



AGRIFOOD

4Future

D2.1

Report on the job and training needs analysis



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Abstract

This document summarizes the methodology used by the AF4F project to identify and understand gaps within Vocational Education and Training (VET) ecosystems. Additionally, it lays the foundation for customized training programs aimed at addressing identified needs, establishing a strong connection between education and the changing demands of the agri-food sector.

The needs assessment and skills gap analysis articulate a comprehensive approach. A matrix will be developed that will cover between 15 and 20 fundamental skills that students must acquire. After peer review and partner validation, this document becomes critical evidence for creating training programs for WP4.

FEMAC assumes the responsibility of disseminating this report to all project partners. Partners in each country will be required to generate a country-specific report based on the responses obtained from the surveys. This collaborative effort ensures a holistic understanding of regional needs and lays the foundation for specific interventions within the agri-food sector.

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1. List of abbreviations

AF4F	AGRIFOOD4FUTURE
WP	Work Package
GIS	Geographic Information Systems
LCA	Life Cycle Assessment
FMIS	Farm Management Information Systems

1 Introduction

1.1 Introduction to VET

Vocational Education and Training (VET) stand as a cornerstone within lifelong learning systems, equipping individuals with the essential knowledge, skills, and competencies vital for specific professions and the ever-evolving labor market. Over the past decade, European policy frameworks for VET have undergone a transformative shift, adapting to emerging needs and emphasizing implementation over policy formulation. This evolution has prompted the European Union to adjust existing frameworks and develop new ones, fostering European cooperation in the field of VET.

Not only must VET respond to the dynamic demands of the economy, but it also plays a pivotal role in nurturing students' personal development and fostering active citizenship. Beyond its societal impact, VET contributes significantly to enhancing the performance, competitiveness, and innovation of companies, making it a cornerstone of success in social and employment policies.

European VET systems rely on a robust network of providers, facilitated by the active participation of social partners, including employers and unions, as well as various organizations such as chambers, governments, and local councils.

A December 2018 study by the Vocational Training Advisory Committee¹ underscores the significance of VET as one of the key pathways for young people entering the labor market. Despite variations across Europe, around 50% of young Europeans participate in initial VET at the upper secondary level. The VET pathway proves beneficial, with 80% of graduates securing their first long-term job within six months of completing their studies.

Moreover, evidence indicates that apprentices following the VET pathway often transition directly into jobs, with salaries comparable to or even surpassing those with a university degree. The European Union's priorities for Vocational Training 2015-2020 emphasize cooperation and quality in education, focusing on promoting work-based learning, enhancing access to VET, and strengthening key competences in curricula.

As we delve into the VET Ecosystem, it becomes evident that VET is not just a training system but a strategic driver for individual and societal growth, contributing significantly to Europe's economic competitiveness and innovation. This introduction sets the stage for exploring the multifaceted dimensions of VET, its challenges, and the envisioned future beyond 2020.

¹ *THE FUTURE OF VOCATIONAL EDUCATION AND TRAINING POST 2020, 3 December 2018, The Advisory Committee on Vocational Training*

1.2 Report introduction

The present report details the results obtained through Task 2.1, dedicated to the Needs Assessment and Skills Gap Analysis in the Vocational Education and Training (VET) ecosystems within the agrifood sector. This task aims to comprehend the weaknesses within training systems and the skills that are yet to be addressed in the labor market.

The report presents the outcomes derived from the survey conducted to identify specific needs and skills in the agrifood sector. The survey covered various aspects, ranging from general digital skills to specific competencies for smart agriculture, sustainable resource management, business and entrepreneurial skills, and interpersonal abilities.

This report is structured into two parts. The first part involves a needs assessment, where an analysis of the weaknesses in the VET ecosystems in each partner country is conducted, along with identifying the skills required and still unmet in the labor market. This will facilitate the proper addressing of training content and learning outcomes. The second part encompasses a report on the consolidation of skill gaps and training needs.

1.2.1 Survey Objectives

The main objective of the task is to carry out a comparative analysis that identifies the main weaknesses in the *Vocational Educational Training (VET) ecosystems*. This analysis will focus on explaining the specific needs identified in VET ecosystems, detailing the key competencies required to support digitization and sustainability in the agri-food sector.

In addition, it is intended to prepare a detailed report on the needs to consolidate skills gaps. This process involves comparing the results of national surveys carried out by the consortium in each partner country, thus providing a comprehensive view of the deficiencies present in VET systems.

To consolidate the information collected, a comparative document will be generated that highlights the common needs identified in all countries. **This document will include a matrix that highlights between 15 and 20 most relevant skills that students must acquire to effectively strengthen the agri-food sector.**

Finally, the resulting document, validated by review of all consortium partners, will be used as key evidence for the construction of the Work Package 4 (*WP4 - Development of innovative teaching and training programmes in smart farming and sustainable food systems*) training programs. This process will ensure the precise alignment of the programs with the needs identified in the comparative analysis, thus ensuring the effectiveness and relevance of the proposed training programs.

1.2.1.1 Methodology

To carry out this project, a comprehensive methodology has been implemented, encompassing various research approaches and tools. The diversity of utilized methods reflects our holistic strategy to obtain accurate and contextualized data. The key aspects of the adopted methodology are detailed below:

1. Desk Research: A thorough literature review on Vocational Education and Training (VET) in the agrifood sector has been conducted, providing a solid theoretical framework and contextualizing VET practices in each partner country. Previous research has also been consulted, identifying knowledge gaps and establishing a reference point for our own analysis.

2. Stakeholder and Company Interviews: Structured interviews were conducted with various stakeholders, including educational institutions, agrifood sector companies, and key professionals. These interviews allowed us to gather insights, experiences, and specific needs, contributing a practical and applied perspective to the research.

3. Statistical Analysis: Statistical analysis tools have been employed to examine relevant quantitative data in the field of VET and the agrifood sector. This quantitative approach provides a quantifiable insight into emerging trends and patterns.

4. The final document review will be carried out by all consortium partners to ensure its validation. This validated document will serve as crucial evidence in the development of training programs within Work Package 4 (WP4).

This multidimensional approach ensures the validity and richness of the collected data, thereby strengthening the foundation for the comparative analysis, an essential component of this project.

2 Analysis of weaknesses in VET ecosystems

2.1 Assessment of digitalization, labor alignment and innovation

The survey aimed at assessing competencies in the agrifood sector revolves around four crucial dimensions that capture current dynamics of the labor market and emerging demands. These dimensions emerge as essential pillars to comprehend and address transformations in the sector, ensuring the readiness of professionals for digital challenges, green and sustainable transition, bioeconomy, and other identified skills.

1. Digital transition:

The first dimension focuses on general digital skills required for everyday use of digital technology in communication. From managing emails to handling messaging apps and other digital communication tools, these skills are fundamental in an increasingly digitized work environment.

2. Green transition and sustainability of food systems:

Sustainable resource management stands out as a priority in the skills analysis. Efficiency in resource use and optimization of the food supply chain are essential to address environmental challenges and ensure the long-term sustainability of the industry.

3. Bioeconomy:

The third-dimension centers on specific skills for the bioeconomy, emphasizing quality management, quality assurance, and quality control. These skills are crucial to comprehensively oversee processes and ensure high standards in a constantly evolving bioeconomic context.

4. Other skills:

The final section of the survey aims to identify any other skills that may be lacking in workers or required by the labor market. This openness allows capturing needs and demands not foreseen in the previous categories, providing a broader and more complete perspective.

In the survey, stakeholders provided insights into their affiliations, professional profiles, primary operational sectors, and educational backgrounds. By delving into specific skills related to digitization, sustainable resource management, and innovation within the agrifood sector, these responses offer a comprehensive understanding of the current skills landscape in the industry.

The survey engaged stakeholders with a series of questions aimed at unraveling their affiliations, professional profiles, primary operational sectors, and educational backgrounds. Additionally, it

delved into specific skills associated with digitization, sustainable resource management, and innovation within the agrifood sector. Here, we present a summary of key questions and the insights garnered:

Digital skills assessment:

1. General digital skills:

- Everyday use of digital technology for communication.
- Handling and analysis of data, including tools like Excel.
- Digital entrepreneurship, covering online business creation, digital marketing, and e-commerce management.
- Utilization of digital information and services, encompassing online data retrieval and content consumption.

2. Digital tools for production and management:

- Implementation of digital product quality management systems.
- Employment of digital supplier management systems for efficient onboarding, performance tracking, and collaboration in the digital supply chain.

3. Specific Skills for Smart Agriculture:

- Use of Farm Management Information Systems (FMIS) for agricultural planning and data-driven decision-making.
- Implementation of digital field operation management systems for planning, monitoring, and optimizing field activities.

4. Skills for Sustainable Resource Management:

- Efficient use of resources and logistics in the food industry to optimize input management, production processes, and distribution channels.
- Adoption of regenerative practices and/or carbon farming methods to promote ecological resilience and mitigate the impacts of climate change.

5. Skills for Environmental Governance and Sustainable Business Models:

- Knowledge of national, EU and international environmental policies, regulations, subsidies and support programmes.
- Corporate social responsibility associated with sustainability reports and transparent communication of ethical and sustainable practices.

6. Energy Skills:

- Identification of suitable renewable energy systems for farms and commercial enterprises.

Specific skills for sustainable food industry

1. Organic production requirements:

- Adherence to guidelines and standards governing organic farming, emphasizing natural processes, soil health, and avoidance of synthetic chemicals.

2. Contaminant analysis:

- Examination and assessment of potentially harmful substances or impurities to ensure product safety and compliance with quality standards.

3. Skills for quality management, quality assurance, and quality control:

- Comprehensive oversight of processes to ensure high standards.
- Ensuring fair, collaborative, and competitive value chains.

4. Business skills and entrepreneurship:

- Marketing skills.
- Financial skills.
- Compliance with policies and legislation.

Identification of additional skills

- Stakeholders were given the opportunity to identify any other skills they believe are lacking in workers or required by the labor market.

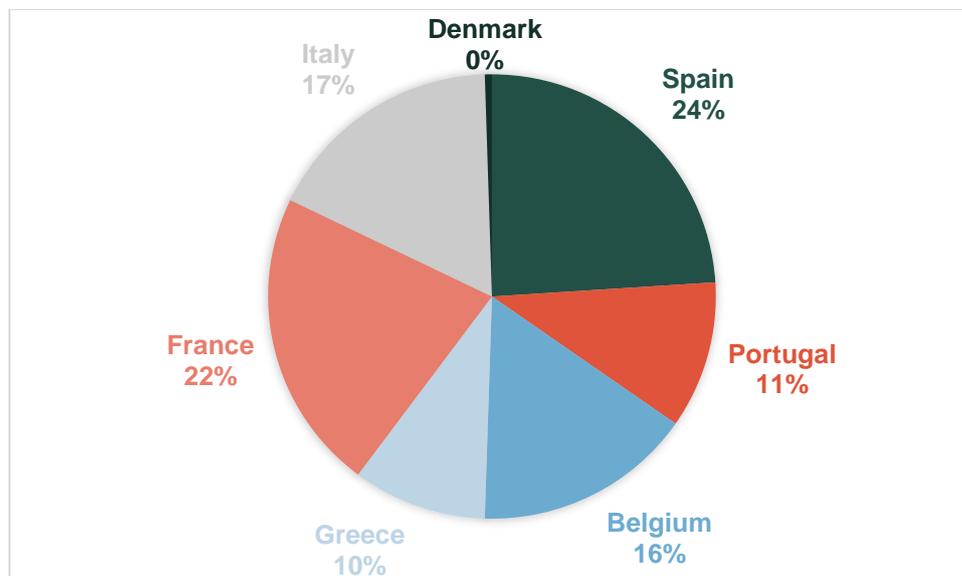
2.2 Mapping the skills landscape in the agrifood sector: Analysis of digital, sustainable, and innovative competencies

The analysis of the general questions provides a comprehensive insight into the composition and characteristics of the respondents in the study on education and vocational training in the agrifood sector.

We conducted a survey and received 196 responses from various **countries**. Here's the detailed breakdown:

Table 1. Survey responses by country.

Country	Responses	Percentage of total
Spain	47	23.98%
France	43	21.94%
Italy	34	17.35%
Belgium	31	15.82%
Portugal	21	10.71%
Greece	19	9.69%
Denmark	1	0.51%



Graphic 1. Survey responses by country.

Key insights

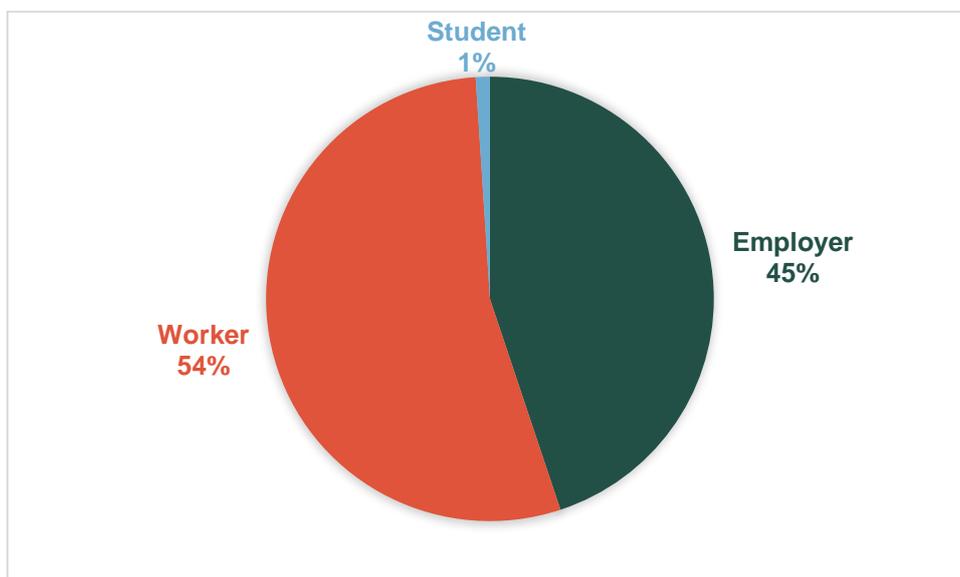
1. **Spain** and **France** have the highest number of responses, collectively contributing nearly half of the total responses (45.92%). This indicates strong engagement from these countries in the survey.
2. **Italy** and **Belgium** also show significant participation, making up 33.17% of the responses.
3. **Portugal** and **Greece** contribute around one-fifth of the responses (20.41%), with Portugal slightly ahead.
4. **Denmark** has the least engagement, with only one response, accounting for just 0.51% of the total.

