

The last competence area in DigComp is “Problem solving”. Among the skills included in this area, **most relevant according to the answers provided was “Creatively using digital technology”** (34,3% of respondents selected it).

“Solving technical problems” and “Identifying needs and technological responses” are other important competencies of “Problem solving” for survey participants (31,4% and 30,4% of respondents, chose these skills, respectively).

Digitalisation. Competencies related to problem solving

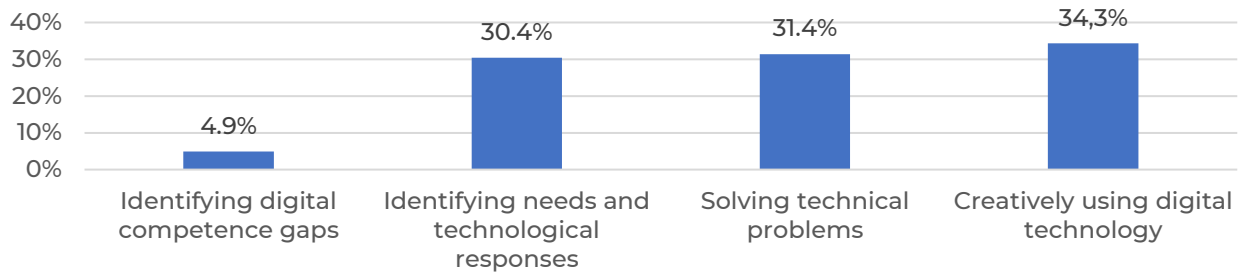


Figure 17. Source: Based on data from in-depth questionnaire.

Regarding country results, the only common trend among countries is that identifying digital competence gaps is the least popular option in all of them.

	Solving technical problems	Identifying needs and technological responses	Creatively using digital technology	Identifying digital competence gaps
Italy	20,8%	45,8%	29,2%	4,2%
Spain	22,7%	50,0%	27,3%	0,0%
Türkiye	50,0%	13,6%	50,0%	9,1%
Austria	13,3%	33,3%	46,7%	13,3%
Belgium	64,3%	7,1%	28,6%	0,0%

Table 19. Competencies related to problem solving, per country. Source: Based on data from in-depth questionnaire.

3.2.2. Sustainability competencies of the workforce

Regarding **competencies related to sustainability**, SMEs were asked if they had needed workers with skills related to sustainability in the previous year. As it can be observed in the next graph, **only 22,9% of participating SMEs had needed workers with these type of skills** in the previous year, and 77,1% had not.

As it occurred with digital skills, this question was only asked to SMEs. The rest of stakeholders in the survey were not demanded to answer it.

SMEs need of workers with sustainability skills

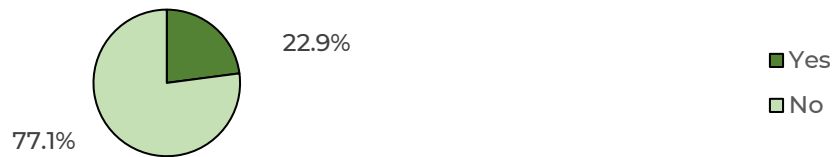


Figure 18. Source: Based on data from in-depth questionnaire. * Question only answered by SMEs (SMEs sample of 48; there are 4 SMEs without response for this question).

The statistics of each country are displayed in the next table. According to the responses collected, most of SMEs answering the in-depth questionnaire did not need workers with sustainability skills.

	Yes	No	Sample
Italy	0,0%	100,0%	4
Spain	27,8%	72,2%	18
Türkiye	33,3%	66,7%	9
Austria	0,0%	100,0%	8
Belgium	33,3%	66,7%	9

Table 20. SMEs need for workers with digital skills, per country. Source: Based on data from in-depth questionnaire.

Among those SMEs who did need this type of workers in the last year, **90,9% encountered difficulties to find people with these skills**. Only 9,1% did not find difficulties searching for them. Nevertheless, it is necessary to consider that the sample in this case is made up of only 11 SMEs.

SMEs difficulties in finding workers with sustainability skills

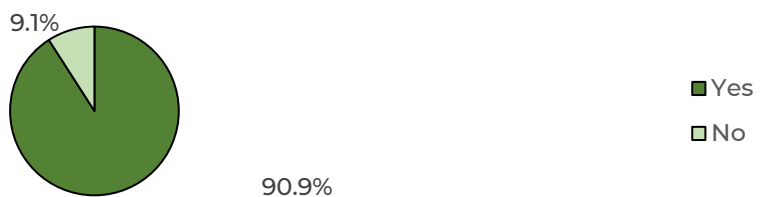


Figure 19. Source: Based on data from in-depth questionnaire. * Question only answered by SMEs needing workers with sustainability skills (SMEs sample: 11).

	Yes	No	Sample
Italy	-	-	0
Spain	100,0%	0,0%	5

Türkiye	100,0%	0,0%	3
Austria	-	-	0
Belgium	66,7%	33,3%	3

Table 21. Difficulties in finding workforce, per country. Source: Based on data from in-depth questionnaire. * Question only answered by SMEs needing workforce with digital skills (SMEs sample: 11).

Furthermore, participants have been asked about the areas of knowledge related to sustainability that their company will need in the future.

Sustainability areas of knowledge in the future

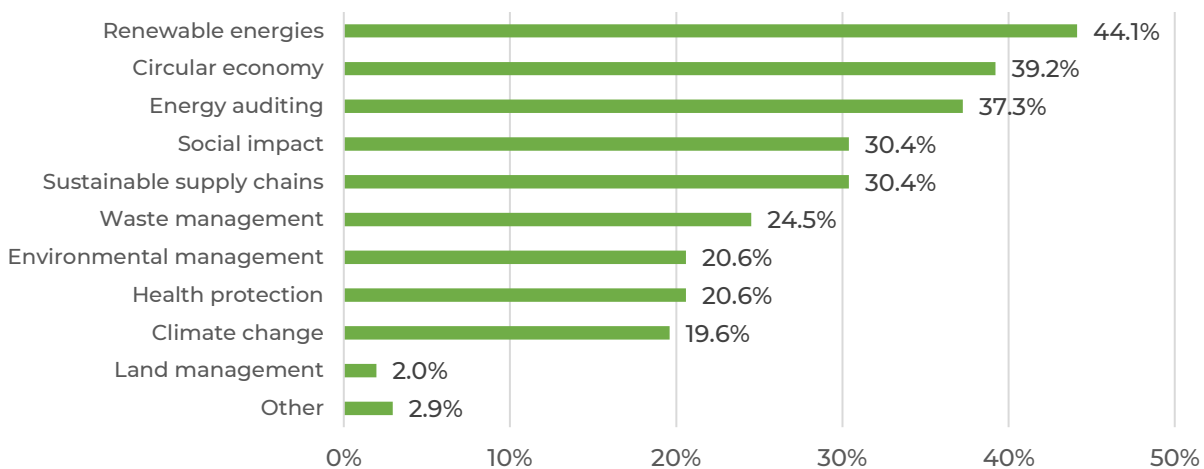


Figure 20 Source: Based on data from in-depth questionnaire.

“Renewable energies” seem to be the field of knowledge most necessary for companies in the future, as it has been selected by 44,1% of respondents. Other popular answers have been “Circular economy” and “Energy auditing”, both chosen by 39,2% and 37,3% of survey respondents, respectively. Analysing country-level results¹⁷, despite a certain degree of variety among countries, renewable energies seem to be an option with a remarkable share in all of them.

	Italy	Spain	Türkiye	Austria	Belgium
Renewable energies	41,7%	40,9%	51,9%	46,7%	35,7%
Waste management	20,8%	9,1%	25,9%	20,0%	57,1%
Environmental management	20,8%	4,5%	40,7%	6,7%	21,4%
Circular economy	41,7%	36,4%	7,4%	66,7%	71,4%
Health protection	20,8%	13,6%	14,8%	13,3%	50,0%

¹⁷ In this occasion rows and columns have been interchanged because the table was too wide.

Land management	4,2%	0,0%	0,0%	6,7%	0,0%
Climate change	20,8%	13,6%	29,6%	6,7%	21,4%
Energy auditing	25,0%	22,7%	74,1%	20,0%	28,6%
Sustainable supply chains	41,7%	40,9%	0,0%	33,3%	50,0%
Social impact	37,5%	36,4%	0,0%	40,0%	57,1%
Other	4,2%	4,5%	0,0%	6,7%	0,0%

Table 22. Sustainability areas of knowledge in the future, per country. Source: Based on data from in-depth questionnaire.

The European Sustainability Competence Framework, [GreenComp](#), consists of 4 competence areas related to sustainability, each of them including a set of skills. In-depth questionnaire asked for the most important skill in each of the GreenComp competence areas.

The first competence area detailed in GreenComp is “Embodying sustainability values”. This area is made of 3 competencies or skills. Among them, the **most important for respondents was “Valuing sustainability” (65,0% of the sample).**

Sustainability. Competencies related to embodying sustainability values

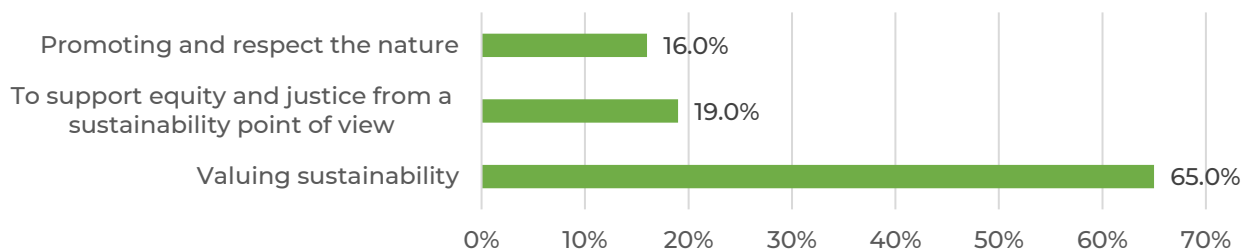


Figure 21. Source: Based on data from in-depth questionnaire.

Regarding the different countries, valuing sustainability is the most popular answer in all of them, as it is displayed in this table.

	Valuing sustainability	To support equity and justice from a sustainability point of view	Promoting and respecting nature
Italy	70,8%	20,8%	8,3%
Spain	63,6%	22,7%	13,6%
Türkiye	74,1%	14,8%	11,1%
Austria	42,9%	28,6%	28,6%
Belgium	61,5%	7,7%	30,8%

Table 23. Sustainability. Competencies related to embodying sustainability values, per country. Source: Based on data from in-depth questionnaire.

Another group of skills are the ones related to “Embracing complexity in sustainability”. Inside this group, the competence **most selected by interviewees has been “To approach sustainability problems thinking and understanding how the elements interact within and between the systems” (47,1%)**.

Sustainability. Competencies related to embracing complexity in sustainability

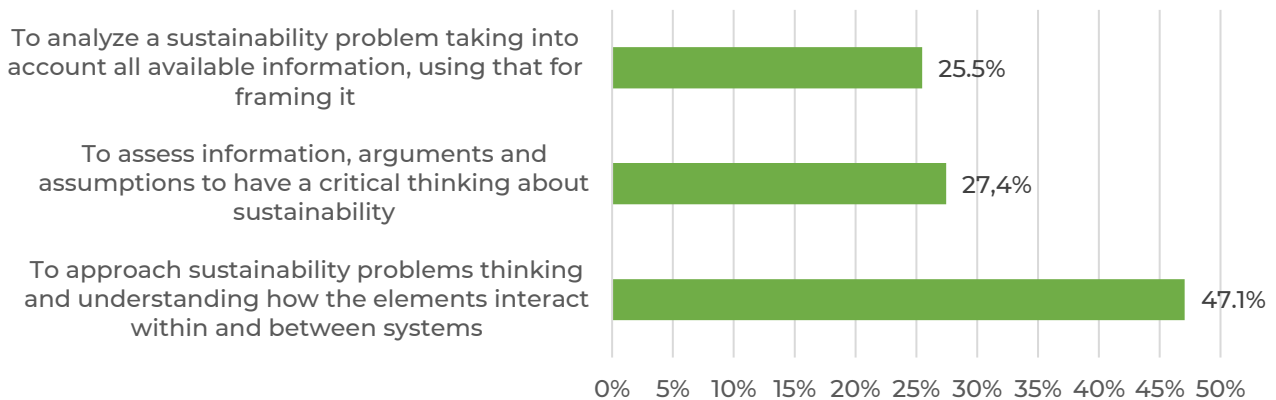


Figure 22. Source: Based on data from in-depth questionnaire.

Regarding these skills, in each one of the countries “To approach sustainability problems understanding how elements interact within and between systems” is the most common answer for participants, except for Belgium, where a greater percentage of respondents has selected “To assess information. Arguments and assumptions to have a critical thinking about sustainability”.

	To approach sustainability problems understanding how elements interact	To assess information to have a critical thinking about sustainability	To analyse a sustainability problem taking into account all available information
Italy	50,0%	12,5%	37,5%
Spain	36,4%	36,4%	27,3%
Türkiye	59,3%	14,8%	25,9%
Austria	53,3%	33,3%	13,3%
Belgium	28,6%	57,1%	14,3%

Table 24. Sustainability. Competencies related to embracing complexity in sustainability, per country. Source: Based on data from in-depth questionnaire.