From the **196** total survey responses, participants identified their **roles** as Employers, Workers, or Students. Here's the detailed breakdown:

Table 2. Role of participants.

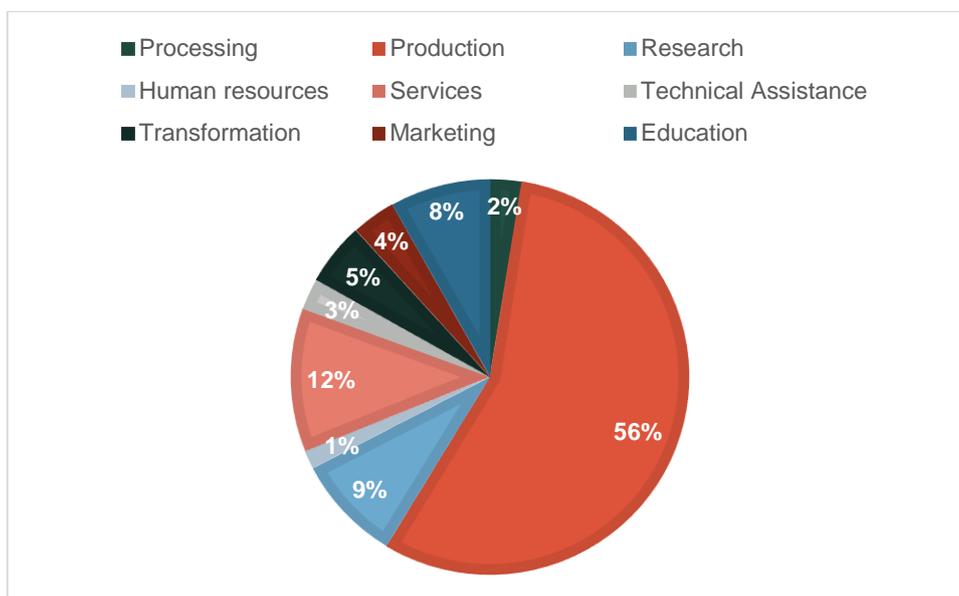
Role	Responses	Percentage of total
Worker	106	54.08%
Employer	88	44.90%
Student	2	1.02%

Most of the responses came from workers, accounting for 54.08% of the total. This indicates a strong representation from employees within the agrifood sector. Employers also have a significant presence, making up 44.90% of the responses. This highlights the importance of understanding the perspectives of those who manage and run agrifood businesses. The responses from students are minimal, at just 1.02%. This suggests a lower engagement from those currently in training or education within this sector.



Graphic 2. Role of participants.

Based on the survey responses, participants identified their **operation in the primary sector** (Graphic 3).



Graphic 3. Primary sector operation of participants.

Here's the detailed breakdown:

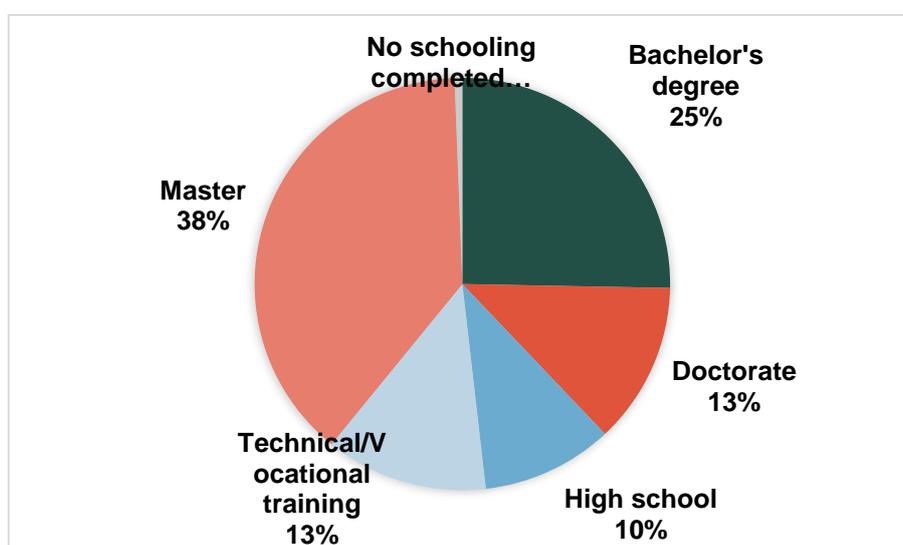
1. **Production:** Most respondents (56.12%) are dedicated to production, highlighting its crucial role within the agri-food sector. This indicates a significant focus on manufacturing and product creation.
2. **Services:** Services account for 11.73% of responses, showing the importance of service-oriented functions in supporting the sector.
3. **Research and education:** Research and education together constitute a notable portion (16.83%) of the responses, emphasizing the continued need for innovation and dissemination of knowledge within the sector.
4. **Transformation and marketing:** These areas, although less represented in a 10%, still show presence, which indicates their importance in adding value and promoting products within the agri-food chain.
5. **Processing and technical assistance:** Both sectors have an equal share of 2.55%, suggesting niche but essential roles in the sector.
6. **Human resources:** The smallest representation, 1.53%, indicates a limited but necessary focus on personnel management and organizational development within the sector.

The high percentage of respondents in production highlight the need to focus on efficiency, innovation, and sustainability practices within this primary sector operation.

The significant number of responses in services and technical assistance indicates the need for strong support mechanisms to improve production efficiency and effectiveness.

Research and education emphasize that research and education initiatives are essential for continued growth, innovation, and sustainability within the agri-food sector.

To have an insight on the educational level of the respondents, participants provided the **highest level of education** achieved.



Graphic 4. Level of education of respondents.

1. **Master's degree:** The largest group of respondents, 32.49%, have a master's degree. This indicates a high level of advanced education among survey participants, suggesting that many are well prepared for specialized roles within the agri-food sector.
2. **Bachelor's Degree:** Bachelor's degree holders represent 21.32% of respondents, demonstrating that a significant portion have completed college education, which is critical for entry-level professional roles.
3. **Technical/Professional Training and Doctorate:** Both categories have equal representation of 10.66%. This highlights the presence of people with specialized practical skills and those with the highest level of academic achievement.
4. **Secondary education:** Respondents with only secondary education represent 8.63%, reflecting a smaller but notable group that could perform more basic or operational roles within the sector.

5. No complete schooling: The smallest category, 0.51%, indicates a minimal presence of respondents without formal education.

The high percentage of respondents with master's and bachelor's degrees emphasizes the need for advanced training programs and continuing professional development opportunities to serve this well-educated workforce.

The significant presence of people with technical/vocational training underlines the importance of these programs in preparing a qualified workforce that can meet the practical demands of the agri-food sector.

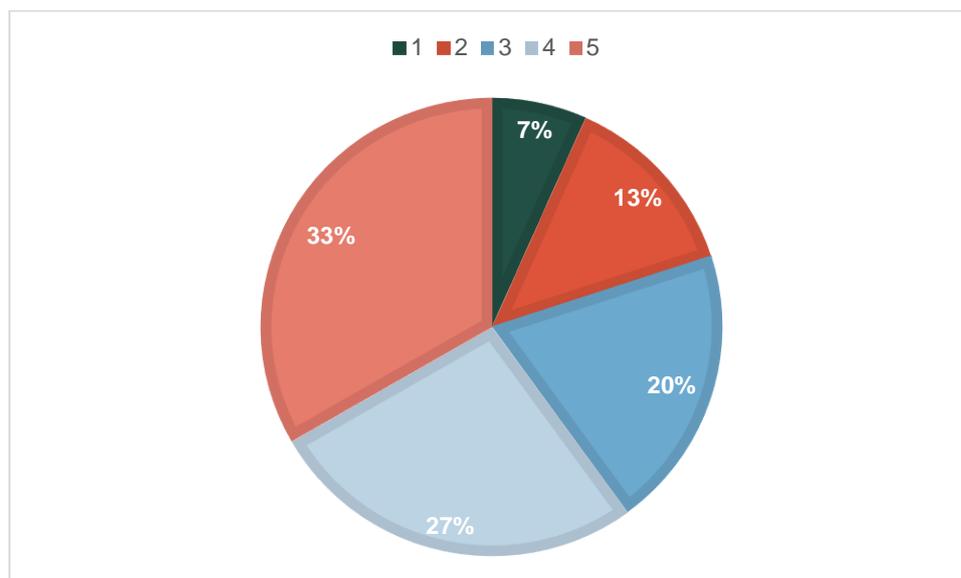
The variety of educational backgrounds among respondents suggests that training programs should be inclusive and adaptable to cater to different education levels and skill sets.

2.2.1. Mapping the skills landscape in the agrifood sector: Analysis of digital transition

In the current digital era, digital transformation has become a crucial factor for competitiveness and sustainability across various industries, including the agrifood sector. With the growing adoption of digital technologies, there arises a need to assess the existing competencies of workers and the skills demanded by the labor market for the digital transition in this sector.

In this section, a detailed analysis will be carried out on the skills that workers lack in the context of digital transition, as well as the skills demanded by the labor market.

Regarding the analysis of **general digital skills** on the daily use of digital technology for communication, the survey assessed the perceived gap in skills related to the daily use of digital technology for communication, such as the use of email, messaging applications and other digital communication tools. Respondents rated the level of missing skill on a scale of 1 to 5, with 5 indicating the most missing skill.



Graphic 5. Everyday usage of digital technology to communicate. Respondents rated the level of missing skill on a scale of 1 to 5, with 5 indicating the most missing skill.

Analysis

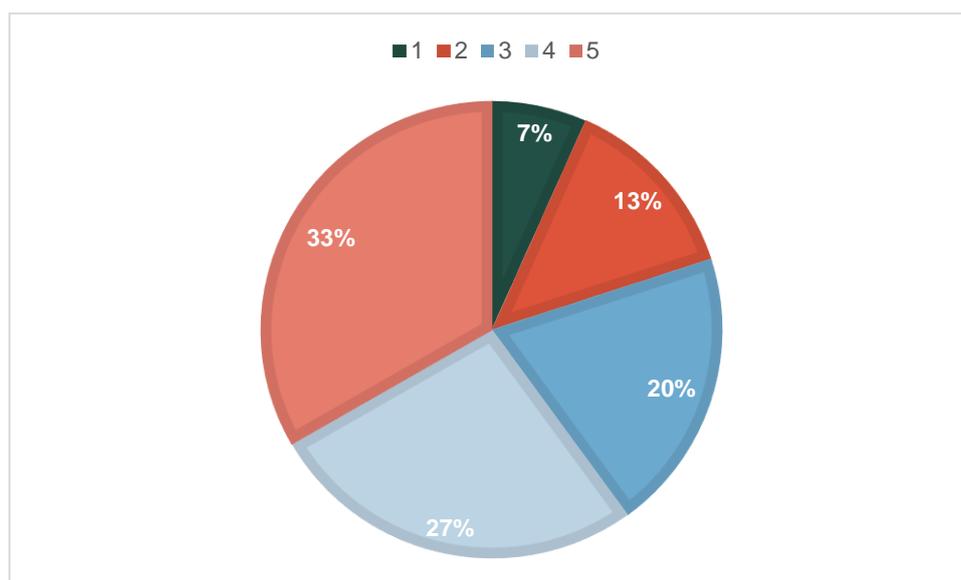
1. **Majority indication of competency (score 1 and 2):** A significant proportion of respondents (76 for score 1 and 59 for score 2) indicated that everyday use of digital technology for communication is not a missing skill to a large degree.
 - 76 respondents rated this skill as 1, suggesting that they feel very confident or see no gap in their ability to use digital communication tools.
 - 59 respondents rated this skill as a 2, indicating minor skill deficiencies or minor areas of improvement.
2. **Moderate skills gap (rating 3):** 35 respondents rated this skill as 3, suggesting a moderate gap in their everyday digital communication skills. This middle ground indicates that while these respondents may have basic competency, there is room for improvement to reach optimal competency.
3. **Significant skills gap (rating 4 and 5):**
 - A smaller proportion of respondents (12 for Rating 4 and 13 for Rating 5) reported a significant lack of skills in everyday digital communication.
 - 12 respondents rated this skill as 4, highlighting substantial room for improvement.
 - 13 respondents rated this skill a 5, indicating that they perceive a significant gap or lack of competency in this area.

Most respondents feel relatively confident in their ability to use digital technology in daily communication. This indicates a generally high level of digital literacy among the surveyed population in this area.

Respondents who rated their skills as a 3, 4, or 5 (60 respondents total) highlight a segment of the workforce that could benefit from targeted training programs to improve their digital communication skills. This group represents approximately 30.61% of the total respondents to this question, indicating a substantial minority with notable skills gaps.

Efforts to improve digital communication skills should particularly focus on those who rated their competency as 4 or 5, as these people see the most significant gaps. Training programs could include practical workshops, online courses, and practical exercises to build confidence and competence in the effective use of email, messaging applications and other digital communication tools.

The perceived gap in skills related to **data management and analysis**, including mastery of tools such as Excel for the interpretation, visualization and statistical analysis of data was also assessed. Respondents rated the level of missing skill on a scale of 1 to 5, with 5 indicating the most missing skill.



Graphic 6. Data handling analysis. Respondents rated the level of missing skill on a scale of 1 to 5, with 5 indicating the most missing skill.

1. Lower perceived skills gaps (ratings 1 and 2):

- 34 respondents rated this skill as 1, indicating that they feel very confident or see no gap in their ability to handle and analyze data.
- 46 respondents rated this skill as a 2, suggesting only minor deficiencies in their data management and analysis skills.

2. Moderate perceived skills gap (rating 3): 48 respondents rated this skill as 3, indicating a moderate gap in their proficiency with data management and analysis tools. This

middle ground suggests that while these respondents have some ability, there is significant room for improvement.

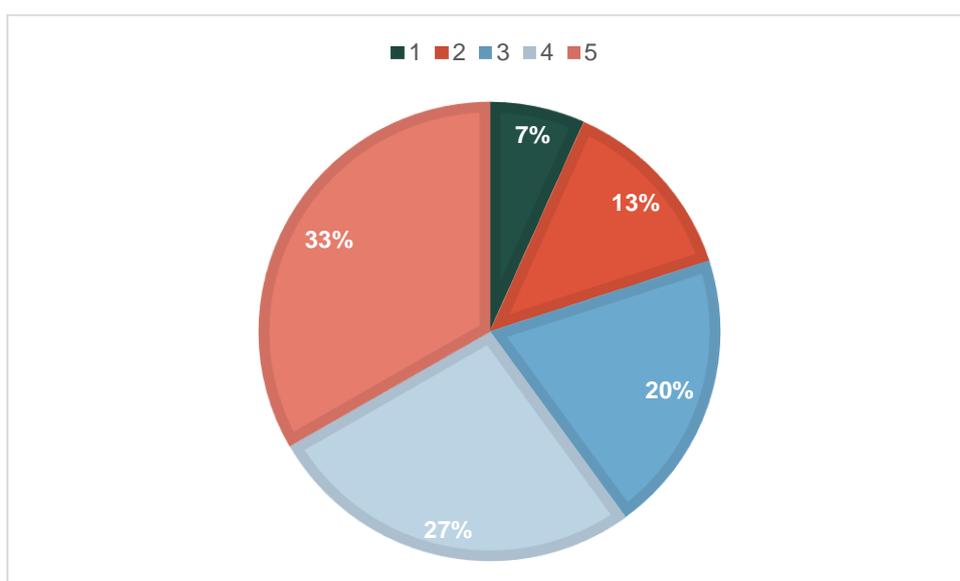
3. Larger perceived skills gaps (ratings 4 and 5):

- 46 respondents rated this skill as 4, showing substantial room for improvement.
- 22 respondents rated this skill as 5, indicating a significant gap or lack of competency in data management and analysis.
- Together, these groups represent a notable portion of the active population that perceives considerable deficiencies in this area.

With these results, we see that we have various levels of competence, training needs and areas of focus for improvement:

1. **Varying levels of competency:** Responses indicate a diverse range of competency levels among participants, with some feeling very competent (7% for Rating 1) and others identifying substantial skill gaps (27% for Rating 4 and 33% for Rating 5).
2. **Training Needs:** Respondents who rated their skills as 3, 4, or 5 (116 respondents total) represent those with moderate to significant skills gaps. This group represents approximately 59.18% of the total respondents for this question. This suggests a substantial need for specific training programs focused on improving data management and analysis skills.
3. **Focus areas for improvement:** Training programs should prioritize practical skills in interpretation, visualization and statistical analysis of data using tools such as Excel. Additionally, emphasizing practical experience and real-world applications can help close these skills gaps effectively.

The perceived gap in skills related to **digital entrepreneurship** was assessed, including online business creation, digital marketing, e-commerce management, and social media. Respondents rated the missing skill level on a scale of 1 to 5, with 5 indicating the most missing skill.



Graphic 7. Assessment of missing digital entrepreneurship skills on a scale of 1 to 5, with 5 indicating the most significant gap.

1. Lower perceived skills gaps (ratings 1 and 2):

- 16 respondents rated this skill as 1, indicating that they feel very confident or do not see any gap in their digital entrepreneurship skills.
- 27 respondents rated this skill as a 2, suggesting only minor gaps in their digital entrepreneurship skills.

2. Moderate perceived skills gap (rating 3):

- 57 respondents rated this skill as 3, indicating a moderate gap in their proficiency with digital entrepreneurship.
- This middle ground suggests that, while these respondents have some ability, there is significant room for improvement.

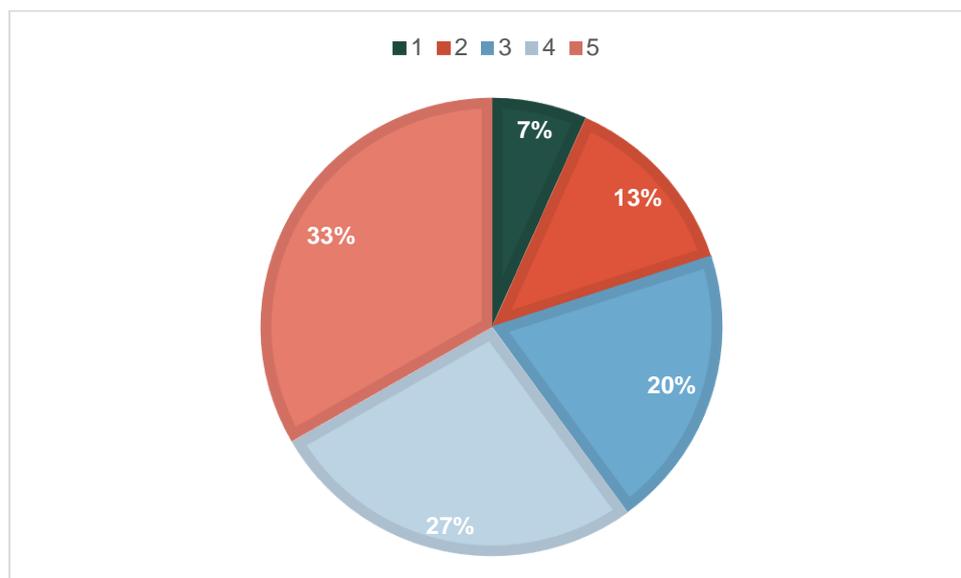
3. Larger perceived skills gaps (ratings 4 and 5):

- 59 respondents rated this skill a 4, showing substantial room for improvement.
- 31 respondents rated this skill a 5, indicating a significant gap or lack of competency in digital entrepreneurship.
- Together, these groups represent a notable portion, 60%, of the active population that perceives considerable deficiencies in this area.

With these results, we see that there are varying levels of competency, training needs, and focus areas for improvement:

1. **Varying levels of competency:** Responses indicate a diverse range of competency levels among participants, with some feeling very competent (7% for rating 1) and others identifying substantial skill gaps (27% for rating 4 and 33% for rating 5).
2. **Training Needs:** Respondents who rated their skills as 3, 4, or 5 (147 respondents total) represent those with moderate to significant skills gaps. This group represents approximately 74.62% of the total respondents for this question. This suggests a substantial need for specific training programs focused on improving digital entrepreneurship skills.
3. **Focus areas for improvement:** On the one hand, we see that training programs should prioritize practical skills in online business creation, digital marketing, e-commerce management and social media. And on the other hand, emphasis should be placed on practical experience and real-world applications can help close these skill gaps effectively.

The perceived gap in skills related to **digital information and services**, including online data retrieval, digital content consumption, and Internet use. Respondents rated the level of missing skill on a scale of 1 to 5, with 5 indicating the most missing skill.



Graphic 8. Assessment of missing skills in digital information and services on a scale of 1 to 5, with 5 indicating the most significant gap.

1. Lower perceived skills gaps (ratings 1 and 2):

- 30 respondents rated this skill as 1, indicating high confidence or minimal gaps in their skills related to information and digital services.
- 57 respondents rated this skill as a 2, suggesting minor gaps in their mastery of these skills.

2. Moderate perceived skills gap (rating 3):

- 61 respondents rated this skill as 3, indicating a moderate gap in their capabilities.
- This group represents the most respondents, suggesting that many have some knowledge but still need to improve further.

3. Larger perceived skills gaps (ratings 4 and 5):

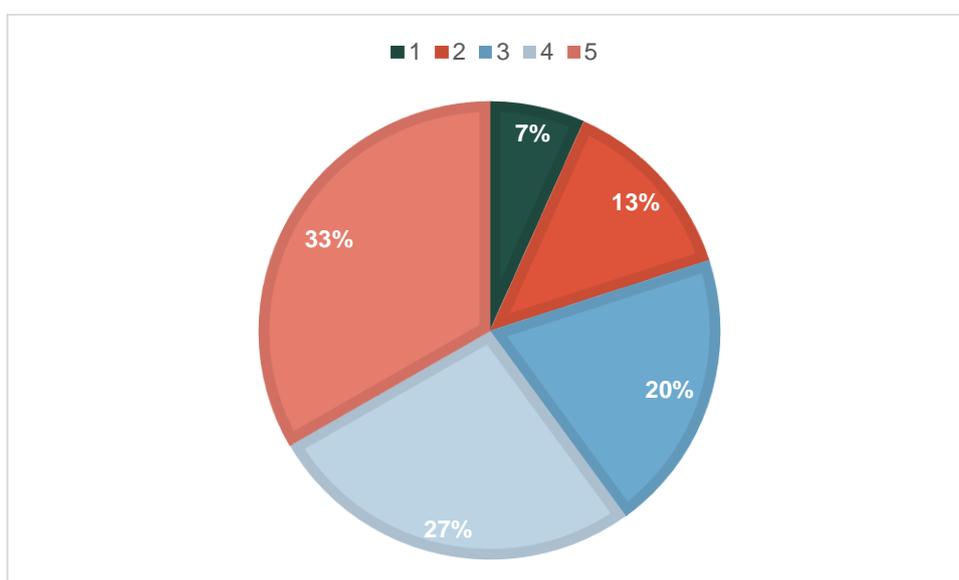
- 32 respondents rated this skill as 4, showing substantial room for improvement.
- 15 respondents rated this skill as 5, indicating a significant gap or lack of competency in digital information and services.
- Taken together, these groups highlight a notable part, 60% of the active population that perceives considerable deficiencies in this area.

With this analysis we found various levels of competence, training needs and areas of focus for improvement:

1. **Varying levels of competence:** Responses indicate varying levels of competence among participants, with some feeling very competent (30 for Score 1) and others identifying significant skill gaps (32 for Score 4 and 15 for Score 5) .

2. **Training Needs:** Respondents who rated their skills as 3, 4, or 5 (108 respondents total) represent those with moderate to significant skills gaps. This group represents approximately 55.10% of the total respondents for this question. This suggests the need for specific training programs focused on improving skills related to digital information and services.
3. **Focus areas for improvement:** Training programs should prioritize practical skills in online data retrieval, digital content consumption, and effective use of the Internet. Emphasizing practical experience and real-world applications can help close these skills gaps effectively.

Regarding the assessment on the perceived gap in skills related to **digital product quality management systems**, including digital quality assurance implementation, testing procedures and performance monitoring, respondents rated the skill level missing on a scale of 1 to 5, where 5 indicates the most missing skill.



Graphic 9. Assessment of missing skills in digital product quality management system on a scale of 1 to 5, with 5 indicating the most significant gap.

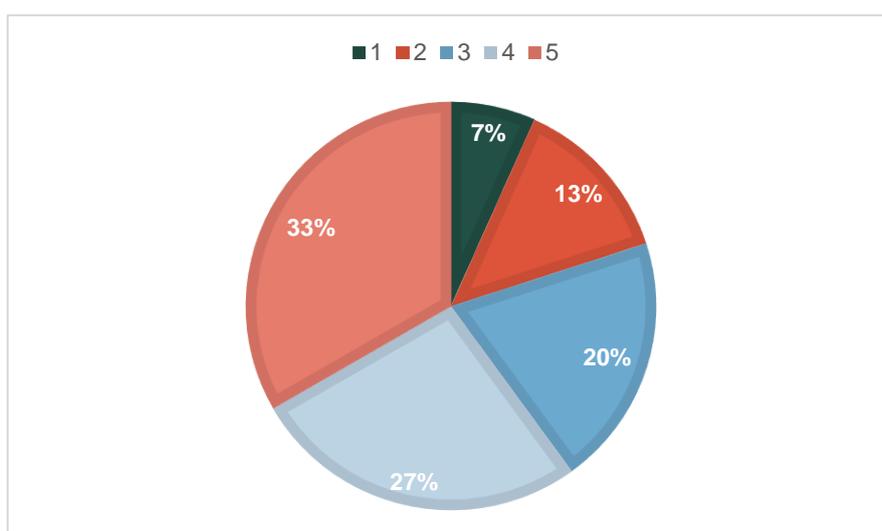
1. **Lower perceived skills gaps (ratings 1 and 2):**
 - 14 respondents rated this skill as 1, indicating high confidence or minimal gaps in their skills related to digital product quality management systems.
 - 36 respondents rated this skill as a 2, suggesting minor gaps in their mastery of these systems.
2. **Moderate perceived skills gap (rating 3):** 55 respondents rated this skill as 3, indicating a moderate gap in their capabilities. This group represents a substantial portion of respondents, suggesting that many have some knowledge but still need to improve further.
3. **Larger perceived skills gaps (ratings 4 and 5):**

- 65 respondents rated this skill a 4, showing significant room for improvement.
- 20 respondents rated this skill as 5, indicating a substantial gap or lack of competency in digital product quality management systems.
- Taken together, these groups highlight a notable part of the active population that perceives considerable deficiencies in this area.

In this analysis, the following levels of competence, training needs and focus areas for improvement have been found:

1. **Varying levels of competence:** Responses indicate varying levels of competence among participants, with some feeling very competent (14 for Score 1) and others identifying significant skill gaps (65 for Score 4 and 20 for Score 5).
2. **Training Needs:** Respondents who rated their skills as 3, 4, or 5 (140 respondents total) represent those with moderate to substantial skills gaps. This group represents approximately 70.35% of the total respondents for this question. This suggests the need for specific training programs focused on improving skills related to digital product quality management systems.
3. **Focus areas for improvement:** Training programs should prioritize practical skills for implementing digital quality assurance, testing procedures, and performance monitoring. Emphasizing practical experience and real-world applications can help close these skills gaps effectively.

Regarding the survey question that assessed the perceived gap in skills related to **digital supplier management systems**, which include platforms for efficient supplier onboarding, performance tracking, communication, risk assessment and collaboration in the digital supply chain. Respondents rated the level of missing skill on a scale of 1 to 5, with 5 indicating the most missing skill.