“Envisioning sustainable futures” is another competence area including in GreenComp. Among the skills included in this area, **“To manage transitions and challenges in sustainability situations and making decisions taking into account the uncertainty” was especially relevant for respondents (38,2%)**.

Sustainability. Competencies related to envisioning sustainable futures

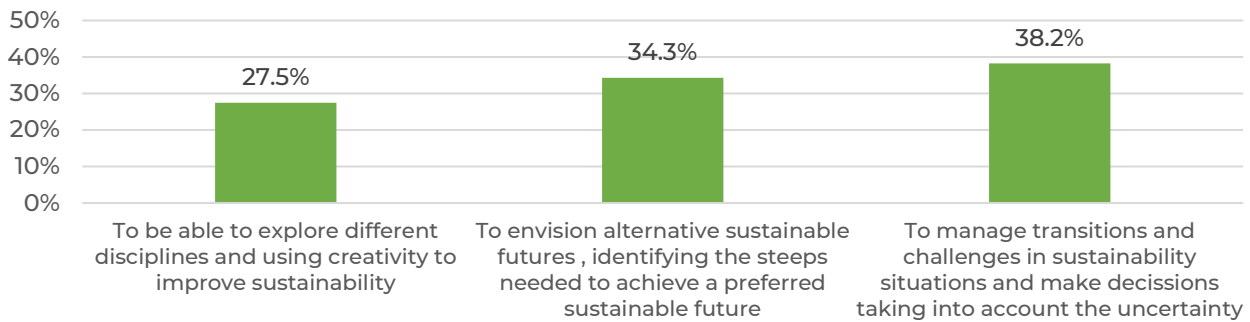


Figure 23. Source: Based on data from in-depth questionnaire.

In this occasion, there is no consensus among countries because there is diversity of opinions among participants from each of them.

	To envision alternative sustainable futures	To manage transitions and challenges in sustainability situations	To explore different disciplines and creativity to improve sustainability
Italy	27,3%	45,5%	27,3%
Spain	36,4%	40,9%	22,7%
Türkiye	48,1%	33,3%	18,5%
Austria	28,6%	21,4%	50,0%
Belgium	21,4%	50,0%	28,6%

Table 25. Sustainability. Competencies related to envisioning sustainable future, per country. Source: Based on data from in-depth questionnaire.

The last set of skills related to sustainability are those that involve “Acting for sustainability”. In this group, the **most remarkable competence is “To act for change in collaboration with others”**, with 39,8% of responses.

Sustainability. Competencies related to acting for sustainability

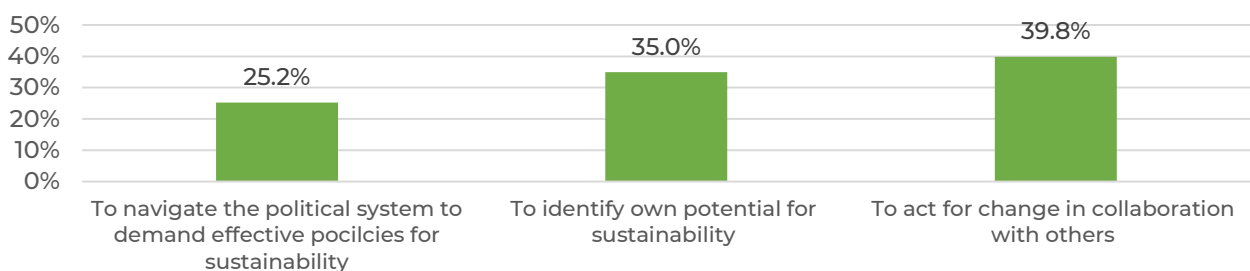


Figure 24. Source: Based on data from in-depth questionnaire.

At the country level, once more there is a great variety of results. It is remarkable the percentage of 60,0% of firms and stakeholders from Austria who consider “To act for change in collaboration with others” as the most important skill, rated much higher than the average of the total sample.

	To navigate the political system to demand effective policies for sustainability	To act for change in collaboration with others	To identify own potential for sustainability
Italy	25,0%	37,5%	37,5%
Spain	22,7%	36,4%	40,9%
Türkiye	29,6%	40,7%	29,6%
Austria	14,3%	57,1%	28,6%
Belgium	30,8%	30,8%	38,5%

Table 26. Sustainability. Competencies related to acting for sustainability, per country. Source: Based on data from in-depth questionnaire.

3.3. Entrepreneurial competencies of the workforce

Apart from the competencies related to digitalisation and sustainability discussed up to this point, businesses demand competencies linked to entrepreneurship as well. **EntreComp is a framework of 15 entrepreneurial competencies or skills divided in 3 competence areas: “Ideas and opportunities”, “Resources” and “Into action”.** In-depth questionnaire requested participants to choose the most important competence for them in each competence area.

Into the first competence area, “Ideas and opportunities”, the ability most important for survey participants was **“Spotting opportunities”, selected by 32,4% of the sample.** Other interesting competencies for respondents were “Creativity” and “Vision” both chosen by 23,5% of the sample.

Entrepreneurship. Competencies related to ideas and opportunities

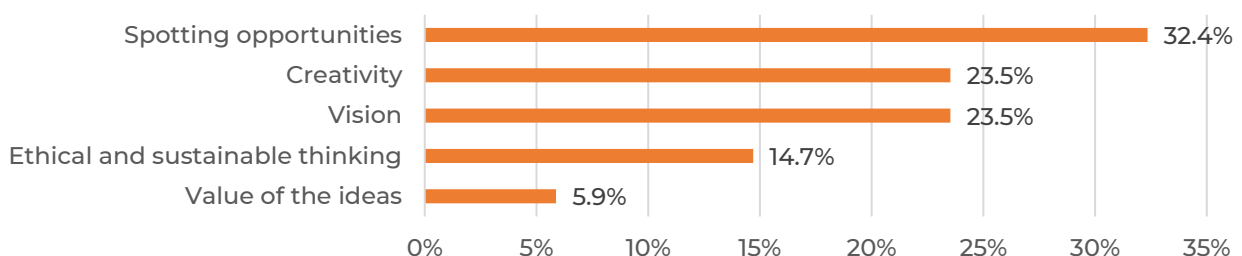


Figure 25. Source: Based on data from in-depth questionnaire.

	Spotting opportunities	Creativity	Vision	Value of the ideas	Ethical and sustainable thinking
Italy	41,7%	20,8%	25,0%	8,3%	4,2%
Spain	45,5%	22,7%	9,1%	9,1%	4,5%
Türkiye	11,1%	22,2%	40,7%	0,0%	0,0%
Austria	46,7%	26,7%	6,7%	0,0%	0,0%
Belgium	21,4%	28,6%	28,6%	0,0%	0,0%

Table 27. Entrepreneurship. Competencies related to ideas and opportunities, per country. Source: Based on data from in-depth questionnaire.

The second competence area is related to “Resources”. Regarding the resources skills of graduates that firms desire, the most frequent was **“Motivation and perseverance”**, with 37,3% of the answers, as it can be observed in the next graph.

Also, “Self-awareness and self-efficacy” (27,5%) and “Financial and economic literacy” (20,6%) were other competencies well valued by respondents.

Entrepreneurship. Competencies related to Resources

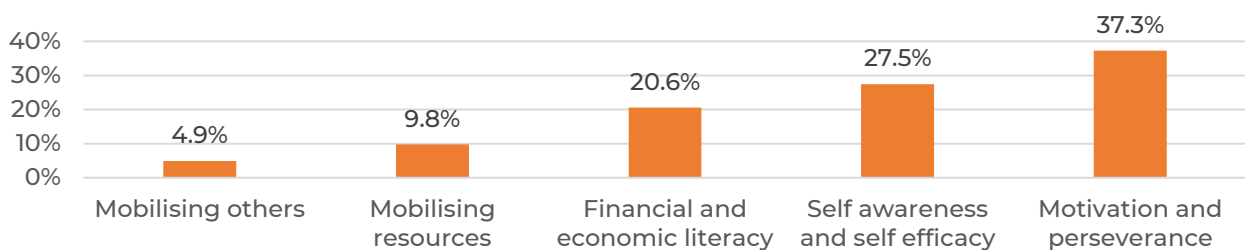


Figure 26. Source: Based on data from in-depth questionnaire.

“Motivation and perseverance” was also the most desired competence for participants in all countries except for Türkiye. In Türkiye, “Self-awareness and self-efficacy” was the competence indicated by a greater proportion of companies.

	Self awareness and self efficacy	Motivation and perseverance	Mobilising resources	Financial and economic literacy	Mobilising others
Italy	25,0%	45,8%	4,2%	25,0%	0,0%
Spain	18,2%	45,5%	4,5%	22,7%	9,1%
Türkiye	37,0%	18,5%	18,5%	22,2%	3,7%
Austria	26,7%	46,7%	13,3%	13,3%	0,0%
Belgium	28,6%	35,7%	7,1%	14,3%	14,3%

Table 28. Entrepreneurship. Competencies related to resources, per country. Source: Based on data from in-depth questionnaire.

Finally, the third set of competencies related to entrepreneurship is named “Into action”. In this competence area, the **most valued skill was “Planning and management”**, selected by 27,5% of the stakeholders making up the sample.

“Dealing with uncertainty, ambiguity and risk” is another competence very important for respondents, almost at same level of “Planning and management”. It was selected by 26,5% of them. “Taking the initiative” and “Working with others” were competencies less important for SMEs and stakeholders of the sample.

Entrepreneurship. Competencies related to Into action

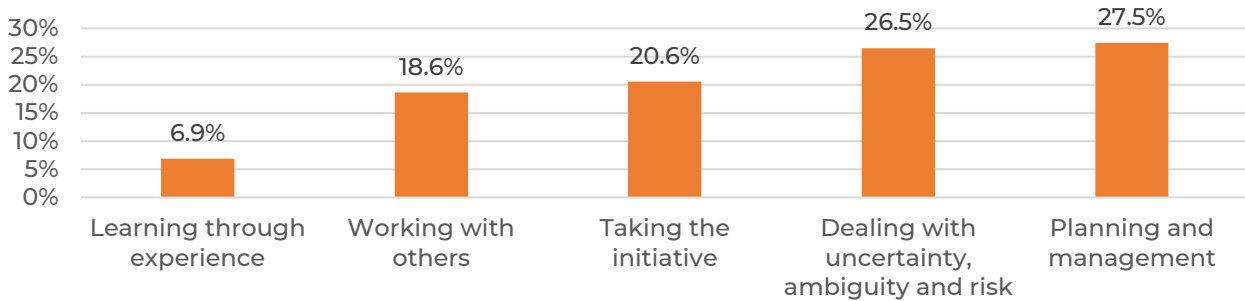


Figure 27. Source: Based on data from in-depth questionnaire.

The breakdown by country shows some differences among them, always taking into account the commented limitations of these results.

	Taking the initiative	Planning and management	Dealing with uncertainty	Working with others	Learning through experience
Italy	4,2%	16,7%	33,3%	37,5%	8,3%
Spain	13,6%	31,8%	27,3%	18,2%	9,1%
Türkiye	33,3%	48,1%	14,8%	0,0%	3,7%
Austria	40,0%	0,0%	20,0%	40,0%	0,0%
Belgium	14,3%	28,6%	42,9%	0,0%	14,3%

Table 29. Entrepreneurship. Competencies related to into action, per country. Source: Based on data from in-depth questionnaire.

3.4. Training in entrepreneurial, digital and sustainability competencies

3.4.1. Level of training provided by HE/VET institutions.

The last section of the in-depth questionnaire was focused on the competencies that HE and VET institutions provide to graduates. In the first chart it can be noticed that the **perception of respondents about the level of training provided by HE/VET on digital skills is mainly low or very low (39,3%)**. The rate of the sample indicating this level is high or advance reaches 26,4%.

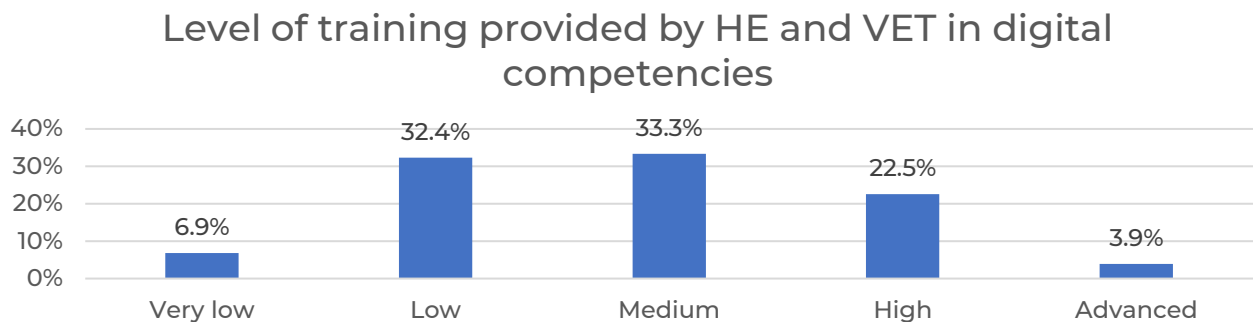


Figure 28. Source: Based on data from in-depth questionnaire.