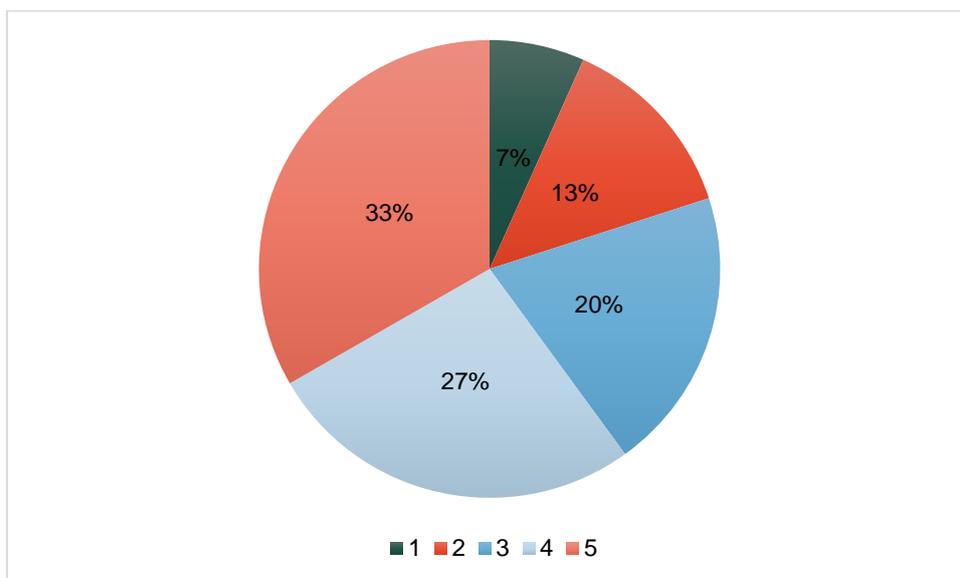
Graphic 10. Assessment of missing skills in the digital supplier management system on a scale of 1 to 5, with 5 indicating the most significant gap.

- 1. Lower perceived skills gaps (ratings 1 and 2):**
 - 13 respondents rated this skill as 1, indicating high confidence or minimal gaps in their skills related to digital supplier management systems.
 - 33 respondents rated this skill as a 2, suggesting minor gaps in their mastery of these systems.
- 2. Moderate perceived skills gap (rating 3):** 61 respondents rated this skill as 3, indicating a moderate gap in their capabilities. This group represents a significant portion of respondents, suggesting that many have some knowledge but still need to improve further.
- 3. Larger perceived skills gaps (ratings 4 and 5):**
 - 54 respondents rated this skill a 4, showing significant room for improvement.
 - 25 respondents rated this skill as a 5, indicating a substantial gap or lack of competency in digital supplier management systems.
 - Taken together, these groups highlight a notable part of the active population that perceives considerable deficiencies in this area.

From this analysis, various levels of competence, training needs and focus areas for improvement have been found:

- 1. Varying levels of competency:** Responses indicate varying levels of competency among participants, with some feeling very competent (13 for rating 1) and others identifying significant skill gaps (54 for rating 4 and 25 for rating 5).
- 2. Training Needs:** Respondents who rated their skills as 3, 4, or 5 (140 respondents total) represent those with moderate to substantial skills gaps. This group represents approximately 71.43% of the total respondents for this question. This suggests the need for specific training programs focused on improving skills related to digital supplier management systems.
- 3. Focus areas for improvement:** Training programs should prioritize practical skills in supplier onboarding, performance tracking, communication, risk assessment, and collaboration within the digital supply chain. As well as, emphasizing practical experience and real-world applications can help close these skills gaps effectively.

The survey question that assessed the perceived gap in skills related to **farm management information systems (FMIS)**, which include technological tools and software that facilitate farm planning, resource optimization, decision-making in data and overall management of farm operations, respondents rated the level of missing skill on a scale of 1 to 5, with 5 indicating the most missing skill.



Graphic 11. Assessment of missing skills in farm management information systems on a scale of 1 to 5, with 5 indicating the most significant gap.

1. Lower perceived skills gaps (ratings 1 and 2):

- 18 respondents rated this skill as 1, indicating high confidence or minimal gaps in their FMIS-related skills.
- 38 respondents rated this skill as a 2, suggesting minor gaps in their mastery of these systems.

2. Moderate perceived skills gap (rating 3):

- 47 respondents rated this skill as 3, indicating a moderate gap in their capabilities.
- This group represents a significant portion of respondents, suggesting that many have some knowledge but still need to improve further.

3. Larger perceived skills gaps (ratings 4 and 5):

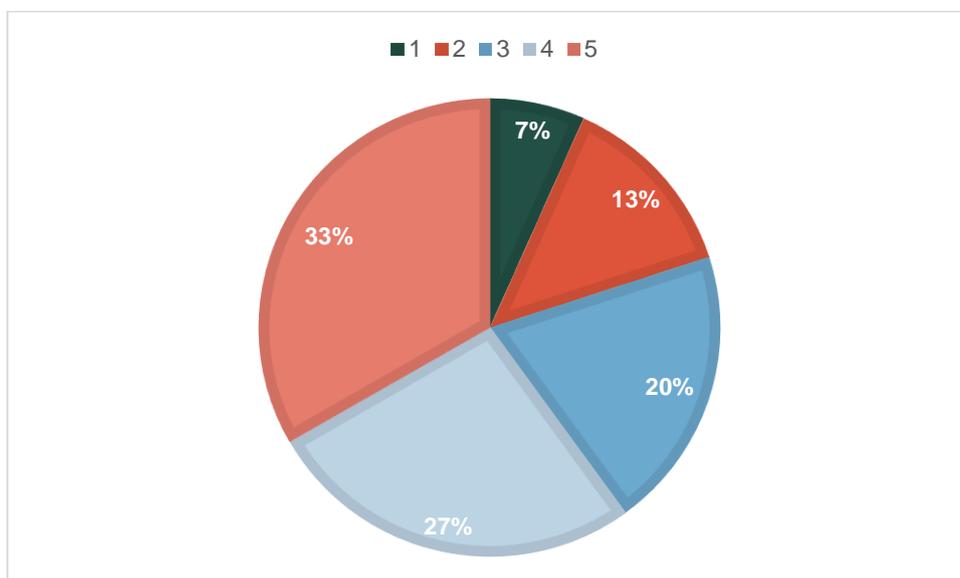
- 56 respondents rated this skill a 4, showing significant room for improvement.
- 32 respondents rated this skill as 5, indicating a substantial gap or lack of competency in FMIS.
- Taken together, these groups highlight a notable part of the active population that perceives considerable deficiencies in this area.

With this analysis, we found various levels of competence, training needs and focus areas for improvement:

1. **Varying levels of competence:** Responses indicate varying levels of competence among participants, with some feeling very competent (18 for Score 1) and others identifying significant skill gaps (56 for Score 4 and 32 for Score 5) .

2. **Training Needs:** Respondents who rated their skills as 3, 4, or 5 (135 respondents total) represent those with moderate to substantial skills gaps. This group represents approximately 69.23% of the total respondents for this question. This suggests the need for specific training programs focused on improving FMIS-related skills.
3. **Focus areas for improvement:** Training programs should prioritize practical skills in farm planning, resource optimization, data-driven decision making, and overall management of farm operations. Additionally, emphasizing hands-on experience with FMIS tools and software can help close these skills gaps effectively.

Regarding the survey question that assessed the perceived gap in skills related to **field operations management systems**, which include digital tools to plan, monitor and optimize field activities, such as task scheduling, resources and real-time data tracking, respondents rated the level of missing skill on a scale of 1 to 5, with 5 indicating the most missing skill.



Graphic 12. Assessment of missing skills in field operations management systems on a scale of 1 to 5, with 5 indicating the most significant gap.

1. **Lower perceived skills gaps (ratings 1 and 2):**
 - 18 respondents rated this skill as 1, indicating high confidence or minimal gaps in their skills related to field operations management systems.
 - 31 respondents rated this skill as 2, suggesting minor gaps in their mastery of these systems.
2. **Moderate perceived skills gap (rating 3):**
 - 57 respondents rated this skill as 3, indicating a moderate gap in their capabilities.
 - This group represents a significant portion of respondents, suggesting that many have some knowledge but still need to improve further.
3. **Larger perceived skills gaps (ratings 4 and 5):**
 - 57 respondents rated this skill a 4, showing significant room for improvement.

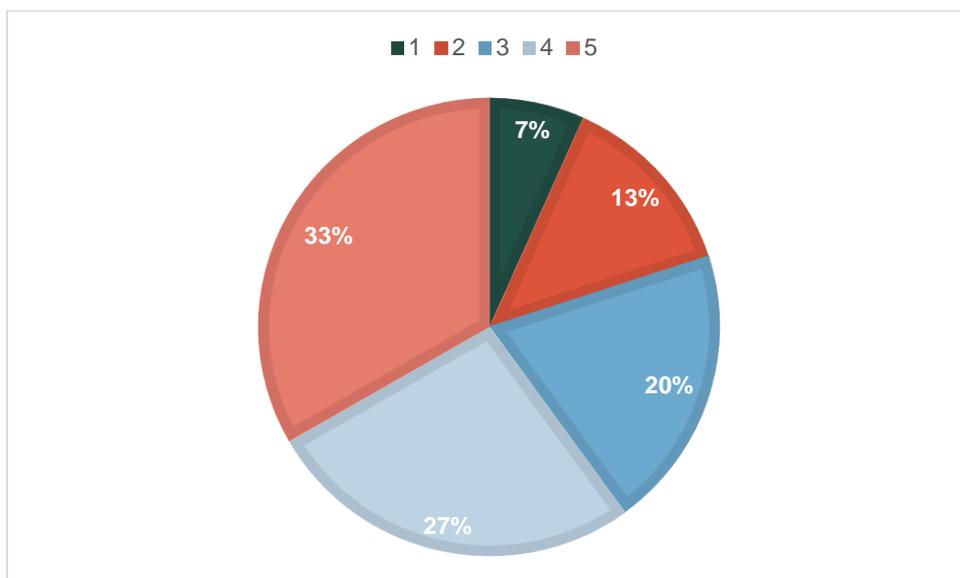
- 28 respondents rated this skill as a 5, indicating a substantial gap or lack of competency in field operations management systems.
- Taken together, these groups highlight a notable part of the active population that perceives considerable deficiencies in this area.

With this analysis we have found various levels of competence, training needs and areas of focus for improvement:

1. **Varying levels of competence:** Responses indicate varying levels of competence among participants, with some feeling very competent (18 for Score 1) and others identifying significant skill gaps (57 for Score 4 and 28 for Score 5) .
2. **Training Needs:** Respondents who rated their skills as 3, 4, or 5 (142 respondents total) represent those with moderate to substantial skills gaps. This group represents approximately 72.45% of the total respondents for this question. This suggests the need for specific training programs focused on improving skills related to field operations management systems.
3. **Focus areas for improvement:** Training programs should prioritize practical skills to plan, monitor and optimize field activities. On the other hand, emphasizing hands-on experience with digital tools for task scheduling, resource allocation, and real-time data tracking can help close these skills gaps effectively.

Analysis of responses indicates a mixed level of proficiency in field operations management systems among agri-food workers. While a portion of respondents feel confident in their abilities, a significant number identify moderate to substantial gaps. Addressing these gaps through comprehensive training and skills development initiatives will be crucial to improving proficiency in field operations management systems. By focusing on hands-on, tool-based training, the agri-food workforce can improve their proficiency in these essential smart farming skills, leading to greater efficiency and effectiveness in managing field operations through technological means.

Regarding the survey question that assessed the perceived gap in skills related to **digital soil nutrient monitoring systems**, which involve technology for accurate monitoring, analysis and management of soil nutrient levels to optimize productivity and agricultural sustainability, respondents rated the level of missing skill on a scale of 1 to 5, with 5 indicating the most missing skill.



Graphic 13. Assessment of missing skills in digital soil nutrient monitoring system on a scale of 1 to 5, with 5 indicating the most significant gap.

1. Lower perceived skills gaps (ratings 1 and 2):

- 13 respondents rated this skill as 1, indicating high confidence or minimal gaps in their skills related to digital soil nutrient monitoring systems.
- 22 respondents rated this skill as a 2, suggesting minor gaps in their mastery of these systems.

2. Moderate perceived skills gap (rating 3):

- 53 respondents rated this skill as 3, indicating a moderate gap in their capabilities.
- This group represents a significant portion of respondents, proposing that many have some knowledge but still need to improve further.

3. Larger perceived skills gaps (ratings 4 and 5):

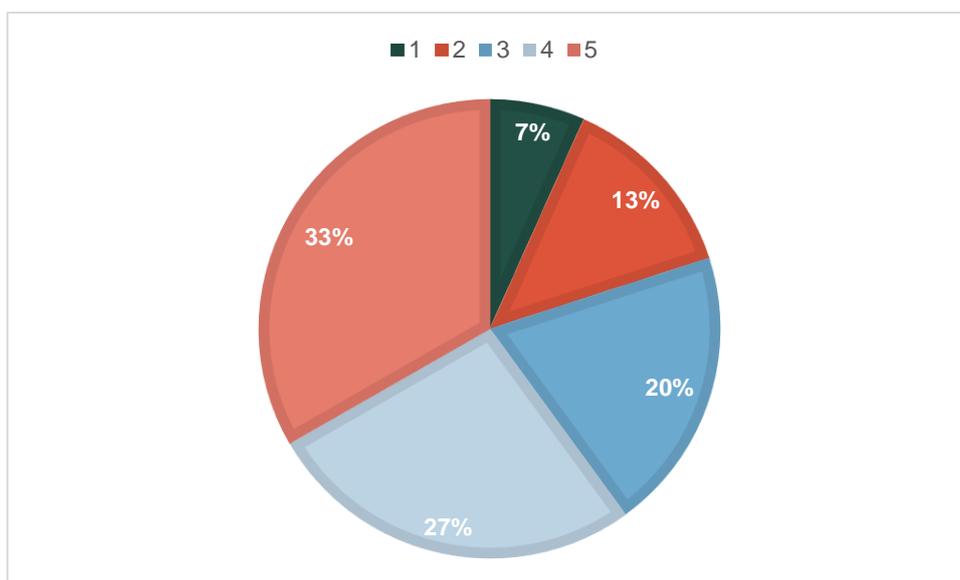
- 56 respondents rated this skill a 4, showing significant room for improvement.
- 43 respondents rated this skill as 5, indicating a substantial gap or lack of proficiency in digital soil nutrient monitoring systems.
- Taken together, these groups highlight a notable part of the active population that perceives considerable deficiencies in this area.

With this analysis, we found various levels of competency, training needs, and focus areas for improvement:

- 1. Varying levels of competency:** Responses indicate varying levels of competency among participants, with some feeling very competent (13 for Rating 1) and others identifying significant gaps in skills (56 for Rating 4 and 43 for Rating 5).

2. **Training Needs:** Respondents who rated their skills as 3, 4, or 5 (152 respondents total) represent those with moderate to substantial skills gaps. This group represents approximately 77.5% of the total respondents for this question. This suggests the need for specific training programs focused on improving skills related to digital soil nutrient monitoring systems.
3. **Focus areas for improvement:** Training programs should prioritize practical skills in monitoring, analyzing and managing soil nutrient levels. Additionally, emphasizing hands-on experience with digital tools and technologies for accurate soil nutrient management can help close these skills gaps effectively.