Considering statistics per country, in Italy and Spain the most frequent perception was that the level of training is low. In Belgium, on the contrary, respondents thought it was high, and in Türkiye and Austria the most common category is medium.

	Very low	Low	Medium	High	Advanced
Italy	8,3%	45,8%	33,3%	12,5%	0,0%
Spain	9,1%	31,8%	27,3%	27,3%	4,5%
Türkiye	3,7%	29,6%	40,7%	18,5%	7,4%
Austria	0,0%	20,0%	46,7%	26,7%	6,7%
Belgium	15,4%	30,8%	15,4%	38,5%	0,0%

Table 30. Level of training provided by HE and VET in digital competencies, per country. Source: Based on data from in-depth questionnaire.

Regarding the **level of training provided by HE/VET in sustainability competencies**, the perception is worse, since the **most common answer has been that the level is “low” (35,3%)**. More specifically, 52,9% of the sample considered that this level is “low” or “very low”. This rate is significantly greater than the sum of the shares of “high” and “advanced” (13,8%).

Level of training provided by HE and VET in sustainability competencies

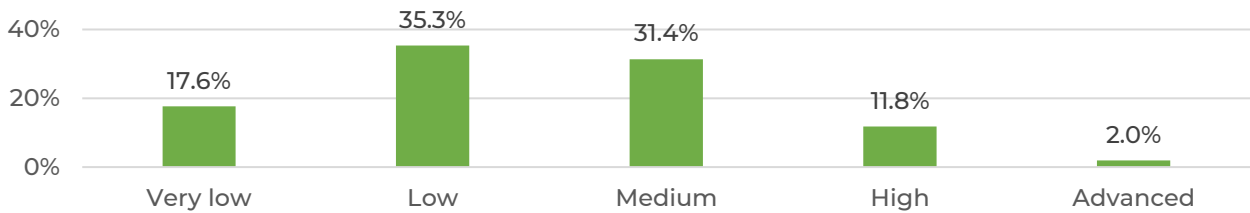


Figure 29. Source: Based on data from in-depth questionnaire.

In addition, looking at country data, in all countries the most usual response has been “low”, but not in Belgium, where participants consider that the level of training provided by HE and VET is “very low”.

	Very low	Low	Medium	High	Advanced
Italy	13,0%	43,5%	34,8%	8,7%	0,0%
Spain	22,7%	36,4%	22,7%	18,2%	0,0%
Türkiye	11,1%	40,7%	37,0%	7,4%	3,7%
Austria	0,0%	57,1%	21,4%	21,4%	0,0%
Belgium	53,8%	7,7%	23,1%	7,7%	7,7%

Table 31. Level of training of HE and VET in sustainability competencies, per country. Source: Based on data from in-depth questionnaire.

Furthermore, entities were also asked about the level of **entrepreneurial skills** that they think HE and VET institutions provide.

In this case, the perception is not very positive either, because the **most common opinion is that this level is low (39,2%)** and the second most common answer has been “very low” (25,5%). Adding both rates it is noteworthy that 62,7% of the respondents thought that level of entrepreneurial skills HE/VET provide is “low” or “very low”. Only 10,8% of the sample thought that this level in “high” or “advanced”.

Level of training provided by HE and VET in entrepreneurial competencies

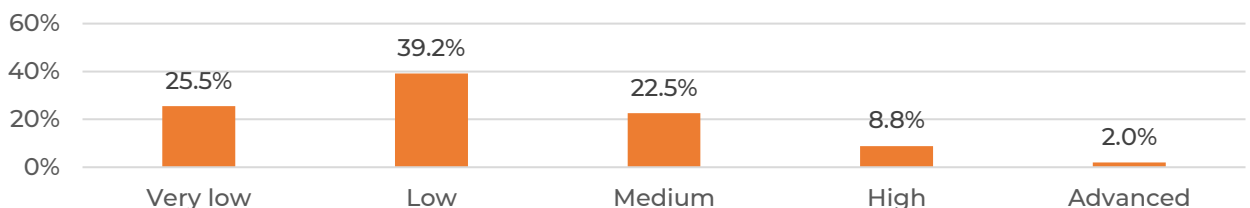


Figure 30. Source: Based on data from in-depth questionnaire.

In Italy, Türkiye and Austria the most common answer has been that the level of entrepreneurial competencies is low. But in Spain and Belgium the situation is more worrying for respondents, since the most popular response in these countries has been that the level is very low.

	Very low	Low	Medium	High	Advanced
Italy	34,8%	39,1%	26,1%	0,0%	0,0%
Spain	36,4%	31,8%	18,2%	9,1%	4,5%
Türkiye	11,1%	48,1%	25,9%	11,1%	3,7%
Austria	6,7%	53,3%	20,0%	0,0%	0,0%
Belgium	46,2%	23,1%	23,1%	7,7%	0,0%

Table 32. Level of training provided by HE and VET in entrepreneurial competencies, per country. Source: Based on data from in-depth questionnaire.

Considering the previous answers, respondents were asked whether they believe that the training HE and VET institutions are providing to current students fits companies in terms of digitalisation and sustainability.

HE/VET current training appropriate to the needs of firms

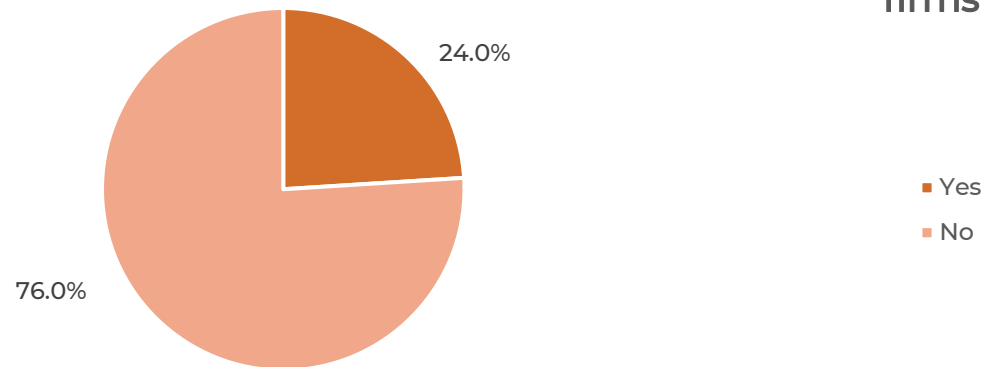


Figure 31. Source: Based on data from in-depth questionnaire.

76,0% of respondents considered that the competencies that HE and VET provide in terms of digitalisation and sustainability do not match the needs of companies.

In fact, in all the countries studied, the majority of respondents think education is not appropriate to the market needs. Particularly, in Türkiye the percentage of agents indicating that HE and VET do not provide these skills was very large (89%). In Austria this proportion was the lowest (60%).

	Yes	No
Italy	33,3%	66,7%

Spain	22,7%	77,3%
Türkiye	11,1%	88,9%
Austria	40,0%	60,0%
Belgium	16,7%	83,3%

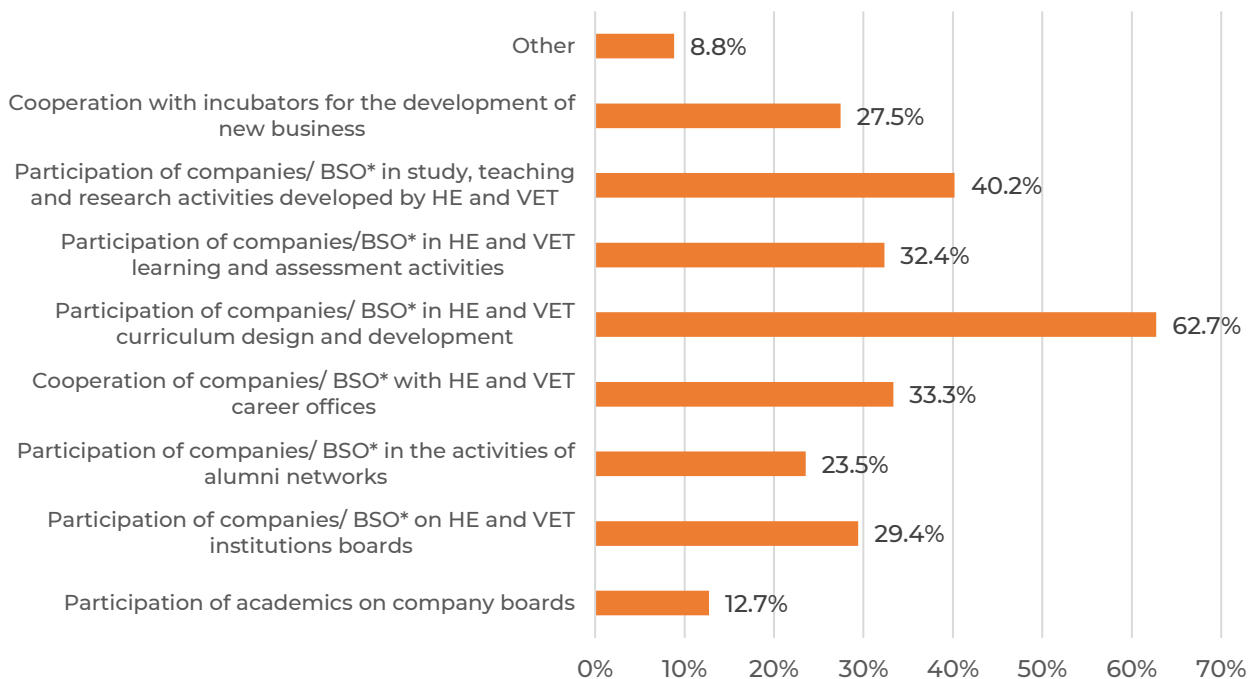
Table 33. Level of training provided by HE and VET in entrepreneurial competencies compared to the needs of firms, per country. Source: Based on data from in-depth questionnaire.

3.4.2. Measures for a better fit between training and SMEs needs.

Participants were also asked about the measures that should be applied to improve the fit between HE/VET education and the needs of firms in terms of sustainability and digitalisation.

The most popular answer was **“Participation of companies/Business Support Organisations in HE and VET curriculum design and development”**. 62,7% of respondents have selected this option. The second most common answer presents a significantly lower percentage (40,20%) and it is **“Participation of companies/BSO in study, teaching and research activities developed by HE and VET”**.

Measures to a better fit among HE/VET training and the need of firms



NB. Percentages add up to more than 100% because each respondent could select more than one option.

Figure 32. Source: Based on data from in-depth questionnaire.

The breakdown by country shows how **“Participation of companies/BSO in HE and VET curriculum design and development”** was the option preferred by respondents in all participating countries.

	Italy	Spain	Türkiye	Austria	Belgium
Participation of academics on company boards	4,2%	22,7%	18,5%	6,7%	7,1%
Participation of companies/ BSO* on HE and VET institutions boards	29,2%	18,2%	40,7%	26,7%	28,6%
Participation of companies/ BSO* in the activities of alumni networks	16,7%	31,8%	25,9%	20,0%	21,4%
Cooperation of companies/ BSO* with HE and VET career offices	50,0%	31,8%	22,2%	53,3%	7,1%
Participation of companies/ BSO* in HE and VET curriculum design	79,2%	59,1%	66,7%	53,3%	42,9%
Participation of companies/BSO* in HE and VET learning and assessment	29,2%	36,4%	33,3%	26,7%	35,7%
Participation of companies/ BSO* in study, teaching and research developed by HE and VET	50,0%	40,9%	37,0%	60,0%	7,1%
Cooperation with incubators for the development of new business	29,2%	36,4%	18,5%	20,0%	35,7%
Other	0,0%	13,6%	0,0%	6,7%	35,7%

NB. Percentages add up to more than 100% because each respondent could select more than one option.

Table 34. Measures to a better fit among HE/VET training and the need of firms, by country. Source: Based on data from in-depth questionnaire.

Finally, respondents were asked on if they think that HE/VET institutions promote the ability to think and act entrepreneurially. The results show that **80,0% of participants did not think that HE/VET training fosters these abilities.**

HE/VET foster the ability to think and act entrepreneurially



Figure 33. Source: Based on data from in-depth questionnaire.

	Yes	No
Italy	4,2%	95,8%
Spain	22,7%	77,3%
Türkiye	14,8%	85,2%
Austria	61,5%	38,5%

Belgium	14,3%	85,7%
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Table 35. HE/VET foster the ability to think and act entrepreneurially, by country Source: Based on data from in-depth questionnaire.

3.5. Survey overall results

INSIGHTS INTO DIGITALISATION OF SMES

- 48% of respondents stated that their level of digitalisation is either high or advanced, 35,3% indicated that their level is medium, and 14,9% whose level is either low or very low.
- A vast majority of interviewees (81,4%) have reported that the degree of digitalisation in their country has increased since the start of the pandemic.
- With respect to the business environment, the increase in the cost of investments is the main obstacle to digitalisation for 54,9% of respondents.
- Similarly, concerning the internal factors of SMEs, the lack of time to dedicate to digitalisation tasks is the most important obstacle to digitalisation, with 40,2% of participating agents selecting this option.
- Lastly, for those obstacles to digitalisation that have to do with the public administration, the most relevant is the bureaucracy in public-private collaboration. 61,6% of SMEs in the sample have chosen this category.

INSIGHTS INTO SUSTAINABILITY OF SMES

- In terms of sustainability, 39,2% of respondents have indicated that their level is high or advanced. On the contrary, 20,6% of them claimed that their current level is low or very low, and 39,2% refer that their level is medium.
- As it occurred with the degree of digitalisation, most participants (64,7%) believe that their level of sustainability has improved since the beginning of the pandemic.
- Regarding the chief obstacles to improve sustainability, the most popular answer among participating SMEs has been the uncertainty about the return/profitability of the measures to improve in this area. 41,2% of companies in the survey have opted for this option.

DIGITAL and SUSTAINABLE COMPETENCIES OF SMES

- Considering the level of digital knowledge and skills of the workforce, 41,1% of the sample states that it is high or advanced, while 24,5% answered low or very low. In addition, 32,4% of them estimate that the level of their workforce in this regard is medium.
- 55,3% of participating SMEs need workers with digital skills. Among them, 64% encounter difficulties in finding workers with these skills.

- The areas of knowledge related to digitalisation that will be more important for SMEs in the future are AI and machine learning (50%) cybersecurity (49%) and data science (47,1%).
- When it comes to digital competencies related to information and data literacy, the responses of agents interviewed are equally split among evaluating data; managing data; and browsing, searching, and filtering data.
- Sharing data, information and digital content through digital technologies is the most prevalent answer among digital competencies related to communication and collaboration, with 32,4% of responses.
- Considering competencies related to digital content creation, both integrating and re-elaborating digital content (28,4%) and developing digital content (28,4%) are the most remarkable skills for agents in the sample.
- Furthermore, with regard to digital competencies related to safety, participants have highlighted protecting personal data and privacy in digital environments, with 41,2% of answers.
- An additional set of competencies linked to digitalisation are those related to problem solving. Among these competencies, the one that has been selected the most in the questionnaire has been the ability to use digital technology creatively (33,3% of answers).
- 77,1% of SMEs need workers with sustainability skills. Among them, 90,9% had difficulties in finding these workers.
- Companies have been asked about the areas of knowledge related to sustainability that they will need in the future, being renewable energies and circular economy those who gather a greater share of responses, with 44,1% and 39,2% respectively.
- Additionally, the most important skill related to embodying sustainability values is valuing sustainability, with 65% of responses.
- Similarly, the most selected skill related to embracing complexity in sustainability is to approach sustainability problems thinking and understanding how the elements interact within and between systems (47,1% of answers).
- When it comes to the competencies related to envisioning sustainable futures, the most important issue for companies is to manage transitions and challenges in sustainability situations and to make decisions taking into account the uncertainty, with 38,2% of responses.
- Lastly, with respect to competencies related to acting for sustainability, the most relevant factor for companies is the ability to act for change in collaboration with others (39,8% of answers).

INSIGHTS TO ENTREPRENEURIAL COMPETENCIES OF SMES

- In addition, competencies in the area of entrepreneurship are relevant for the agents interviewed as well.
- For those competencies related to ideas and opportunities, the most popular among respondents has been spotting opportunities with 32,4% of answers.
- Plus, for those competencies linked to resources, motivation and perseverance is the most valued, with 37,3% of responses.
- 27,5% of participating agents have stated that planning and management is the most relevant competence related to “into action”.

TRAINING PROVIDED BY HE AND VET INSTITUTIONS

- With respect to the level of training provided by HE and VET in digital competencies, 39,3% of respondents believe that it is low or very low. 33,3% of them consider it is medium and 26,4% argue that it is high or advanced.
- Similarly, the perception is that the level of training provided by HE and VET in sustainability competencies is low or very low (52,9%). 13,8% of companies consider it is high or advanced and 31,4% that it is medium.
- In entrepreneurial competencies, the most common opinion is that it is low and very low as well (62,7%). Only 10,8% of the sample thought that this level in “high” or “advanced” and 22,5% that is medium.
- Overall, 76% of respondents argue that, in general, HE/VET training provision does not fit the needs of firms
- In this regard, the measure that has been selected to a greater extent to provide a better fit among HE/VET training and the need of firms is the participation of companies or BSOs in HE and VET curricula design and development. 62,7% of respondents have opted for this possibility.
- Lastly, 80% of participants believe that HE/VET do not foster the ability to think and act entrepreneurially.



CHAPTER 4:

Conclusions and recommendations

The EntreComp4Transition project aims at developing new, innovative, multidisciplinary approaches to teaching and learning, paving the way for the future “Green Transition Facilitator” by fostering an entrepreneurial mindset, facilitating co-creation, and ensuring recognition of learning outcomes.

Within the framework of the project, market analysis tries to identify the needs that SMEs have regarding new workers with skills related to digitisation and sustainability, the barriers that exist to find them and the role that HE/VET institutions should play to facilitate companies the path to get more digitized and sustainable businesses.

The main conclusions and recommendations drawn from the market analysis carried out are detailed below.

CONCLUSIONS

The **results of the market research indicate that enterprises have varying perceptions about the usefulness of digital competencies depending on the sector they operate in** (for example, industrial enterprises have a different approach from retailers or family tourism enterprises). Moreover, **perceptions differ depending on the size of the enterprises**, as some do not see how concrete digital technologies can increase their productivity and bring real added value.

RECOMMENDATIONS

There is a need for new training pathways on digital and sustainable competencies.

Specific programmes and accompanying micro-credentials for SMEs should be developed, tailored to their specific needs by sector and size (industrial companies are different from retailers, and international companies have different approaches from national/regional SMEs).

SMEs included in the study perceive their level of digitalisation to be high or advanced, in contrast to the view of stakeholders and trainers, who consider that SMEs have a low level of digital competencies.

SMEs and stakeholders should exchange views and information on digital and sustainable competencies to reach common ground on the issue. Some best practices could be presented to SMEs in common workshops.

New assessment tools distributed among SMEs could also help to this (Entrecomp4Transition AI Tool may help on this).

Both SMEs and stakeholders agree that the pandemic caused by Covid-19 has contributed to an increase in digitalisation among SMEs.

It is important to raise awareness of how digitalization processes enable efficiency and savings in the company. The more digitalized, the more sustainable SMEs can be.

However, there is still a long way to go to achieve the desired level of digitalisation.

New training programmes should be organised to foster the current trend among SMEs to use digital competencies. BSOs could provide SMEs with knowledge and reflection before acquiring new IT devices, too.

According to the survey, the most important barriers for digitalisation among SMEs are the following ones: SMEs cannot increase the **cost of investments** for digitalisation; SMEs do **not have enough advice nor enough time to reflect and to learn about the new digital and sustainable competencies** that could be adequate for their activity.

BSOs and Continuous Training institutions should provide SMEs with specific advice and training about the usefulness of new digital competencies and sustainable competencies to become more effective and competitive, as well as guidance to identify funding opportunities to favour the SMEs' investment in digitalization and sustainability.

Flexibility is key to develop the new plans of action.

SMEs tend to identify the benefits and the added value of digitalisation more easily than those of the sustainability. Their processes are also affected by the capacity and relationships with suppliers and customers.

Specific communication campaigns should be organized in order **to foster sustainability training among SMEs. Using inspiring practices and cross-border inspiring examples/practices could be useful for this.**

Regarding sustainability, **high energy prices have propelled progress on sustainable activities, but SMEs are uncertain** about the benefits it may bring.

The role of Public Services and decision-makers would be very important to increase certainty among SMEs and **to foster sustainability training among SMEs. Using inspiring practices for cross- fertilisations** could be useful for this.

SMEs prefer specialised digital and sustainable professional profiles, and they often seek them outside the company rather than investing in training their current staff.

BSOs could support the SMEs with the provision of new **specialised professional profiles** either by the offer of continuous training and by in-company training related to the specific needs of each company.

BSOs could also support new networking services between SMEs and Education providers to find new profiles and to support the digital and sustainability transformation among SMEs.

55,3% of SMEs declare that they need new workers with digital skills, and only 22,9% of SMEs need new workers with sustainable skills.

Participant SMEs declare **that they had difficulties in finding the new professional profiles needed in both fields.**

(This shortage is already becoming a competitive disadvantage for SMEs).

Dual Education Systems should be extended in order to close SMEs needs to education system.

Continuous training and lifelong learning must be reinforced since companies are aware of their specific needs. In addition, **new micro-credentials with official recognition could help to solve this situation too.**

Fostering micro-credentials will allow to share and showcase skills and qualifications to employers.

In the future, **the digital professional profiles more requested by enterprises would be those related to AI/machine learning and cybersecurity.**

HE and VET institutions should **update their current curricula** and include some Digital competencies and Sustainable competencies (such as: Digital Marketing, professional social media or mobile devices; circular economy and social responsibility) in all programmes, because SMEs demand more specialised staff.

Both SMEs and stakeholders recognize that SMEs have developed or improved their digital marketing, e-commerce competencies, etc. Digital marketing and e-commerce are widespread among SMEs, with stakeholders observing their active presence on social networks and digital platforms for commercial purposes.

Continuous Training Institutions should offer **micro-credentials or complementary training short programmes to update digital competencies already used by SMEs.**

A bidirectional relationship between enterprises and CVET training centres is necessary.

Participants suggested that digital and sustainable competencies and skills are not exclusive to engineering and related areas.

The labour market increasingly demands digital skills across all professions. However, the current education systems do not provide sufficient training on cross-cutting digital competencies (such as digital marketing, mobile devices, professional social media work, or e-commerce) and almost no cross-cutting sustainable competencies (such as circular economy and social responsibility).

HE and VET Institutions should **offer updated training** programmes on these cross-cutting digital and sustainable competencies: technology office automation, social networks, and mobile devices, as well as the 3 cross-cutting Sustainable competencies mentioned below.

Bi-directional relationships between enterprises and HE and VET training centres is necessary.

Additionally, there is a shortage of training for trainers in higher education on these subjects.

Formal learning does not meet the skills needs of SMEs. The SMEs surveyed agree that HE and VET systems do not offer an education that replies to market needs, nor do they adequately foster entrepreneurship competencies.

Formal education Institutions, BSOs, and Continuous Training Institutions should collaborate with companies to develop and recognize **micro-credentials** to move faster in the field of Digital and Sustainable Competencies.

Formal education struggles to adapt its curricula to the necessary changes, and lifelong learning insufficiently meets the training needs of SMEs.

SMEs suggest that companies or Business Support Organisations (BSOs) should participate in HE and VET curriculum design and development” (62,7%) and in study, teaching, and research activities (40,20%) to contribute to solve the above-mentioned problems.

A bidirectional relationship between enterprises and training centres is necessary.

Companies should be involved in the training process.

The SMEs surveyed demand more technical skills for digitalisation than sustainability, which are more focused on regulation and standards.

New Training pathways for managers (addressed at management level) could develop the capacity and vision to develop more digital and sustainable businesses

Regarding the competencies related to **the 3 European Frameworks, the SMEs interviewed think the main needed skills in the future are:**

DigComp Framework

- ✓ **Information and data literacy”. According to the answers collected, the 3 skills or competencies included in this area – “Browsing, searching and filtering data, information and digital content”, “Managing data, information and digital content” and “Evaluating data, information and digital content” - had the same response rate.**
- ✓ **Communication and collaboration”. Among the skills related to this area, “Sharing data, information and digital content through digital technologies” was the most important. (32,4%).**

- ✓ Digital content creation”. **Developing digital content (to create and edit digital content)”** and **“Integrating and re-elaborating digital content (to create new original content from existing digital information)”**, both selected by 28,4% of the sample.
- ✓ “Safety”, **41,2% of employers and other stakeholders in the sample thought that “Protecting personal data and privacy in digital environments” is the most important skill** into this topic.
- ✓ "Problem solving". Among the skills included in this area, **most relevant according to the answers provided was “Creatively using digital technology” (34,3%)**.

GreenComp framework

- ✓ **“Embodying sustainability values”**: the most important for respondents was **“Valuing sustainability” (65,0% of the sample)**.
- ✓ **“Embracing complexity in sustainability”**. Inside this group, the competence most selected by interviewees has been **“To approach sustainability problems thinking and understanding how the elements interact within and between the systems” (47,1%)**.
- ✓ **“Envisioning sustainable futures”** is another competence area including in GreenComp. Among the skills included in this area, **“To manage transitions and challenges in sustainability situations and making decisions taking into account the uncertainty” (38,2%)**.
- ✓ **“Acting for sustainability”**. In this group, the most remarkable competence is **“To act for change in collaboration with others”**, with **39,8% of responses**.