Regarding the survey question assessed the perceived gap in skills related to the **use of robotic solutions in smart agriculture**, this includes the application of automated machinery and robotic technologies for tasks such as planting, harvesting and other precision agricultural operations. Respondents rated the level of missing skill on a scale of 1 to 5, with 5 indicating the most missing skill.



Graphic 14. Use of robotic solutions in smart agriculture . Respondents rated the level of missing skill on a scale of 1 to 5, with 5 indicating the most missing skill.

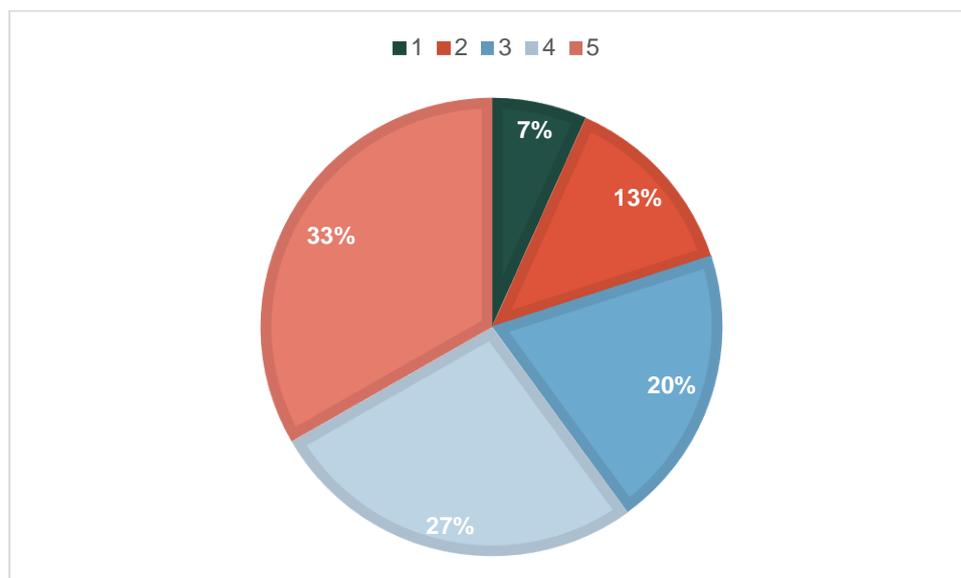
1. **Lower perceived skills gaps (ratings 1 and 2):**
 - 15 respondents rated this skill as 1, indicating that they feel very competent or see minimal gaps in their ability to use robotic solutions in agriculture.
 - 27 respondents rated this skill as a 2, suggesting they perceive minor gaps in their proficiency with robotic technologies.
2. **Moderate perceived skills gap (rating 3):**
 - 45 respondents rated this skill as 3, indicating a moderate gap in their capabilities.

- This group represents a significant portion of respondents, highlighting that while there is some knowledge, there is still considerable need for improvement.
- 3. Larger perceived skills gaps (ratings 4 and 5):**
 - 52 respondents rated this skill a 4, showing a significant gap in their ability to use robotic solutions effectively.
 - 50 respondents rated this skill as a 5, indicating a substantial or critical gap in their skills related to robotic technologies.
 - Combined, these groups suggest that a considerable portion of the workforce feels insufficiently prepared to use these advanced technologies.

With this analysis we find various levels of competence, training needs and areas of focus for improvement:

1. **Varying levels of competency:** Responses indicate a wide range of competency levels, with some workers feeling confident (15 for Rating 1) and others identifying significant gaps (52 for Rating 4 and 50 for Rating 5).
2. **Training Needs:** Respondents who rated their skills as 3, 4, or 5 (147 respondents total) represent those with moderate to substantial skills gaps. This group represents approximately 78.13% of the total respondents for this question. This suggests a great need for specific training programs aimed at improving skills related to the use of robotic solutions in agriculture.
3. **Focus areas for improvement:** Training programs should prioritize hands-on experience with machinery and robotic technologies. Additionally, emphasis should be placed on practical applications such as planting, harvesting and precision agricultural operations, which are critical tasks where robotic solutions can significantly improve efficiency and productivity.

Regarding the survey question that assessed the perceived gap in skills related to the **use of sensor solutions in smart agriculture**, this includes the integration and deployment of sensors for data collection, monitoring, and analysis to improve precision, efficiency and decision making in various agricultural processes. Respondents rated the level of missing skill on a scale of 1 to 5, with 5 indicating the most missing skill.



Graphic 15. Use of sensor solution in smart agriculture. Respondents rated the level of missing skill on a scale of 1 to 5, with 5 indicating the most missing skill.

1. Lower perceived skills gaps (ratings 1 and 2):

- 13 respondents rated this skill as 1, indicating that they feel very competent or see minimal gaps in their ability to use sensor solutions in agriculture.
- 29 respondents rated this skill as 2, suggesting they perceive minor gaps in their proficiency with sensor technologies.

2. Moderate perceived skills gap (rating 3):

- 60 respondents rated this skill as 3, indicating a moderate gap in their capabilities.
- This group represents the majority of respondents, highlighting that while there is some knowledge, there is still a considerable need for improvement.

3. Larger perceived skills gaps (ratings 4 and 5):

- 53 respondents rated this skill a 4, showing a significant gap in their ability to use sensor solutions effectively.
- 36 respondents rated this skill as a 5, indicating a substantial or critical gap in their skills related to sensor technologies.
- Combined, these groups suggest that a considerable portion of the workforce feels insufficiently prepared to use these advanced technologies.

With this analysis we find various levels of competence, training needs and areas of focus for improvement:

- 1. Varying levels of competency:** Responses indicate a wide range of competency levels, with some workers feeling confident (13 for Rating 1) and others identifying significant gaps (53 for Rating 4 and 36 for Rating 5).

2. **Training Needs:** Respondents who rated their skills as 3, 4, or 5 (149 respondents total) represent those with moderate to substantial skills gaps. This group represents approximately 76.02% of the total respondents for this question. This suggests a great need for specific training programs aimed at improving skills related to the use of sensor solutions in agriculture.
3. **Focus areas for improvement:** Training programs should prioritize hands-on experience with sensor technology, including integration and deployment. Emphasis should be placed on practical applications such as data collection, monitoring and analysis, which are critical tasks where sensor solutions can significantly improve accuracy, efficiency and decision-making.

In the survey question that asked respondents to name **other skills they felt were missing** in the context of smart agriculture, responses provided information on specific areas where additional training and knowledge is needed.

The missing skills and knowledge identified are the following:

2. **Automatic solutions for water management**
3. **Knowledge and training in the use of tools**
4. **Recover tests and field trials**
5. **Geographic Information Systems (GIS) Maps**
6. **Data interpretation and decision making**
7. **Capital for investment**
8. **Artificial intelligence (AI)**
9. **Data management and software skills**
10. **Animal monitoring and medication management**
11. **Fire detection sensors**
12. **Drone operation**
13. **Site-specific fertilization**
14. **Business intelligence tools**
15. **Technology in agricultural bureaucracy**
16. **Real-time GPS and soil quality analysis**

The analysis highlights several critical areas where additional training and knowledge is needed to improve smart farming practices:

- **Technical skills:** Emphasis on tools, GIS, IA and data management.
- **Practical skills:** focus on water management, field testing and decision making.
- **Financial skills:** Address the need for investment capital and financial management.

2.2.2. Mapping the skills landscape in the agrifood sector: Analysis of green transition and sustainability of food systems

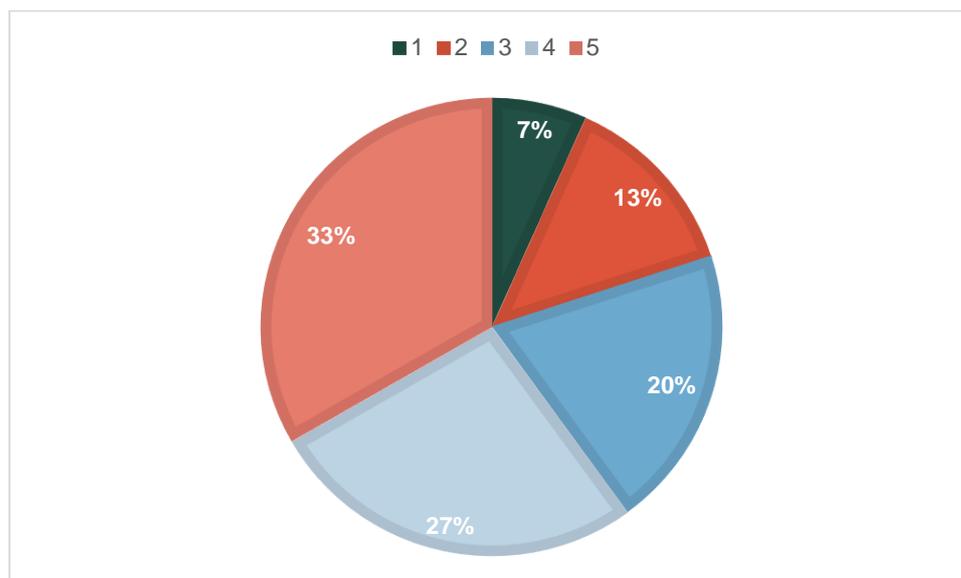
The green transition and sustainability in food systems are crucial topics on the current global agenda, driven by the urgent need to mitigate climate change, protect natural resources, and ensure food security for future generations. As the agri-food industry faces these challenges, it becomes evident that the adoption of sustainable practices and eco-friendly technologies is fundamental to achieving these objectives.

In this context, identifying the skills needed to support the green transition and sustainability becomes a priority for both workers and the labor market. The required competencies extend beyond traditional knowledge in agriculture, encompassing a wide range of new technical skills, specialized knowledge, and innovative capabilities that enable the implementation and management of environmentally sustainable and efficient agricultural practices.

This section is dedicated to analyzing the skills currently lacking among workers and those demanded by the labor market to facilitate this transition. Various specific competencies will be evaluated, providing a clear insight into areas where improvements and capacity development are needed. This assessment will help identify the most critical skill gaps and formulate effective strategies to train the workforce in the agri-food sector, better preparing them to tackle the challenges of sustainability and the green transition.

By assessing these skills, the goal is to provide a detailed understanding of the extent to which workers lack these competencies and what the labor market expectations are. This information is essential for designing training programs and educational policies that respond to the emerging needs of the sector, ensuring that the agri-food industry is well-equipped to move towards a greener and more sustainable future.

Responses to the survey on **efficient use of resources and logistics in the food industry** indicate the level of skills that are missing among participants related to efficient use of resources and logistics in the food industry. Ratings range from 1 (least missing) to 5 (most missing), with the following results:



Graphic 16. Efficient use of resources and logistics in the food industry. *Ratings range from 1 (least missing) to 5 (most missing).*

1. **Moderate skills gap (score 3):** The largest number of respondents (69) rated efficient use of resources and logistics in the food industry as a moderately missing skill (score 3). This indicates that, while some knowledge and skills exist, there is a significant need for improvement and further training in this area.
2. **Mild to moderate skills gap (ratings 2 and 4):** A substantial number of respondents (42) rated this skill as slightly poor (rating 2), suggesting that fundamental understanding exists but needs improvement. Similarly, 45 respondents rated it as quite poor (score 4), highlighting the need for more advanced and specific training to effectively close the gap.
3. **Significant skills gap (rating 5):** 24 respondents identified this skill as the most lacking (rating 5). This group highlights a critical need for in-depth training and development to equip workers with the skills necessary for efficient resource use and logistics management.
4. **Least missing skill (rating 1):** Only 10 respondents considered this skill to be the least missing (rating 1), indicating that a small segment of the workforce feels confident in their abilities in this area.

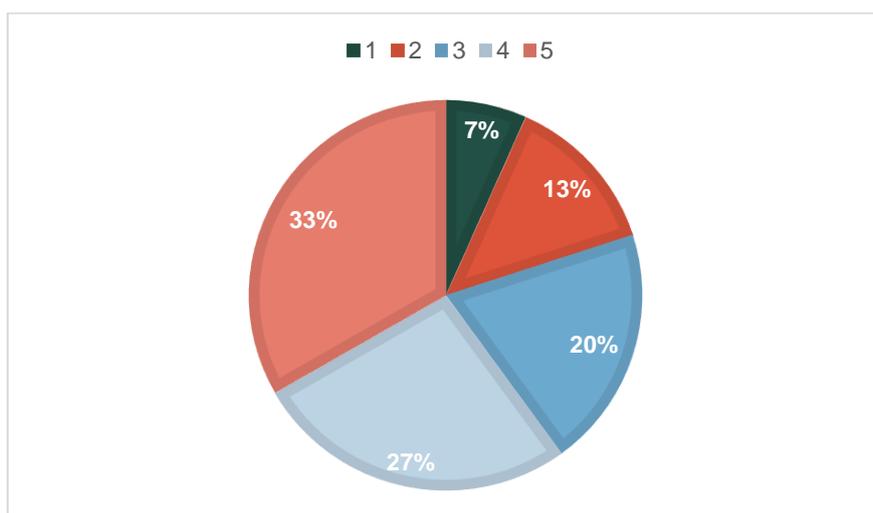
The analysis reveals a clear need for specific training programs in the efficient use of resources and logistics within the food industry. The distribution of responses shows that while there is a basic understanding of these skills, there is a substantial portion of the workforce that requires significant improvement:

- **Basic to intermediate training:** For those who rated the skills gap as 2 or 3, training should focus on enhancing their existing knowledge with more practical and applied learning experiences.

- **Advanced training:** For those who rated the skills gap as 4 or 5, more comprehensive and specialized training programs are necessary. These should include strategic management techniques, optimization of production processes, and advanced logistics and supply chain management practices.

- **Specific focus areas:** Training should cover strategic input management, efficient production processes, optimization of distribution channels, waste reduction and overall supply chain efficiency to ensure sustainable input management. resources in the food industry.