EntreComp framework

- ✓ **“Ideas and opportunities”**, the ability most important for survey participants was **“Spotting opportunities”**, selected by **32,4%**.
- ✓ **“Resources”**. Regarding the resources skills of graduates that firms desire, the most frequent was **“Motivation and perseverance” (37,3% of the sample)**.
- ✓ **“Into action”**. In this competence area, the most valued skill was **“Planning and management”**, selected by **27,5%**, and **“Dealing with uncertainty, ambiguity and risk”**, by **26,5%**.

Therefore, Entrecomp4Transition learning pathway will focus on the following competences:

GreenComp framework

Embodying sustainability values	Valuing sustainability
Embracing complexity in sustainability	To approach sustainability problems thinking and understanding how the elements interact within and between the systems
Envisioning sustainable futures	To manage transitions and challenges in sustainability situations and making decisions taking into account the uncertainty
Acting for sustainability	To act for change in collaboration with others

DigComp Framework

Information and data literacy	<p>Browsing, searching and filtering data, information and digital content</p> <p>Managing data, information and digital content</p> <p>Evaluating data, information and digital content</p>
Communication and collaboration	Sharing data, information and digital content through digital technologies
Digital content creation	<p>Developing digital content (to create and edit digital content)</p> <p>Integrating and re-elaborating digital content (to create new original content from existing digital information).</p>
Safety	Protecting personal data and privacy in digital environments
Problem solving	Creatively using digital technology

EntreComp framework:

Ideas and opportunities	Spotting opportunities
-------------------------	------------------------

Resources	Motivation and perseverance
Into action	Planning and management
	Dealing with uncertainty, ambiguity and risk



ANNEX I:

In-depth questionnaire

QUESTIONNAIRE FOR DEEP INTERVIEWS (FIELD WORK)

INSTRUCTIONS TO CARRY OUT THE INTERVIEW

1. EntreComp4Transition is a project co-funded by the European Union, run under the coordination of Eurochambres (the Association of European Chambers of Commerce and Industry). It aims at developing new, innovative, multidisciplinary approaches to teaching and learning to support SMEs in green and digital transition.
2. The partners will carry out a market analysis in the 5 countries by interviews in depth with companies and experts (a minimum of 10 people per country and a minimum of 100 interviews in total). This questionnaire will be useful to know the needs of companies regarding the entrepreneurial, green and digital skills they need to move towards a more sustainable and digital business, and to identify the gaps between the needs they have and the training that High Education institutions (HE) and Vocational Education Training (VET) providers, supply.
3. The target group for the interviews will be mainly companies, since other stakeholders, HE and VET providers and public authorities have participated in the Focus Groups phase. Companies may be SMEs or big companies but the main needs to identify are related to SMEs' needs, since SMEs represent more than 99% of the companies in Europe.
4. Partners may organise on-site or on-line interviews (by Teams, zoom, google meet, etc.), however the partner/interviewer should run the interview and use the questionnaire. When the questionnaire is completed and if the meeting has been organised on-line, the interviewer should send the completed questionnaire to the participant, so that the participant company/organisation's representative could sign the questionnaire.
5. CCI Spain will send an excel file to partners in the first week of January 2023. The partners should tabulate the results of the questionnaire in the excel file, and they should send the results of their national interviews to CCI Spain in order to be compiled and analysed by CCI Spain for the Final report of WP3 (official deliverable of this WP).
6. Regarding the terms used in the questionnaire, please, find below the following clarifications:

The Twin Digital and Green Transition.

- Digital or twin transition: The goal of transforming Europe to a globally competitive, climate-neutral digitalised economy and society rests on two pillars: the green and digital ("twin") transitions. The twin green and digital transitions accelerate the pace of change affecting all aspects of our lives and will have many consequences for the future of work.
- The European Green Deal and the New Circular Economy Action Plan have set out an ambitious agenda for environmental policy, while the Industrial Strategy sets out actions in the area of innovation, investment, standards, fair competition and efforts to reduce barriers to the single market. Together, these initiatives outline the European Commission's strategy of the so-called twin transitions.

- As the European Commission states, these twin transitions require “new products and services, markets and business models, which must be grounded in our European values and our social market economy¹⁸.”

Sustainability.

- Sustainability means prioritising the needs of all life forms and of the planet by ensuring that human activity does not exceed planetary boundaries (GreenComp 2022).
- A sustainable business is a business that delivers financial returns in the short and long term in a way that generates positive value for society and the environment, operates within environmental constraints and contributes to the ongoing resilience of social and environmental systems
- The European Commission’s review of the sustainable development strategy in 2009 refers to long-term vision for sustainability in which economic growth, social cohesion and environmental protection go hand in hand and are mutually supporting. It also pointed to the lead it has taken in regard to climate change and promoting a low-carbon economy¹⁹.

Sustainability competencies.

- These are the knowledge, skills and attitudes to live, work and act in a sustainable manner to embody sustainability values, and embrace complex systems, in order to take or request action that restores and maintains ecosystem health and enhances justice, generating visions for sustainable futures.

Digitalisation.

- Digitalisation is the ongoing integration of digital technologies and digitised data across the economy and society (European Commission – Eurofound).

Digital competencies.

- These are the knowledge, skills and attitudes that involve the confident, critical and responsible use of, and engagement with, digital technologies for learning, at work, and for participation in society (DigComp)

Entrepreneurship.

- Entrepreneurship is when you act upon opportunities and ideas and transform them into value for others. The value that is created can be financial, cultural, or social (EntreComp 2016).

Entrepreneurial competencies.

- These are the knowledge, skills and attitudes that make up what it means to be entrepreneurial, discovering and acting upon opportunities and ideas, and transforming them into social, cultural, or financial value for others.

7. Finally, regarding personal data treatment, since the participants are free to participate, they do not need to sign any specific personal data form. Nevertheless, partners should guarantee and inform the participants that their respective data would be treated anonymously and compiled as the whole group of 100 questionnaires.

¹⁸ https://www.digitalsme.eu/digital/uploads/Position-paper-Sustainable-Digital-Transformation_FINAL-2.pdf

¹⁹ <https://eur-lex.europa.eu/EN/legal-content/glossary/sustainable-development.html>

Privacy aspects of the EntreComp4Transition data

The information gathered in the questionnaire will be treated confidentially and be used for research purposes only. The responses provided will not be linked to individual names or addresses. Each participating country is bound by its national legislation on the processing and use of personal data. For European Community member states, national legislation follows Regulation (EU) 2016/679 of the European Parliament and of the Council on the protection of natural persons with regard to the processing of personal data and on the free movement of such data²⁰. Publications based on the EntreComp4Transition data will never contain information that can identify individual respondents or individual organisations.

Please info the person to be interviewed that:

**If you are unsure of the exact answer to some questions,
please estimate the answer to the best of your ability.**

A. CLASSIFICATION DATA

A1. Name of the stakeholder organization:

A2. Type of stakeholder. Please select the best option:

1. Company (move to A3 and A4)
2. Association
3. High Education institution (HE)
4. Vocational Education Training provider (VET)
5. Public institution (other than HE or VET)
6. Other. Please detail:

A3. Size of the company (answer only if option 1 in A2 was selected):

1. 0 employees
2. 1 to 9 employees
3. 10 to 49 employees
4. 50 to 249 employees
5. 250 or more employees

²⁰ See also [EUR-Lex - 32016R0679 - EN - EUR-Lex \(europa.eu\)](#)

A4. Sector to which company belongs (answer only if option 1 in A2 was selected):

1. Industry
2. Construction
3. Wholesale and retail
4. Other services

B. DIGITALISATION AND SUSTAINABILITY IN SMEs

B1. In your opinion, what is the digitalisation level of your company (or what do you think is the digitalisation level of SMEs in your country if you are not a SME)? Please, select from 1- Very low to 5- Advanced:

1 (very low)	2	3	4	5 (advanced)
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B2. Regarding the level of digitalisation that your company had before the outbreak of the health crisis (2019) (or the level of digitalisation you think SMEs had at that time if you are not a SME), how do you think this level has evolved?

1. It has improved
2. No change
3. It has become worse

B3. What do you consider to be the main obstacles to the digitalisation of SMEs? Please, select a maximum of 2 options in each group.

a. Main obstacles to digitalisation -business environment:

1. Level of digital knowledge of customers
2. Level of digital knowledge of suppliers
3. Digital security and privacy
4. Lack of internationally harmonized criteria and standards
5. Increase in the cost of investments required for digitalisation

b. Main obstacles to digitalisation - internal factors of the SMEs/organization:

1. Company staff training
2. Lack of knowledge about the effects of digitalisation
3. Insufficient advice on the type of digitalisation that companies need
4. Lack of necessary resources (financing)
5. Difficulties finding specialized human resources
6. Lack of time to dedicate to digitalisation tasks

c. Main obstacles to digitalisation - relationship with Public Administrations:

1. Provision of infrastructures (connectivity, broadband)
2. Bureaucracy in public-private collaboration

3. Absence of public incentives (fiscal, labour, etc.)

4. e-Administration incomplete

B4. In your opinion, what is the sustainability level of your company (or, if you are not an SME, what do you think is the environmental sustainability level of SMEs in your country)? Please, select from 1- Very low to 5- Advanced:

1 (very low)	2	3	4	5 (advanced)
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B5. How do you think the sustainability of your company has evolved in the last 2 years (or, if you are not an SME, in your opinion how do you think SME sustainability has evolved in the last 2 years)?

1. It has improved
2. No change
3. It has become worse

B6. In your opinion, what are the main obstacles that hinder the implementation of measures to improve the sustainability of your company (or SMEs in general, if you are not a SME)? Select a maximum of 3 options:

1. General economic situation
2. Difficulty to obtain financing
3. Bureaucracy
4. Lack of specialized human resources
5. Lack of public incentives (subsidies, tax incentives...)
6. Increase of production costs
7. Uncertainty about the return/profitability of the implementation of measures to improve sustainability
8. Others - please state.....

C. DIGITAL AND SUSTAINABILITY COMPETENCIESCOMPETENCIES OF THE WORKFORCE

C1. What is the level of digital knowledge and skills that employees of your company currently have (or, if you are not an SME, in your opinion what is this level in the workforce in general)? Please, select from 1- Very low to 5- Advanced:

1 (very low)	2	3	4	5 (advanced)
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C2. Question only for SMEs. Answer only if option 1 in A2 was selected. During the last 2 years, have you needed to incorporate workers with digital skills in your company?

1. Yes (move to C3)
2. No (move to C4)

C3. Answer only if option 1 in C2 was selected. Did you encounter difficulties in finding workers having the digital skills that you were looking for?

1. Yes
2. No

C4. What areas of specialist knowledge, related to the digital world, would your company need in the future (or, if you are not a SME, what areas do you think will be important for SMEs in the future)? Please select a maximum of 3 areas (the most important for you).

1. Specialised programmes
2. Network and information security - Cybersecurity
3. E-commerce
4. Data science and analytics
5. User experience design
6. Digital marketing
7. Artificial intelligence and machine learning
8. Deep tech
9. Other. Please state.....

C5. Below there is a list of competencies related to digitalisation. Please select the competence most important for you in each of the areas that should possess new HE or VET graduates. Please **select only one competence in each area.**

	Select the most important for you in each area
Information and data literacy	
- Browsing, searching and filtering data, information and digital content	
- Evaluating data, information and digital content	
- Managing data, information and digital content	
Communication and collaboration	
- Interacting through digital technologies	
- Sharing data, information and digital content through digital technologies	
- Engaging citizenship through digital technologies	
- Collaborating through digital technologies	
- Netiquette (to be aware of behavioural norms while using digital technologies)	
- Managing digital identity	
Digital content creation	
- Developing digital content (to create and edit digital content)	
- Integrating and re-elaborating digital content (to create new original content from existing digital information)	
- Copyright and licenses (to understand how copyright and licences apply to digital information)	
- Programming	
Safety	
- Protecting devices (to protect and understand risks and threats in digital environment)	
- Protecting personal data and privacy in digital environments	
- Protecting health and well-being (from threats to physical and psychological well-being)	
- Protecting the environment (to be aware of the environmental impact of digital technologies)	
Problem solving	
- Solving technical problems	
- Identifying needs and technological responses	
- Creatively using digital technology	
- Identifying digital competence gaps	

C6. Question only for SMEs. Answer only if option 1 in A2 was selected. During the last year, have you needed to incorporate workers with skills related to sustainability in your company?

1. Yes (move to C7)
2. No (move to C8)

C7. Answer only if option 1 in C6 was selected. Did you encounter difficulties in finding workers having the skills related to sustainability that you were looking for?

1. Yes
2. No

C8. What areas of knowledge, related to sustainability, would your company need in the future (or, if you are not a SME, what areas do you think will be important for SMEs in the future). Please select a maximum of 3 areas (the most important for you).

1. Renewable energies
2. Waste management
3. Environmental management
4. Circular economy
5. Health protection
6. Land management
7. Climate change
8. Energy auditing
9. Sustainable supply chains
10. Social impact
11. Other - please state.....

C9. Below there is a list of competencies related to sustainability. Please select the competence most important for you in each of the areas that should possess new HE or VET graduates. Please **select only one competence** in each area.

	Select the most important for you in each area
Embodying sustainability values	
- Valuing sustainability	
- To support equity and justice from a sustainability point of view	
- Promoting and respect the nature	
Embracing complexity in sustainability	
- To approach sustainability problems thinking and understanding how the elements interact within and between systems	
- To assess information, arguments and assumptions to have a critical thinking about sustainability	
- To analyse a sustainability problem taking into account all available information, using that for framing it	
Envisioning sustainable futures	
- To envision alternative sustainable futures, identifying the steeps needed to achieve a preferred sustainable future	
- To manage transitions and challenges in sustainability situations and make decisions taking into account the uncertainty	
- To be able to explore different disciplines and using creativity to improve sustainability	
Acting for sustainability	
- To navigate the political system to demand effective policies for sustainability	
- To act for change in collaboration with others	
- To identify own potential for sustainability	

C10. Below there is a list of competencies related to developing peoples' ability to think and act entrepreneurially, including as an employee. Please select the competence most important for you in each of the areas that should possess new HE or VET graduates. Please **select only one competence** in each area:

	Select the most important for you in each area
Ideas and opportunities	
- Spotting opportunities	
- Creativity	
- Vision	
- Value of the ideas	
- Ethical and sustainable thinking	
Resources	
- Self awareness and self efficacy	
- Motivation and perseverance	
- Mobilising resources	
- Financial and economic literacy	
- Mobilising others	
Into action	
- Taking the initiative	
- Planning and management	
- Dealing with uncertainty, ambiguity and risk	
- Working with others	
- Learning through experience	

D. TRAINING IN ENTREPRENEURIAL, DIGITAL AND SUSTAINABILITY COMPETENCIES

D1. What do you think is the level of the training that HE and VET institutions are providing to current students in relation to digital, sustainability and entrepreneurial competencies? Please, select from 1 - Very low to 5 - Advanced:

Digital competencies	1 (very low)	2	3	4	5 (advanced)
Sustainability competencies	1 (very low)	2	3	4	5 (advanced)
Entrepreneurial competencies	1 (very low)	2	3	4	5 (advanced)

D2. Do you think the training that HE and VET institutions are providing to current students fits to the needs of companies in terms of digitalisation and sustainability?

1. Yes
2. No

D3. In your view, what measures should be applied to get a better fit of the training provided by HE and VET institutions to the needs of firms in terms of digitalisation and sustainability? Please, select a maximum of 3 options:

1. Participation of academics on company boards
2. Participation of companies/ BSO* on HE and VET institutions boards
3. Participation of companies/ BSO* in the activities of alumni networks
4. Cooperation of companies/ BSO* with HE and VET career offices
5. Participation of companies/ BSO* in HE and VET curriculum design and development

6. Participation of companies/BSO* in HE and VET learning and assessment activities
7. Participation of companies/ BSO* in study, teaching and research activities developed by HE and VET
8. Cooperation with incubators for the development of new business
9. Other. Please specify:

* BSO: Business Support Organizations

D4. Do you think that HE and VET institutions in your country promote or foster their learners' ability to think and act entrepreneurially?

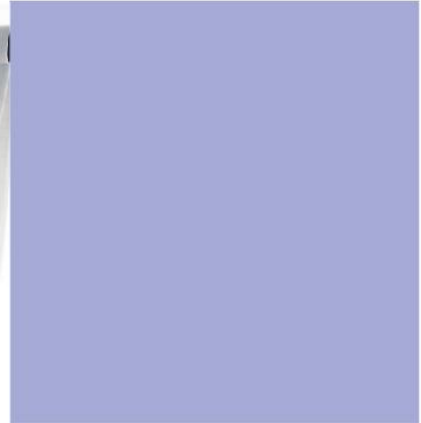
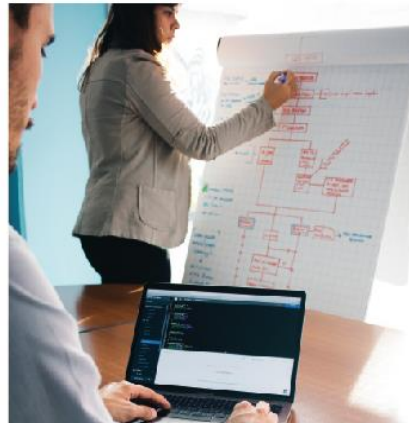
1. Yes
2. No

E. COMMENTS

E1. Please, add any comment or suggestion you want to make related to these issues:



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ANNEX 2: INSPIRING PRACTICES SERVING CHALLENGES OF ENTERPRISES IN THE DIGITAL AND GREEN TRANSITION

Project Name	Building upon the EntreComp Framework for a green and digital transition
Project Acronym	EntreComp4Transition
Work Package	3
Document Title	INSPIRING PRACTICES SERVING CHALLENGES OF ENTREPRISES IN THE DIGITAL AND GREEN TRANSITION
Author(s)	Seval İskender – TOBB – The Union of Chambers and Commodity Exchanges of Türkiye

Disclaimer

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MARCH 2023

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Preface

EntreComp4Transition project aims at developing new, innovative, multidisciplinary approaches to teaching and learning paving the way for the future “Green Transition Facilitator” by fostering an entrepreneurial mindset, facilitating co-creation, and ensuring recognition of learning outcomes.

The Work Package 3 of the Project is market analysis on skills to reach the green and digital transition. The market analysis will contribute to define the learning outcomes required to enable students and professionals to move forward to the green and digital transition, helped by the appraisal of the EntreComp Framework competencies.

The task 3.3 under the WP3 aims to identify inspiring practices at business, but also VET and HE level, which can motivate providers, students, and companies on how to face new green and digital challenges.

This document was created by TOBB on behalf of the EntreComp4Transition project, with contributions from all partner countries.

- Wirtschaftskammer Österreich (Austria)
- SPW-Emploi et Formation (Belgium)
- Cámara de Comercio de España (Spain)
- Unioncamere – Unione Italiana delle Camere di commercio, industria, artigianato e agricoltura (Italy)
- Türkiye Odalar ve Borsalar Birliği (Türkiye)



INSPIRING PRACTICES

AUSTRIA

SUSTAINABILITY CHALLENGE

WU Wien

ABOUT

Useful resource links about the practice:

[Sustainability challenge website](#)

Who is involved in the practice?

7 UNIVERSITIES

WU Wien
BOKU
TU Wien
Universität Wien
die Angewandte
Universität Graz
Mozarteum
Salzburg

PARTNERS OF THE PRACTICE

Austrian Development Agency, circle17, Lebensart Verlag, OeBB Train Tech, Siemens Mobility Rolling Stock, beehiwe – the sustainable business club, Dachverband Salzburger Kulturstätten, Magistratsabteilung 48 – Abfallwirtschaft, Straßenreinigung, und Fuhrpark, Porr Umwelttechnik GmbH, Studo, Bundesministerium für Klimaschutz, Umwelt, Energie, Mobilität, Innovation und Technologie, klimaaktiv, OeBB Operative Services, Radiofabrik Salzburg.

What is the geographic reach of the practice?

National

SHORT SUMMARY

Primary Target Audience: Students from different universities in Austria work together for two semesters.

Goal: Working together on a better world for tomorrow.

Interdisciplinarity: Students from all fields of study can participate in the Sustainability Challenge. The teachers provide insight into the various fields of study. This guarantees an exciting exchange of different perspectives and provides a very good basis for solving the problems in the projects.

Practical Projects: The Sustainability Challenge gives students the opportunity to apply theoretical knowledge in a concrete way. In doing so, completely new learning spaces are created in which it is possible to become active for the implementation of the SDGs and to gain practical experience for later professional life.

Teamwork: In addition to the possibility of setting up their own business idea, students also have the choice of working with practice partners on concrete problems from their everyday business life. In this way, projects and ideas do not disappear in dusty drawers, but are actively implemented.

Conversation at eye level: Each project is personally supervised by a teacher. The collaboration in the respective teams or with the practice partners takes place at eye level – everyone works together towards the same goal. This is also how valuable contacts are made.

Interactivity: The practice tries to integrate education for sustainable development into the classroom by allowing plenty of room for interactive teaching and learning formats.

How is the project implemented?

Participation in the Sustainability Challenge is possible in one of two tracks. In the Service Learning Track, projects are realized together with practice partners. In the Start-Up Track, students implement their own sustainable start-up idea.

What does this implementation result in?

Service Learning means working on concrete problems together with practical partners. Service Learning combines theoretical teaching and practical cooperation with project partners, whereby both sides learn from each other. The practical partners formulate the questions for the project in advance with the support of the RCE Vienna. The focus of the projects is always on sustainable development and the achievement of the SDGs.

Start-up means developing and implementing the own sustainable business idea. In the Start-up Track of the Sustainability Challenge, students find their own entrepreneurial response to global challenges. They apply as a team or individually, bring their own sustainable start-up idea or join a start-up. The students are accompanied by experts during the concretization, further development and implementation.

BUSINESS CHALLENGES THE INSPIRING PRACTICE SERVES TO:

Solution and reality-based learning

- ✓ Finding path to implement solutions of sustainability challenges in companies
- ✓ Working together in transdisciplinary study teams
- ✓ If you want to make the world sustainable, you need knowledge and experience. In the Sustainable Challenge, students from all fields of study receive both: theoretical knowledge from renowned teachers and the chance to put this knowledge directly into practice.



INSPIRING PRACTICES

BELGIUM

NEXT CIRCULAR WALLONIA

ABOUT

Useful resource links about the practice:

[NEXT - Financement de votre projet d'Économie Circulaire](#)

[Circular Wallonia \(wallonie.be\)](#)

[Wallonie Entreprendre \(wallonie-entreprendre.be\)](#)

[Economie@Wallonie | Politique économique, clusters et pôles, outils pour les PME](#)

[#S3Wallonne](#)

Who is involved in the practice?

[Service public de Wallonie \(SPW – Economy Employment Research\)](#)

[SRIW](#)

[Wallonie Entreprendre](#)

What is the geographic reach of the practice?

Regional

SHORT SUMMARY

Target audience: Start-ups, TPE, SME, GE

Project phase: Growth

Instrument: Financing (loan)

Next Circular Wallonia finances industrial projects that are part of the circular economy. Next also aims to accelerate the growth of such practices.

The project must demonstrate the prospect of economic profitability, even if it is in the long term. Private actors must also support the financing of the project, so NEXT does not intervene alone.

BUSINESS CHALLENGES THE INSPIRING PRACTICE SERVES TO:

The project address one or more axes of the Circular Economy:

- circular design and production,
- new economic models,
- reverse logistics,
- industrial symbioses.

W.ALTER

ABOUT

Useful resource links about the practice:

[W.ALTER](#)

[SRIW](#)

[Wallonie Entreprendre](#)

Who is involved in the practice?

Public institutions & Labour Market Actors

What is the geographic reach of the practice?

Regional

SHORT SUMMARY

Target audience: Start-ups, VSEs, SMEs (social and cooperative economy enterprises)

Project phase: pre-project, creation, growth, innovation, optimization, transition

Instrument: Financing (loan)

W.Alter offers adapted financing for social and cooperative economy projects. Twenty-five years ago, traditional financial actors did not understand social enterprise models. These companies, in particular because they did not seek to maximize profit, encountered difficulties in obtaining financing and developing their activities. This is why the S.R.I.W. (Société Régionale d'Investissement de Wallonie) in collaboration with the Government of the Walloon Region and the trade unions has decided to create a specific financing tool dedicated to this entrepreneurial model. On 6 July 1995, W.ALTER was launched.

W.ALTER (cooperative enterprises) is part of WE - Wallonie Entreprendre - the economic and financial tool of Wallonia at the service of businesses.

Doing business in a cooperative means choosing a specific and unique business model. Entrepreneurship in a cooperative means opting for a model that promotes ethical values and places societal goals at the heart of the economic project.

Particularly adapted to meet societal and economic challenges, the cooperative model is attracting more and more interest from entrepreneurs, who are keen to undertake in a sustainable way, with respect for all. Focused on people, the cooperative model is well suited to entrepreneurs who rely on the collective and wish to face the challenges they encounter together.

Entrepreneurship in a cooperative means choosing a model that is financially solid and particularly resilient, even more so in times of crisis. W.ALTER facilitates the creation of social and cooperative economy enterprises by supporting the start-up of their activities.

The amount of financing depends on the real needs of each entrepreneur and is analysed on a case-by-case basis. As an indication, W.ALTER equity contributions can go up to €200,000 per project, or even €500,000 if the project is part of the energy transition. W.ALTER also offers expertise and networking (around 150 companies).

BUSINESS CHALLENGES THE INSPIRING PRACTICE SERVES TO:

Providing financial solutions adapted to the needs of entrepreneurs from pre-creation to growth.

W.ALTER facilitates the creation of social and cooperative economy enterprises by supporting the start-up of their activities when they meet specific criteria that contribute to the green and digital transition concerning: energy transition, resources and wastes management, recycling, responsible purchasing, eco-conception, innovative entrepreneurial practices.

W.ALTER is a public company (financed by the SPW) serving entrepreneurs who want to invest in a different economy: sustainable and human-centred. W.ALTER exists to support Walloon cooperative projects. How? By providing financial solutions adapted to the needs of entrepreneurs from pre-creation to growth.