The survey responses of **Regenerative Practices and/or Carbon Farming Practices** provide insight into the level of skills missing among participants regarding regenerative practices and carbon farming practices. The ratings range from 1 (least missing) to 5 (most missing), with the following results:



Graphic 17. Regenerative practices and or carbon farming practices. The ratings range from 1 (least missing) to 5 (most missing)

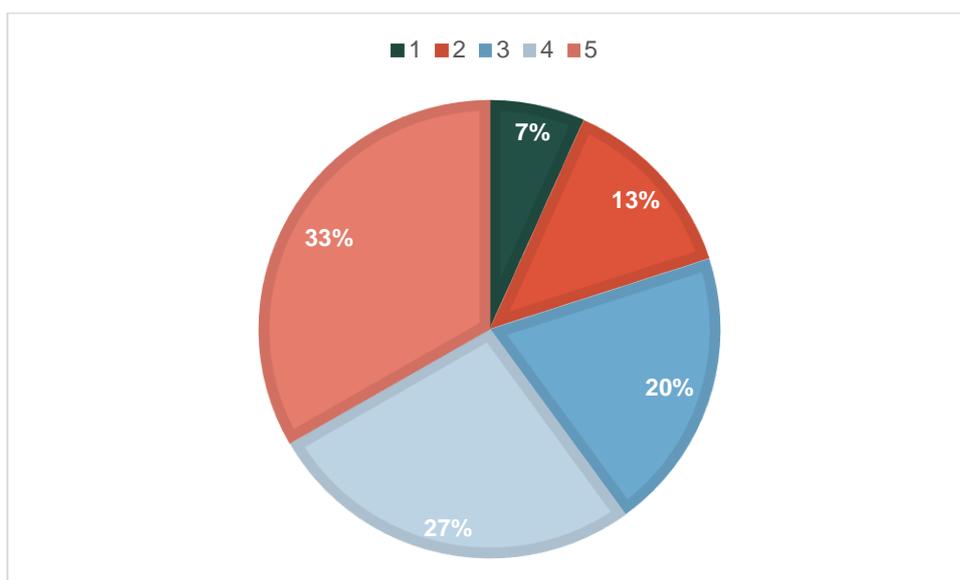
1. **Moderate to significant skill gap (Ratings 3 and 4):** The most of respondents (52 and 55 respectively) rated the skill gap in regenerative practices and carbon farming practices as moderate to missing (ratings 3 and 4). This indicates a widespread recognition of the need for improvement in these areas, suggesting that while some foundational knowledge may exist, there is considerable room for enhancement and development of skills.
2. **Significant skill gap (Rating 5):** 31 respondents identified this skill as the most missing (rating 5). This highlights a critical need for comprehensive training and education in regenerative and carbon farming practices to ensure the workforce is well-equipped to implement sustainable agricultural methods.

3. **Mild skill gap (Rating 2):** 35 respondents rated the skill gap as slightly missing (rating 2), suggesting that there is a basic understanding of these practices, but further education and training are required to deepen this knowledge and application.
4. **Least Missing Skill (Rating 1):** 16 respondents considered this skill the least missing (rating 1), indicating that a small segment of the workforce feels confident in their abilities in regenerative and carbon farming practices.

The analysis shows a significant need for targeted training programs in regenerative practices and carbon farming within the agrifood sector. The distribution of responses indicates that while there is some level of understanding, a considerable portion of the workforce needs substantial upskilling:

- **Intermediate training:** For those who rated the skill gap as 2 or 3, training should focus on enhancing their existing knowledge with practical applications and more advanced techniques in regenerative practices and carbon farming.
- **Advanced training:** For those who rated the skill gap as 4 or 5, more comprehensive and specialized training programs are necessary. These should cover topics such as soil health improvement, biodiversity enhancement, carbon sequestration techniques, and overall strategies for ecological resilience and climate change mitigation.
- **Specific focus areas:** Training should encompass sustainable agricultural methods, the importance of soil health, biodiversity, carbon sequestration, and how these practices contribute to ecological resilience and climate change mitigation.

The responses on **Climate Adaptation Measures** to the survey reflect the degree to which skills related to climate adaptation measures are lacking among participants. The ratings range from 1 (least missing) to 5 (most missing), with the following results:



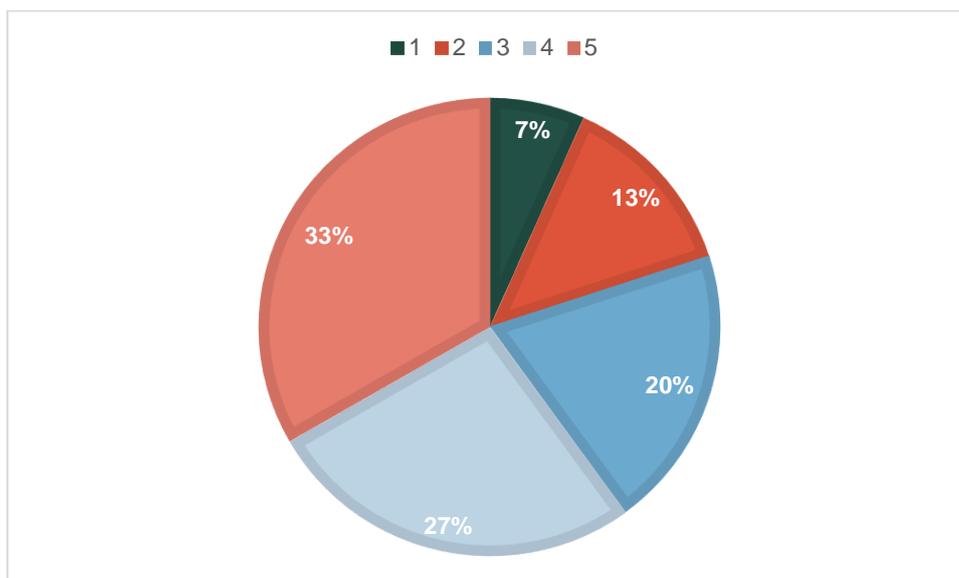
Graphic 18. Climate adaptation measures. The ratings range from 1 (least missing) to 5 (most missing).

1. **Moderate skills gap (ratings 3 and 4):** Most respondents (59 for ratings 3 and 4) perceive the skills gap in climate adaptation measures as moderate. This suggests that while some fundamental knowledge exists, substantial improvement is needed. This moderate gap indicates that participants are aware of climate adaptation strategies but may lack detailed understanding or implementation skills.
2. **Significant skills gap (rating 5):** 22 respondents rated this skill as the most lacking (rating 5), highlighting a critical need for comprehensive training in climate adaptation measures. This group represents those who feel very unprepared to adjust agricultural practices to climate changes.
3. **Slight skills gap (rating 2):** 37 respondents rated the skills gap as slightly non-existent (rating 2). This indicates a basic understanding and some competence in climate adaptation measures, but more training and education would still be beneficial.
4. **Skill least missing (rating 1):** 11 respondents considered this skill to be the least missing (rating 1). This small group is confident in their ability to implement climate adaptation measures, suggesting that they have a strong understanding and capacity in this area.

The analysis indicates a considerable need for specific training programs focused on climate adaptation measures within the agri-food sector. The distribution of responses suggests different levels of understanding and competence:

- **Intermediate training:** For those who rated the skills gap as 2 or 3, training should aim to leverage existing knowledge, emphasizing practical applications and advanced strategies for climate adaptation.
- **Advanced training:** For those who rated the skills gap as 4 or 5, comprehensive and in-depth training programs are necessary. These programs should cover a wide range of topics including:
 - **Climate Risk Assessment:** Techniques to evaluate the potential impacts of climate change on agricultural practices.
 - **Adaptation strategies:** Specific actions to modify agricultural systems to better resist climate variability, such as crop diversification, soil management practices, water conservation techniques, and the use of resilient crop varieties.
- **Implementation and Monitoring:** Methods to effectively implement adaptation strategies and monitor their results to ensure continuous improvement and sustainability.

Responses to the **Crop Modeling and Simulation** survey indicate the extent to which participants lack skills related to crop modeling and simulation. The rating scale goes from 1 (least missing) to 5 (most missing), with the following distribution of responses:



Graphic 19. Crop modelling and simulation. The rating scale goes from 1 (least missing) to 5 (most missing)

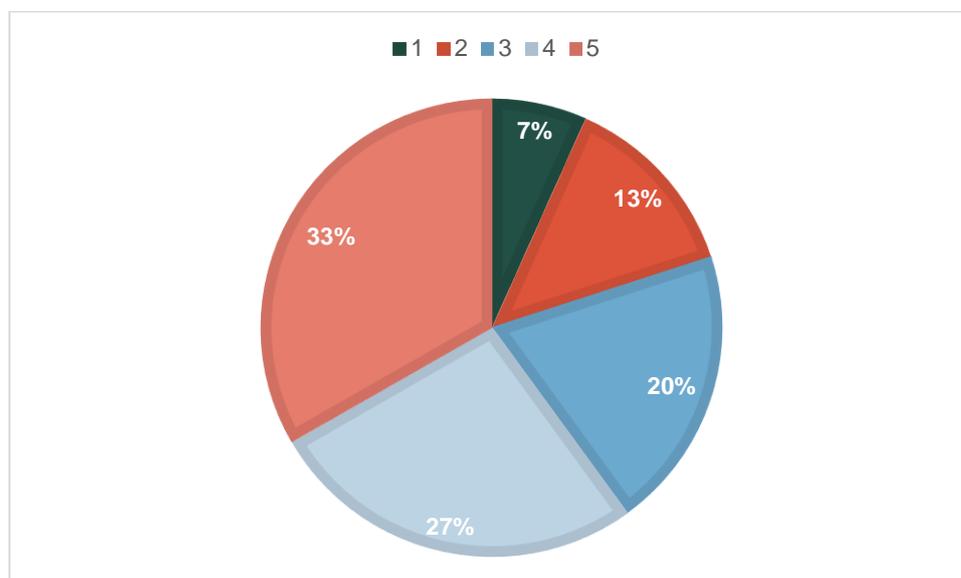
1. **Moderate to significant skills gap (ratings 4 and 5):** A large proportion of respondents, 59 rated the skills gap as 4 and 45 rated it as 5, indicating a significant need for modelling and simulation training of crops. This shows that many participants consider this area to be unimportant in their current skill set.
2. **Medium skills gap (rating 3):** 44 respondents rated this skills gap as 3, indicating a moderate gap. These respondents have some knowledge but need further development to master crop modeling and simulation.
3. **Mild skills gap (rating 2):** 27 respondents rated the skills gap as 2, suggesting basic understanding and partial competence. This group could benefit from advanced training to improve their skills.
4. **Skill that is least missing (rating 1):** Only 13 respondents considered this skill to be the one that was least missing, which implies that they already have strong capabilities in crop modeling and simulation.

The analysis reveals a substantial need for training programs focused on crop modeling and simulation within the agri-food sector. The distribution of responses highlights different levels of experience:

- **Advanced training:** For those who rated the skills gap as 4 or 5, comprehensive training programs are necessary. These should include:
 - Introduction to Crop Models: Understand the basic concepts of the different crop models and their applications.
 - **Simulation Techniques:** Hands-on training in simulation techniques to predict crop growth and yield under various climatic conditions.
 - **Data analysis and interpretation:** Methods to analyze and interpret simulation data to make informed decisions.

- **Software Proficiency:** Training in the use of relevant software tools for crop modeling, such as DSSAT, APSIM or STICS.
- **Intermediate training:** For those who rated the skills gap as 3, training should aim to build on their existing knowledge, focusing on:
 - **Advanced simulation scenarios:** Creation and analysis of more complex scenarios involving multiple variables.
 - **Integration with field data:** Techniques to integrate simulation results with real-world field data for validation and adjustment.
- **Basic training:** For those who rated the skills gap as 2, training must cover:
 - **Fundamentals of Crop Modeling:** Basic principles and the importance of crop modeling and simulation.
 - **Practical applications:** simple and practical applications of crop modeling in everyday agricultural decisions.

Survey responses on improved system **productivity, including sustainable water and energy management**, indicate the extent to which participants lack skills related to improving system productivity, with a focus on sustainable water and energy management. The rating scale goes from 1 (least missing) to 5 (most missing), with the following distribution of responses:



Graphic 20. Productivity, including sustainable water and energy management. The rating scale goes from 1 (least missing) to 5 (most missing)

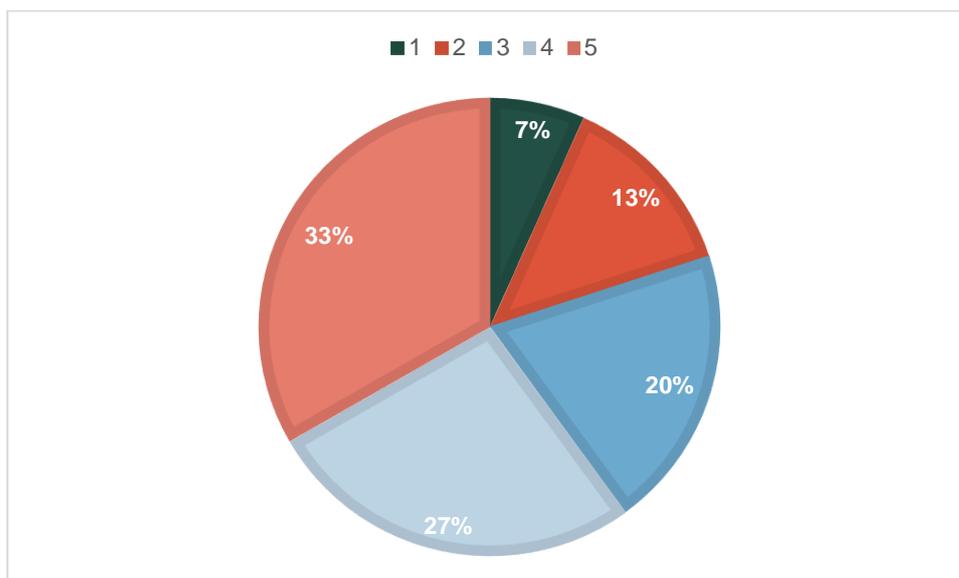
1. **Moderate to significant skills gap (ratings 4 and 5):** A considerable number of respondents, 58 rated the skills gap as 4 and 27 rated it as 5, indicating a significant need for training in sustainable management practices of water and energy. This highlights that many participants consider this area to be unimportant in their current skill set.

2. **Medium skills gap (rating 3):** 56 respondents rated this skills gap as 3, indicating a moderate gap. These respondents have some knowledge but need further development to master sustainable water and energy management.
3. **Mild skills gap (rating 2):** 31 respondents rated the skills gap as 2, suggesting basic understanding and partial competence. This group could benefit from advanced training to improve their skills.
4. **Skill that is least missing (rating 1):** 18 respondents considered this skill to be the one that was least missing, which implies that they already have strong capabilities in the sustainable management of water and energy resources.