Through its activities, W.ALTER facilitates the creation and development of businesses in its territory. It contributes to a Wallonia in transition, more resilient and more human.

ERA-MIN

ABOUT

Useful resource links about the practice:

[ABOUT ERA-MIN 3](#)

[Wallonie Recherche \(SPW\)](#)

[ERA-MIN Joint Call 2023](#)

Who is involved in the practice?

[FWO \(BE\)](#)

[VLAIO Flanders Innovation and Entrepreneurship \(BE\)](#)

[Innoviris Brussels \(BE\)](#)

[Service public de Wallonie \(SPW – Economy Employment Research\)](#)

Countries/ involved Partners:



The practice has been implemented by whom? Public Institutions

What is the geographic reach of the practice? International

SHORT SUMMARY

Target audience: TPE, SME, GE, university unit, higher education unit or associated research center, research center

Project phase: launch, transition, growth

Instrument: Call for projects - international support (7/12/22: call opening)

ERA-NET Confund on Raw Materials (ERA-MIN) is an **international network of national and/or regional funding agencies** which aims to implement European-wide coordination of research and innovation programmes on raw materials in order to strengthen industry, competitiveness and the transition to a circular economy.

Supported by EU Horizon 2020, it is now on its third edition, **ERA-MIN3** (2020-2025) and builds on the experience of the FP7 ERA-NET **ERA-MIN** (2011-2015) and the **ERA-MIN 2** (2016-2022).

ERA-MIN aims to support the European Innovation Partnership on Raw Materials (EIP RM), the EU Raw Materials Initiative and further develop the raw materials (RM) sector in Europe through funding of transnational research and innovation (R&I) activities. This will be achieved through calls designed and developed specifically for the non-fuel, non-food raw materials sector.

ERA-MIN3: RAW MATERIALS FOR THE SUSTAINABLE DEVELOPMENT AND THE CIRCULAR ECONOMY aims to improve synergy, coordination and coherence between regional, national and EU funding in the raw materials sector by reducing fragmentation of raw materials funding across Europe and globally, as well as, improving the use of human and financial resources, the competitiveness and the environmental, social, health and safety issues of raw materials operations through supporting of transnational, excellent and translational R&I activities.

BUSINESS CHALLENGES THE INSPIRING PRACTICE SERVES TO:

ERA-MIN3 addresses **5 key objectives**:

1. **Support and promote R&I cooperation in Europe**, contributing to the objectives and the implementation of both the Raw Materials Initiative and the EIP RM Strategies, maximising the impact
2. of the Technology Pillar of the Strategic Implementation Plan;
3. Reduce fragmentation of R&I funding in the area of **non-fuel, non-food raw materials** across Europe and globally;
4. Provide a **pan-European support network** and financial resources to improve synergies, coordination and collaboration;
5. Improve the **efficiency and impact of human and financial investment** in R&I activities in the area of Raw Materials;
6. Improve the **competitiveness and the environmental, health and safety performance** of non-fuel, non-food RM operations.



INSPIRING PRACTICES

ITALY

ADOPT A SCHOOL PROJECT

ABOUT

Useful resource links about the practice:

[ADOTTA-UNA-SCUOLA.pdf](#)

Who is involved in the practice?

[Altgamma Foundation](#) in collaboration with **Italian Ministry of Education** and **8 Italian Regions** (Campania, Marche, Abruzzo, Veneto, Piemonte, Toscana, Lombardia, Emilia-Romagna); **17 Brand Companies** associated with Altgamma and **17 technical and vocational secondary schools**.

17 Companies	Brand	17 Technical and vocational secondary schools
		Istituto Superiore Amedeo Avogadro, Torino
Aurora		Scuole Tecniche San Carlo, Torino
Benetti		Istituto Bartolomeo Montagna, Vicenza
Bottega Veneta		ISS Vincenzo Moretti, Roseto degli Abruzzi (TE)
Brioni		Istituto Tecnico Ascanio Sobrero, Casale Monferrato (AL)
Bulgari		IPSIA Ostilio Ricci, Fermo
Fendi		CFP Giuseppe Terragni, Meda (MB)
Giorgetti		Istituto Professionale Andrea Barbarigo, Venezia
The Gritti Palace		ACOF Istituti Olga Fiorini, Busto Arsizio (VA)
Herno		Istituto Isabella d'Este Caracciolo, Napoli
Isaia		IPIA Giuseppe Magni, Borgosesia (VC)
Loro Piana		IISS Consoli Pinto, Castellana Grotte (BA)
Masseria S. Domenico		IIS Caterina da Siena, Milano
Moncler		IPSIA Renzo Frau, Sarnano (MC)
Poltrona Frau		IIS Benvenuto Cellini, Firenze
Salvatore Ferragamo		Istituto Salesiano Edoardo Agnelli, Torino
Stellantis		Istituto Superiore Pascal Comandini, Cesena (FC)
Technogym		

Since 1992, **Altgamma Foundation** has brought together the companies of the high Italian cultural and creative industry, recognized as authentic ambassadors of Italian style in the world. Its mission is to contribute to the growth and competitiveness of companies in the Italian cultural and creative industry. Altgamma companies operate in many sectors, among which fashion, design, jewellery, food, hospitality, speed and wellness stand out.

What is the geographic reach of the practice? Regional and National.

SHORT SUMMARY

The project, born within the Human Resources Group of Altgamma, aims at strengthening the relationship between education and industry, allowing to refine educational programmes upon the latest skill needs of the companies. It is based on a **'adoption model'**: a school is adopted by a company, which establishes a codified and constant collaborative process, with the aim of reducing the gap between supply and demand regarding the profiles and skills of the sector of the Italian excellence (Italian culture and creativity, enterprise education, green and digital transitions). At the same time, the collaboration intends to improve the perception of these training and professional paths and their effective value for the Italian cultural and creative industries.

Aims and Objectives

"Adopt a School" creates a synergistic collaboration between companies and schools in all phases of the process of drafting the teaching plan and the provision of teaching modules.

From the point of view of the macro-planning of the school year, the contents and training methods provide for a partial customisation of the ministerial programmes, while as regards the micro-planning, among the characterising elements of the collaboration among companies and school there are, in addition to preparation of teaching materials, tutorship, company visits and "preparatory" lessons in the classroom by company experts.

How is the project implemented

For the vocational institutes involved, the school-company co-planning of the number of hours concerning the specific skills of the address area of the last three years (up to 40% of the total) is envisaged, above all for laboratory and training alternation, starting from the specific types of company processes and products. These specificities will also be indicated and valued in the student's final curriculum, on the occasion of the final state exam of the courses.

Schools and companies are also working to prepare planning for the 2022-2023 school year.

Depending on the case and conditions, it is expected:

- the intervention of company experts in schools on innovative content, currently not fully covered by the teachers and/or available laboratories
- activities in alternating training for the fourth and fifth classes, more integrated both in reference to the technical skills to be achieved and to the soft skills
- the development of specific interventions for orientation purposes to facilitate the choice of post-diploma courses (including ITS), starting from the various production and technological supply chains of corporate reference.

What does this implementation result in?

The collaboration is formalised in a specific framework agreement which details the classes involved, the contact persons for coordination and tutorship, the specific contents and activities, the obligations of the

school, the company and the student, the conditions of access and use of facilities, company equipment and spaces, guarantees regarding safety and the general calendar for the school year. A multi-year experimentation that will involve hundreds of students of the last two years, distributed throughout our territory.

BUSINESS CHALLENGES THE INSPIRING PRACTICE SERVES TO:

The brand companies that have been participating in this project come from Italian luxury sector (Fashion, Tourism, Wellness, Hospitality, Food, and wines); they are involved in training new workers and professionals for their future. The spirit of this important initiative is to offer specialized training, innovative skills (digital, green, entrepreneurial and managerial skills) and employment opportunities to keep vital and competitive the Italian high level 'made in Italy' sector.

TECHNICAL – PROFESSIONAL CENTRE FOR MECHANICS IN FORNOVO DI TARO-MOTOR VALLEY

ABOUT

Useful resource links about the practice:

[Formazione e lavoro Regione Emilia-Romagna](#)

[Polo Meccanica](#)

[Il Polo Tecnico Professionale di Forno di Taro](#)

Who is involved in the practice?

Within the framework of national measures for the simplification and promotion of technical and professional education (Ministerial Decree February 7, 2013) through stable connections between training and production system in the area of the Emilia-Romagna Region, in agreement with the regional school office, has resolved (GPG n. 2012/2101), the launch of the preparatory activities for the establishment of the technical-professional pole for mechanics in Forno di Taro, by the following subjects:

EDUCATION	TRAINING INSTITUTIONS	COMPANIES
I.I.S.S. Gadda-Fornovo di Taro	Forma Futuro (Territorial Training Body)	Bercella - Carbon Fiber (Composite Materials)
I.T.I.S. Berenini-Fidenza	Cisita Parma Enterprises (Parma Industrial Union)	Camattini Meccanica (Composite Materials) Dallara Cars

What is the geographic reach of the practice? Regional

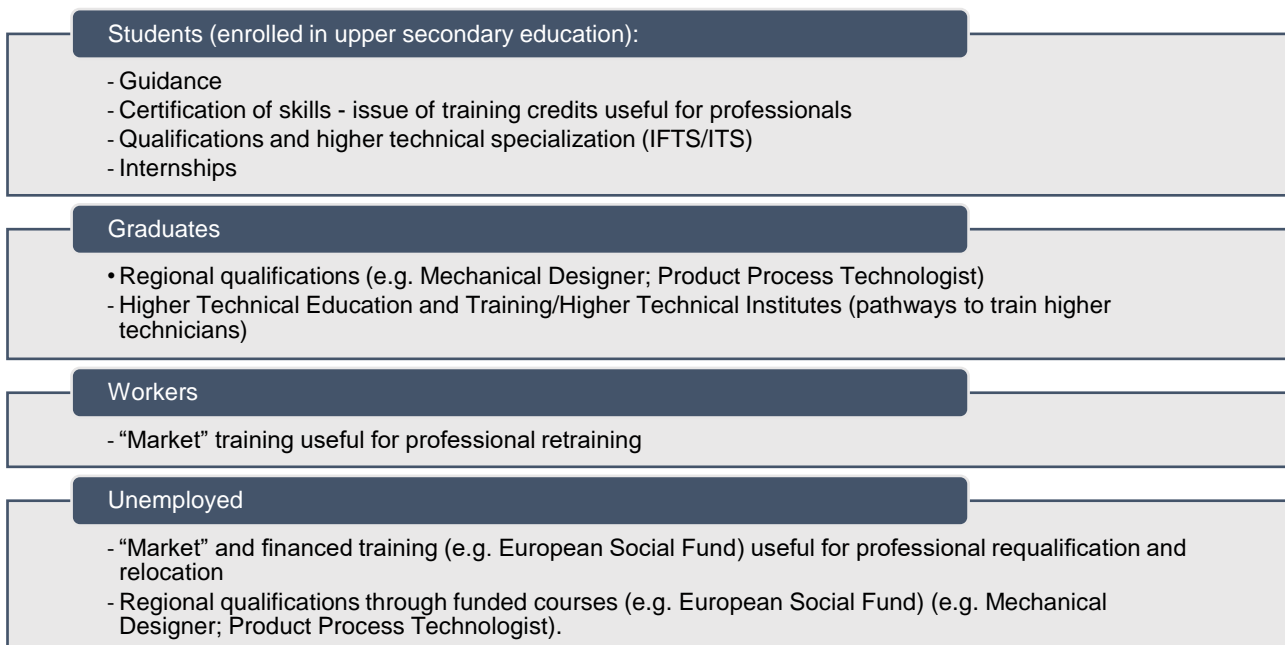
SHORT SUMMARY

The Technical-Professional Centre of Fornovo di Taro is a structured form of collaboration between Technical and Professional Institutes, Training Institutions, and local companies, which aims to create an Education and Training System with High Professional and Technological Specialisation integrated with the production system of the Mechanics sector with specialisation in the processing of Composite Materials.

The purpose of the centre is to:

- Offer concrete opportunities for the development of the local system (culture, employment, quality of life, innovation, services...);
- Disseminate the technical-professional and technological culture;
- Build an educational system of education and training of excellence and with high professional and technological specialisation, “integrated” with the production system of the territory. Stimulate interest in the mechanical supply chain, enhancing the growing cluster of companies engaged in the study and processing of composite materials;
- Offer young people and families the opportunity to drive themselves, already from the 1st cycle of education, with the collaboration of local subjects and businesses, between:
 1. different types and addresses of upper secondary institutions,
 2. university and “non-university tertiary” education (IFTS/ITS),
 3. vocational education and training (three-year qualifications and four-year professional diplomas, apprenticeship pathways and vocational training courses);
- Create places of education, training and learning in application contexts: from knowledge to know-how (from the classroom to the laboratory-classroom and work contexts)
- Rediscovering the value and importance of manual skills, linked to knowledge, based on the “schools of arts and crafts”

The project has four main recipients:



Polo Users

For each group there are special finalized activities, as

- Company guided tours, seminars, open days, workshops;

- Skills Certification: Scholarships for the key skills certification of the working citizenship (English, IT, CAD drawing, Safety at work)
- Internships and International Internships: Participation and involvement in high-level European projects (Erasmus Plus: individual mobility project 'Move fast' – Mobility of VET Forward Automotive Sector Traineeship; Print STEM -Introduction of innovative technologies in school teaching _ Strategic partnerships for the school sector)
- Workshops; school-work alternation project;
- Training for the unemployed people
- Training for the not in employment people
- Advanced vocational training.