The analysis reveals a substantial need for training programs focused on sustainable water and energy management practices within the agri-food sector. The distribution of responses highlights different levels of experience:

- **Advanced training:** For those who rated the skills gap as 4 or 5, comprehensive training programs are necessary. These should include:
 - **Water and Energy Efficiency Techniques:** Detailed training on methods to improve efficiency in the use of water and energy.
 - **Implementation of sustainable practices:** Practical guidance on the implementation of sustainable practices in water and energy management.
 - **Technological Solutions:** Training in the latest technological solutions for sustainable resource management, such as smart irrigation systems and renewable energy sources.
- **Intermediate training:** For those who rated the skills gap as 3, training should aim to build on their existing knowledge, focusing on:
 - **Resource optimization strategies:** Advanced strategies to optimize the use of water and energy in various agricultural processes.
 - **Monitoring and Evaluation:** Techniques to monitor the use of resources and evaluate the effectiveness of sustainable practices.
- **Basic training:** For those who rated the skills gap as 2, training must cover:
 - **Fundamentals of Sustainable Management:** Basic principles of the sustainable management of water and energy resources.
 - **Practical applications:** Practical and simple applications of sustainable practices in everyday agricultural operations.

Responses to the **Soil Health Management: Soil Ecosystems, Nutrient Cycling, and Implementing Practices to Improve Soil Health** survey indicate the extent to which participants lack skills related to soil health management. The rating scale goes from 1 (least missing) to 5 (most missing), with the following distribution of responses:



Graphic 21. Soil Health Management. The rating scale goes from 1 (least missing) to 5 (most missing)

1. **Moderate to significant skills gap (ratings 4 and 5):** 39 respondents rated the skills gap as 4 and 28 respondents rated it as 5. This indicates that a significant portion of participants recognize a substantial need for improved training and knowledge in soil health management practices.
2. **Medium skills gap (rating 3):** 62 respondents rated this skills gap as 3, suggesting that many participants have a moderate understanding but need further development to improve their expertise in soil health management.
3. **Mild skills gap (rating 2):** 44 respondents rated the skills gap as 2, indicating a basic understanding of soil health management practices. This group would benefit from advanced training to deepen their knowledge and practical skills.
4. **Least missing skill (rating 1):** 16 respondents considered this skill to be the least missing, implying that they already have strong capabilities in soil health management, nutrient cycling, and soil ecosystem practices.

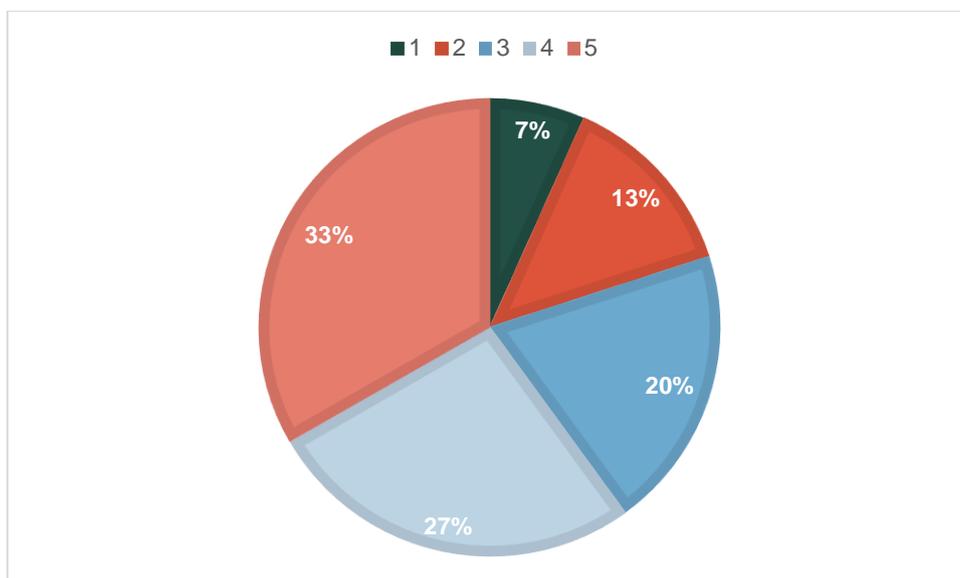
The analysis reveals a substantial need for specific soil health management training programs within the agri-food sector. The distribution of responses highlights different levels of experience:

- **Advanced training:** For those who rated the skills gap as 4 or 5, comprehensive training programs are necessary. These should include:
 - **Soil Health Principles:** In-depth training on soil health principles, including soil biology, chemistry, and physics.
 - **Nutrient management:** Advanced nutrient cycling and management techniques to improve soil fertility and productivity.
 - **Sustainable Practices:** Practical guidance on implementing sustainable practices for soil health, such as cover crops, reduced tillage, and organic amendments.

- **Intermediate training:** For those who rated the skills gap as 3, training should aim to build on their existing knowledge, focusing on:
 - o **Soil ecosystem management:** advanced strategies to manage soil ecosystems to improve soil health and productivity.
 - o **Monitoring and Evaluation:** Techniques to monitor soil health parameters and evaluate the effectiveness of soil management practices.

- **Basic training:** For those who rated the skills gap as 2, training must cover:
 - o **Soil Health Fundamentals:** Basic principles of soil health management, including soil structure, organic matter, and microbial activity.
 - o **Practical Applications:** Simple, practical applications of soil health practices in everyday farming operations.

Regarding the analysis of the question **soil properties, irrigation, erosion**, etc., in the survey, we obtained the following results:



Graphic 22. Specific soil health management

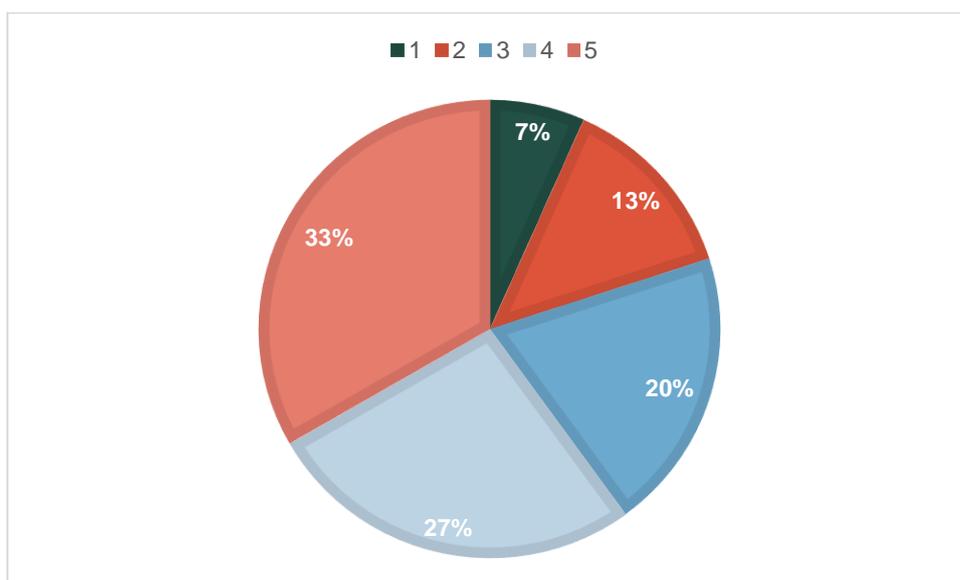
1. **Moderate skill deficiency:** Most responses are grouped in the medium range (2-4), indicating that although there is some deficiency in skills related to soil properties, irrigation and erosion, there is no is perceived as the most critical gap according to respondents.
 - 42 respondents rated this skill at level 2, suggesting that these skills are not greatly lacking, but still require some attention.
 - 56 respondents rated this skill at level 3, showing a moderate level of skill deficiency.
 - 44 respondents rated this skill at level 4, indicating a slightly higher level of concern.
2. **Lower perceived deficiency at the extremes:**

- Only 24 respondents rated this skill as 1, indicating that it is not a major problem for them.
- 21 respondents rated this skill as a 5, indicating that it is a critical skill that is missing for a smaller portion of respondents.

Implications for training and development:

- Targeted training programs: Data suggest the need for targeted training programs to address moderate skills gaps in soil management, particularly focusing on efficient irrigation techniques and erosion control practices.
- Resource Allocation: Efforts to improve these skills should prioritize people who rated these skills as 3 or 4, as they represent the largest groups in need of improvement.
- Specific attention: For those who identified these skills as highly deficient (rating of 5), more intensive, possibly individualized, training may be necessary to bring them up to date.

Regarding the analysis of "Sustainable business and governance models and environmental policy - 'National, EU and international environmental policies, regulations, subsidies and support programmes'", we found the following results:



Graphic 23. National, EU and international environmental policies, regulations, subsidies and support programmes

- 1. Upper-mid-range responses:** Most respondents rated the skills gap between 3 and 4, indicating a moderate to significant gap in knowledge and skills related to environmental policies, regulations, and support programs.
 - 62 respondents rated this skill at level 3, showing a moderate level of skill deficiency.
 - 58 respondents rated this skill at level 4, indicating a slightly higher level of concern.
- 2. Significant deficiency for some:**

- 33% respondents rated this skill as a 5, demonstrating that for a notable portion of respondents, understanding and navigating environmental policies and support programs is a critical missing skill.

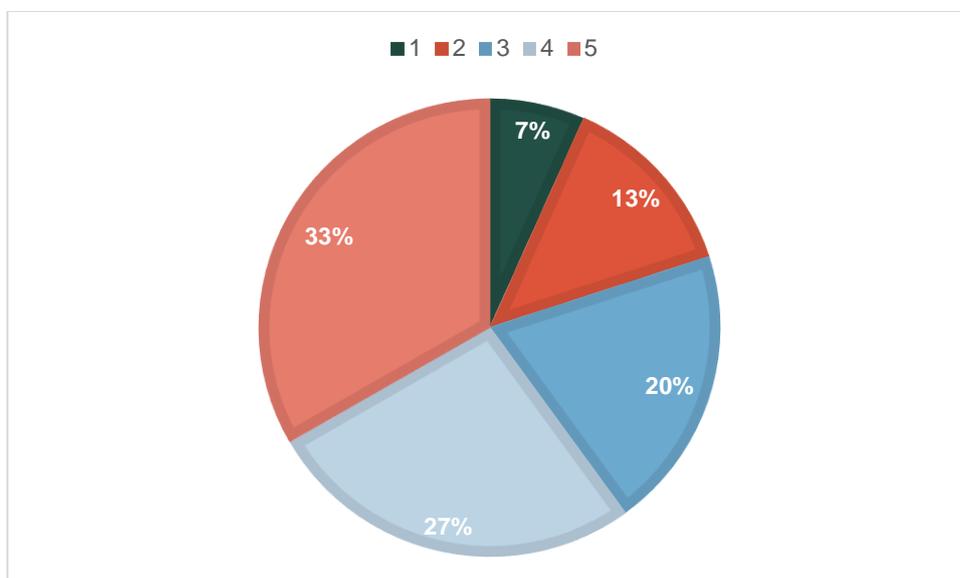
3. Less concern at the extremes:

- Only 7% respondents rated this skill as 1, suggesting that a small number of respondents feel very confident in their knowledge of these policies.
- 13% respondents rated this skill as 2, showing a slightly higher, but still relatively low level of concern.

Implications for training and development:

- Specific educational programmes: There is a clear need for educational initiatives focused on improving understanding of national, EU and international environmental policies, regulations and support programmes.
- Support for areas of greatest concern: Special attention should be paid to those who rated this skill a 4 or 5, as they represent the groups most in need of improvement.
- Policy workshops and seminars: It would be beneficial to organize workshops, seminars and training sessions that cover the complexities of environmental policies and how to navigate subsidy and support programs.

Regarding the analysis of "Governance and Sustainable Business Models and Environmental Policy - 'Corporate social responsibility associated with sustainability reports/press releases'", we found the following responses:



Graphic 24. Corporate social responsibility associated with sustainability reports/press releases

1. Distribution of Responses:

- The distribution of responses indicates a distribution across all levels of skill deficiency, with most respondents identifying a moderate to significant gap.

- 20% of respondents rated this skill at level 3, suggesting a moderate deficiency in skills related to corporate social responsibility (CSR) and sustainability reporting.
- 27% of respondents rated this skill at level 4, indicating greater concern about the lack of these skills.

2. Significant impairment for a substantial group:

- 33% of respondents rated this skill as 5, highlighting that for a notable group, there is a critical need to improve the understanding and implementation of CSR and sustainability reporting.

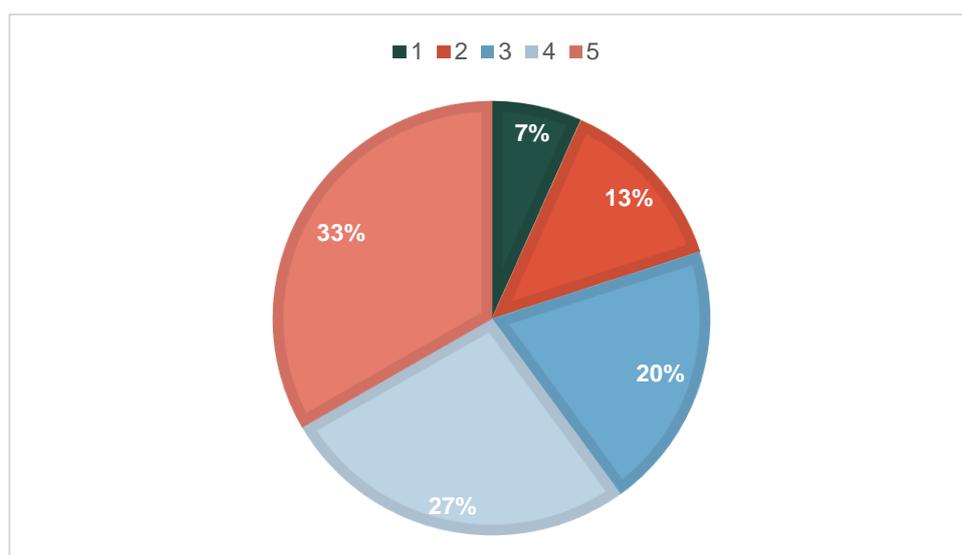
3. Lower levels of concern at the extremes:

- 7% of respondents rated this skill as 1, indicating that a small group feels very confident in their sustainability and CSR reporting skills.
- 13% of respondents rated this skill as 2, which shows a little more concern, but still at a lower level compared to the majority.