What does this implementation result in?

Recently, a DemoLab IoT has been launched by Lutech, leader in Italy and European player in ICT services and solutions, in collaboration with Cisco and PTC, at the premises of Innovation Farm within the headquarters of the mechanical Fornovo di Taro (Parma) hub, to promote digitisation, innovation and training of Manufacturing companies. The area is dedicated to the training of new talents and to experimentation for companies, capable of simulating the industrial processes typical of Manufacturing through four IoT experiences in a Factory 4.0 context: Augmented Reality (management in support and assembly operations) ; Smart Factory (creation of a connection between machines, monitoring of their operation and remote control); Remote expert (management of all levels of training and assistance) and Cybersecurity (management of factory Cybersecurity, in an integrated and complete way).

BUSINESS CHALLENGES THE INSPIRING PRACTICE SERVES TO:

The mechanics hub of Fornovo Val di Taro was born to offer specialized training, innovative skills (digital, green, entrepreneurial and managerial skills) to boost the profiles and employment opportunities of the actual students that will be future workers.



INSPIRING PRACTICES

SPAIN

LOCALCIR DESIGN METHODOLOGY for GREEN ITINERARIES

ABOUT

Useful resource links about the practice:

[Localcir Methodology](#)

[Eurocirculo](#)

In the framework of the project, a digital tool has been developed, "Eurocírculo". It provides an assessment for companies, taking into account the performance and the impacts generated by their activities and business models, considering the green and circular economy as an objective to be implemented.

The result is a self-diagnosis report of the situation by means of a performance assessment platform obtained from the organizations interested in being assessed and knowing their current situation, offering a preliminary idea of the path to be taken to achieve the green transition.

Who is involved in the practice?

S.G De Población Y Desarrollo Rural. Junta De Extremadura.

Agencia Extremeña De La Energía

Extremadura Avante

D.G. Empresa. Junta De Extremadura.

D.G. Deportes. Junta De Extremadura.

Federación De Municipios Y Provincias De Extremadura (Fempex)

Sexpe

Diputación De Badajoz

Diputación De Cáceres

Cluster De La Energía De Extremadura

Fundación Cresem

Nere

Pact

Ciebi - Centro De Inovação Empresarial Da Beira Interior

ENERAREA

The practice has been implemented by whom? Mostly public entities, but also private professional and business associations.

What is the geographic reach of the practice? Cross-border regional scope: Extremadura (Spain), Centro and Alentejo (Portugal).

SHORT SUMMARY

Primary target audience: rural companies (SMEs and Micro Companies)

Aims and Objectives:

The “LOCALCIR Design Methodology for green itineraries” seeks to implement a business start-up support service in order to encourage new entrepreneurial initiatives in the rural environment. The projects must be linked to the Green and Circular Economy paradigm, since it is identified as a key model for the future of the EUROACE region.

225 companies have benefited from this service, by helping them to foster sustainable new activities, new products and/or new processes, which has resulted in an improved competitive level of the participating rural companies.

How is the project implemented?

The methodology has been implemented in several subsequent phases, all relevant for those companies wanting to integrate circular economy concepts into their services and processes, regardless of the sector to which they belong. The phases have been organized into an individualized roadmap adapted to the needs of the individual companies; this roadmap is the so-called “green itinerary”.

This individual green itinerary began with a first contact with the companies that wished to analyse their circularity potential. In a second step, a circularity analysis was conducted, aiming at maximizing the efficiency in the use of materials and resources, as well as at minimizing waste.

Next, a SWOT analysis was provided, which allowed to identify the investments and tools needed to incorporate the development of new products or services stemming from the new circular economy activities to be introduced in each company. The green itinerary was finally completed with an evaluation and monitoring process allowing the company to further identify new opportunities and potentials in the future in the field of the circular economy.

What does this implementation result in?

LOCALCIR has provided guidance and coaching services to 225 companies, helping thus to launch new local sustainable products, services or processes, helping thus to improve the competitive level of these rural-based private companies and contribute to the overall objective of green transition.

BUSINESS CHALLENGES THE INSPIRING PRACTICE SERVES TO:

The SMEs that have been participating in this programme are from different sectors, such as tourism, renewable energy, agri-food industry, Gardening, cleaning and laundry, painting and small repairs, plastic recycling, accommodation, catering and SPA, sport, tourism and training, Wine production and marketing, Services, etc.

The business challenges they have been working on are linked with the use of renewable energies, greening their commercialisation processes, improve they waste management, identify new packaging, decrease their CO2 carbon footprint, reuse of waste, etc.

SUSTAINABILITY IN FINAL PROJECTS OF HIGHER TECHNICIAN CURRICULUMS

ABOUT

Useful resource links about the practice:

[Portal de sostenibilidad de Cámara Valencia](#)

[Objetivos de desarrollo sostenible](#)

[Ethic.es Medioambiente](#)

Who is involved in the practice?

Campus Cámara FP

Cámara Valencia

The practice has been implemented by whom? Teachers, Tutors, Management team.

What is the geographic reach of the practice? This educational project is framed within the curriculum of the Spanish Higher Technician Diplomas. The level of the diploma is non-University Higher Education (Level 5 of the International Standard Classification of Education - ISCED5 - and Level 5 of the European Qualifications Framework - EQF5).

All projects are eligible to be presented to national entrepreneurship contests or start up accelerators to operate both nationally and internationally.

SHORT SUMMARY

The Final Project is one subject included in the second year of the Higher Technician curriculums.

During this final work, students design projects related to the competencies described in the diploma, including and developing their constituting stages. They plan the project implementation, determining the intervention plan and associated documentation and define the procedures for the monitoring and the control of the project implementation, justifying the selection of the variables and the instruments used.

At Campus Cámara FP, the objective is to make students aware of the importance of working, creating and projecting their professional ideas, always taking into account principles such as sustainability, circular economy and the objectives of the 2030 Agenda.

At the beginning of their last year, students are trained on how to approach this project and provided with all the necessary information: estimated length, index of contents, which includes the sections officially contemplated by the regulations and some sections that we added on sustainability.

Starting in March, students will do internships at companies, and, at the same time, they will work in teams in their final projects, which they will have to present in June.

It results not only in the development of the entrepreneurial capacity of the students, but also on the development of a critical thinking and awareness of the importance of sustainability in the productive and economic development of the environment.

Consequently, sustainability gains prominence, present and future, in all areas of their personal and professional life.

BUSINESS CHALLENGES THE INSPIRING PRACTICE SERVES TO:

From an educational point of view, the main business challenge faced is to instil the necessary bases so that our students, who are the future professional talent, continue to learning throughout their lives, putting the focus on the fundamental pillars that the labour market currently needs.

- Digitisation
- Sustainability
- Entrepreneurship

Nowadays, to be competitive at a national and international level, companies need to make sure they have the required skills and talent but, they also must create a learning-for-all culture in which people are encouraged and inspired.

From this point of view, training soft skills to students during their last stage of their academic training plays a key role. Skills such as adaptation to change, proactivity, teamwork or resilience are vital for the present and future talent of our companies (human resources would have the motivation and initiative to continue learning throughout their lives).



INSPIRING PRACTICES
TÜRKİYE

DDX DIGITAL TRANSFORMATION MODEL

ABOUT

Useful resource links about the practice:

[DDX Digital Transformation Programme](#)

[Consultancy Support to the Digital Transformation of SMEs - KOSGEB](#)

[Digital Transformation Istanbul Interest Free Credit Support Programmes](#)

[Digital Transformation Assessment Report](#)

[Digital Transformation Evaluation report](#)

Who is involved in the practice?

TUBİTAK, TUSSIDE, KOSGEB, Local Development Agencies (MARKA, İSTKA)

The practice has been implemented by whom? Public Institutions

What is the geographic reach of the practice? National

SHORT SUMMARY

The DDX model aims to contribute to the digital transformation of Türkiye's manufacturing industry. Companies with 10-500 employees in the manufacturing industry are prioritized. With this model, the digital transformation maturity levels of the companies are evaluated, and tailor-made digital transformation roadmaps are presented, taking into account the strategic objectives of the companies. To implement the model, a training programme was given to digital transformation consultants and a pool of digital transformation consultants was created.

BUSINESS CHALLENGES THE INSPIRING PRACTICE SERVES TO:

It provides companies with the opportunity to start their digital transformation journey with a right roadmap.

HACK THE NORMAL SUSTAINABILITY

ABOUT

Who is involved in the practice?

Arçelik (as Beko), The Next Web, FT Talent

In collaboration with [78 partners](#)

TUBİTAK TUSSIDE, KOSGEB, Development Agencies (MARKA, İSTKA)

The practice has been implemented by whom? Labor Market Actors, Companies

What is the geographic reach of the practice? In total 70 countries mostly from Europe.

SHORT SUMMARY

Hack the Normal Sustainability is an online hackathon series that aims to support participants in developing sustainable living solutions and new technologies. The third edition of the event, held on 13-15 May 2022, had a focus on sustainability and targeted the European Innovation Ecosystem. The primary target audience for the event was innovators, entrepreneurs, and developers from around the globe who are passionate about finding solutions to environmental issues.

The aim of Hack the Normal Sustainability was to bring together a diverse group of individuals and startups with the goal of fostering collaboration and creativity in the pursuit of sustainable living solutions. The hackathon provided to participants some training sessions and mentorship during a 2.5-day event, and giving them the resources and support they needed to develop their ideas. The event welcomed over 700 participants from 70 countries, who worked to develop practical solutions to some of the world's biggest environmental issues, including climate change, water management, and the circular economy.

In addition to the 50,000 EUR prize pool, the winning teams had the opportunity to participate in an accelerator programme with Startup Wise Guys, sponsored by Arçelik. This programme provided them with the resources and support they needed to further develop and commercialize their projects.

Overall, Hack the Normal Sustainability was an event that brought together a diverse group of individuals from around the world with the goal of finding sustainable living solutions. The hackathon provided participants with the resources and support they needed to develop their ideas and make a positive impact on the environment.

BUSINESS CHALLENGES THE INSPIRING PRACTICE SERVES TO:

Hack the Normal Sustainability aims to serve a variety of business challenges that companies are facing in today's market when it comes to the green and digital transition, also known as the "twin transition". One major challenge that companies are facing is the need to adopt more sustainable business practices in order to reduce their environmental impact and meet increasing customer demand for eco-friendly products and services.

Hack the Normal Sustainability provides a platform for participants to develop innovative solutions that address this challenge by fostering the development of sustainable living technologies and practices.

By providing training and mentorship to participants during the hackathon, Hack the Normal Sustainability supports participants to learn some new methods and tools which can make it possible to develop new digital solutions that can address these challenges and support companies like us in their transition to a more digital and sustainable future.

Overall, Hack the Normal Sustainability serves as a valuable resource for us and our partners who looking to meet the twin challenges of the green and digital transition. By providing a platform for the development of innovative solutions and supporting participants with training and mentorship, the hackathon helps companies to navigate these challenges and find new ways to improve their sustainability and adapt to the digital age.

ADAPTING THE TEXTILE INDUSTRY IN IZMIR TO EU GREEN DEAL

ABOUT

Who is involved in the practice?

Izmir Chamber of Commerce, Izmir Development Agency, Izmir University of Economics

The practice has been implemented by whom? Public Institutions, HEI/VET Provider, Chambers

What is the geographic reach of the practice? Regional

SHORT SUMMARY

This practice was a joint initiative by Izmir Chamber of Commerce (ICC) and Izmir University of Economics (IEU), funded by Izmir Development Agency (IDA). The primary target audience was the textile sector in Izmir, which happens to hold the highest share as far as exports from Izmir to the European Union is concerned.

The aim of the practice was to raise an awareness amongst the textile industry in Izmir, most of which comprises of small- and-medium-scale-enterprises, about the European Union Green Deal, with a special focus on upcoming Carbon Border Adjustment Mechanism (CBAM). This aim was achieved by arranging training sessions and focus group meetings, followed by a case-study on an actual company. The topic of the case study was conducting life cycle assessment (LCA) on the activities of a company in order to provide an insight about environmental impact calculations.

The methodology and the results of analysis were shared with all the participants in order to raise awareness about LCA practices. Special focus was given to how to implement digital transition in order to enable the companies determine and improve the environmental profile of their activities. The project has ended very recently and therefore feedback gathering still goes on, but the preliminary results indicate that the level of awareness on issues such as carbon footprint, LCA, CBAM, etc. has significantly increased amongst the participants.

BUSINESS CHALLENGES THE INSPIRING PRACTICE SERVES TO:

- Lack of awareness on regulatory issues
- Quantifying environmental performance
- Developing strategies for improving environmental performance



Co-funded by
the European Union