Implications for training and development:

- Enhanced CSR Training: There is a clear need for comprehensive training programs focused on corporate social responsibility and sustainability reporting. This may include workshops, online courses and seminars.
- Practical reporting skills: Training should emphasize practical skills to create transparent and effective sustainability reports and press releases.
- Focus on public relations: Incorporating elements of public relations and communication strategies in sustainability training can help close the identified skills gap.

Regarding the analysis of "Energy - 'Identification of renewable energy systems suitable for farms/commercial businesses'", we found the following answers:



Graphic 25. Identification of renewable energy systems suitable for farms/commercial businesses

1. Distribution of responses:

- The largest group of respondents (20%) rated this skill at level 3, indicating a moderate level of deficiency in identifying renewable energy systems suitable for farms or commercial enterprises.
- 27% of respondents rated this skill at level 4, suggesting significant concern about the lack of these skills.
- 33% respondents rated this skill at level 5, demonstrating that there is a critical need for improvement for a substantial number of respondents.

2. **Moderate Impairment:** Moderate Impairment (Level 3) is the most common rating and reflects widespread recognition that, while some knowledge exists, there is still considerable need for improvement in this area.

3. **Significant need for criticism:** The combined number of respondents who rated this skill as level 4 or 5 (60%) indicates that more than one-third of respondents believe this skill is significantly or lacking. criticism.

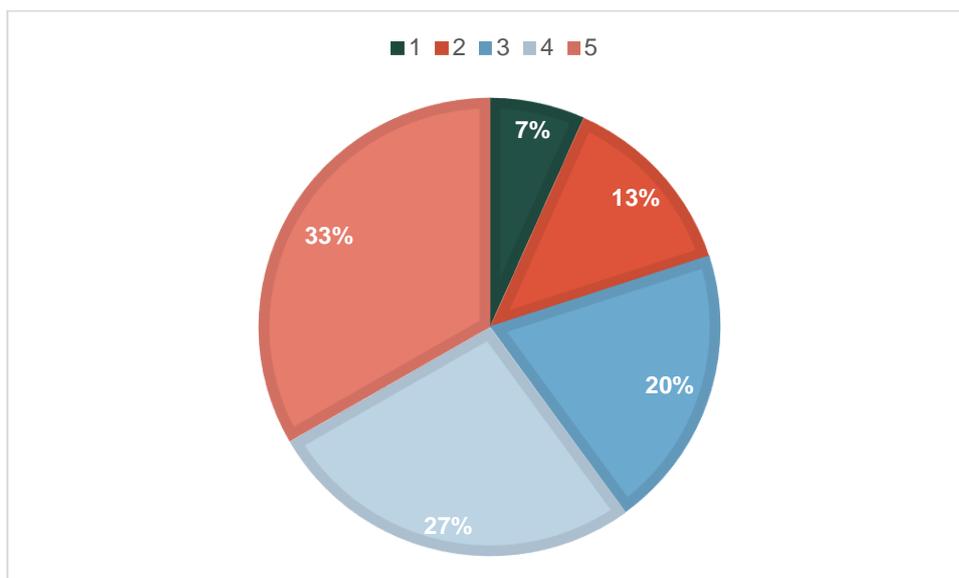
4. Lower levels of concern:

- 7% respondents rated this skill as 1, indicating that a small group feels very confident in their ability to identify suitable renewable energy systems.
- 13% respondents rated this skill as 2, suggesting a relatively lower level of concern but still recognizing a deficiency.

Implications for training and development:

- Training focused on renewable energy systems: There is a clear need for specialized training programs that focus on identifying and implementing renewable energy systems suitable for agricultural and commercial enterprises.
- Case studies and practical examples: Training should include case studies and practical examples to help participants understand the application of different renewable energy technologies in real-world scenarios.
- Collaboration with experts: Collaboration with renewable energy experts and consultants can provide deeper insights and more personalized guidance for the energy needs of agricultural and commercial businesses.

Regarding the analysis of "Specific skills for the sustainable food industry - '**Organic production requirements**'", we obtain the following results:



Graphic 26. Organic production requirements

1. Distribution of responses:

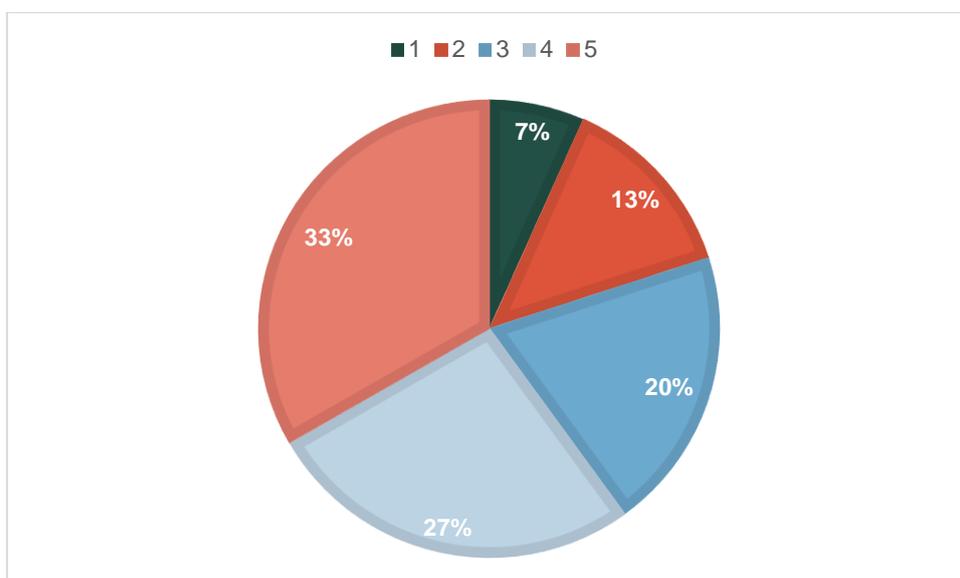
- The largest group of respondents (20%) rated this skill at level 3, indicating a moderate deficiency in understanding and meeting organic production requirements.
 - 13% respondents rated this skill at level 2, suggesting a lower level of concern but still recognizing a deficiency.
 - 27% respondents rated this skill at level 4, highlighting significant concern about the lack of these skills.
 - 33% respondents rated this skill at level 5, showing that there is a critical need for improvement for a smaller, but important, segment of respondents.
 - 7% respondents rated this skill as 1, indicating that a small group feels very confident in their knowledge and compliance with organic production requirements.
- 2. Moderate deficiency:** Moderate deficiency (level 3) is the most common rating and reflects widespread recognition that, while there is some knowledge and compliance with organic production requirements, there is still considerable need for improvement in this area.
- 3. Significant need for criticism:** The combined number of respondents who rated this skill as level 4 or 5 (60%) indicates that there is a notable portion of respondents who believe these skills are significantly or critically lacking.
- 4. Lower levels of worry:** 13% of respondents rated this skill as a 2, suggesting a relatively lower level of worry but still recognizing a deficiency.

Implications for training and development:

- **Specific training on organic standards:** There is a clear need for specialized training programs that focus on the guidelines and standards governing organic agriculture, including natural processes, soil health, and the avoidance of synthetic chemicals.

- Certification programs: Developing certification programs to ensure comprehensive understanding and compliance with organic production requirements can help standardize practices.
- Hands-on Workshops: Hands-on training sessions and workshops can provide practical knowledge and real-world applications to help farmers and food industry professionals meet organic standards.
- Continuing education: Regular updates and continuing education on changes in organic farming regulations and best practices will be beneficial.

Regarding the analysis of “Specific competencies for the sustainable food industry - 'Analysis of contaminants’”, we obtain the following answers:



Graphic 27. Analysis of contaminants

1. Distribution of responses:

- The largest group of respondents (20%) rated this skill at level 3, indicating a moderate deficiency in the ability to analyze contaminants.
- 13% of respondents rated this skill at level 2, suggesting a lower level of concern but still recognizing a deficiency.
- 27% of respondents rated this skill at level 4, highlighting significant concern about the lack of these skills.
- 33% of respondents rated this skill at level 5, showing that there is a critical need for improvement for a smaller, but significant, segment of respondents.
- 7% of respondents rated this skill as 1, indicating that a small group feels very confident in their ability to analyze contaminants effectively.

2. Moderate deficiency: Moderate deficiency (level 3) is the most common rating and reflects widespread recognition that, while there is some knowledge and ability to analyze contaminants, there is still considerable need for improvement in this area.

3. **Significant need for criticism:** The combined number of respondents who rated this skill as a level 4 or 5 (60%) indicates that there is a notable portion of respondents who believe these skills are significantly or critically lacking.
4. **Lower levels of worry:** 13% respondents rated this skill as a 2, suggesting a relatively lower level of worry but still recognizing a deficiency.

Implications for training and development:

- Specific training on contaminant analysis: There is a clear need for specialized training programs that focus on the examination and evaluation of potentially harmful substances or impurities in food products.
- Certification programs: Developing certification programs to ensure comprehensive understanding and compliance with quality standards and contaminant analysis can help standardize practices.
- Practical workshops: Workshops and practical training sessions can provide practical knowledge and real-world applications to help food industry professionals analyze and manage contaminants effectively.
- Continuing education: Regular updates and continuing education on changes in regulations and best practices related to contaminant analysis will be beneficial.

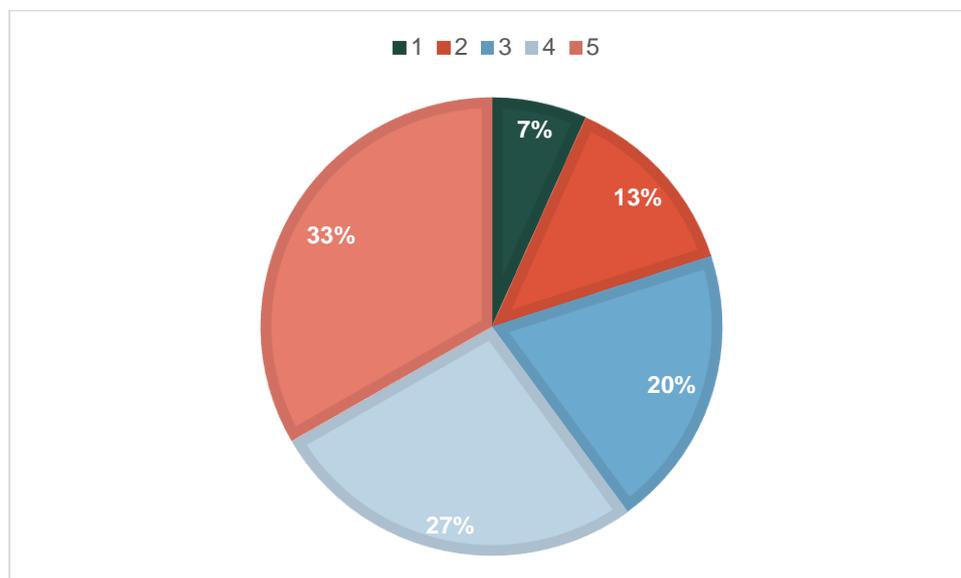
2.2.3. Mapping the skills landscape in the agrifood sector: bioeconomy

The analysis of bioeconomy and the skills required by the labor market is crucial for understanding how the industry is evolving and how workers' competencies align with market demands. Bioeconomy, which focuses on the sustainable use of biological resources to produce food, energy, chemicals, and materials, is experiencing significant growth as efforts are made to reduce reliance on non-renewable resources and mitigate environmental impacts.

This analysis focuses on identifying the skills that workers in the field of bioeconomy may lack and that are required by the labor market. These skills are essential to ensure the competitiveness and sustainability of the industry, as well as to drive innovation and development in this constantly evolving field. By assessing the mentioned skills and their relevance in the labor market, key areas for professional development and training can be identified, both for current workers and those seeking to enter this growing sector.

Bioeconomy, as a paradigm that seeks the sustainable utilization of biological resources to produce goods and services, demands a blend of specialized skills for its development and progress. In this detailed analysis, we will examine the labor market's perception of various critical skills for bioeconomy, ranging from quality management to waste flow analysis. Through a comprehensive review of the responses provided for each skill, we aim to identify trends, patterns, and areas of focus within the context of bioeconomy.

Regarding the analysis of "Specific skills for the bioeconomy - 'Quality management, quality assurance and quality control, incl. sensory evaluation and qualities'", we obtain the following results:



Graphic 28. Quality management, quality assurance and quality control

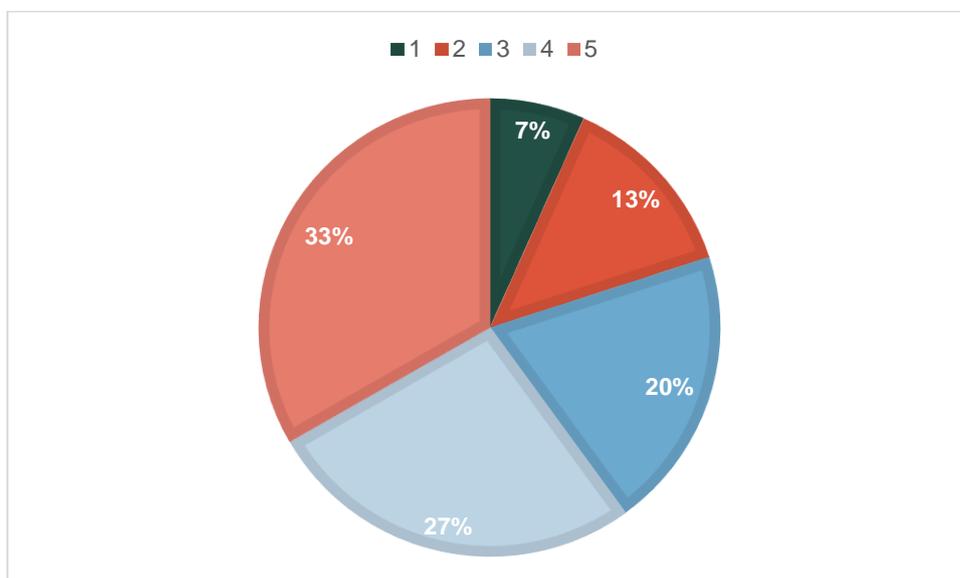
1. Distribution of Responses:

- The largest group of respondents (20%) rated this skill at level 3, indicating a moderate deficiency in the ability to manage quality, ensure quality assurance, and perform quality controls.
 - 13% respondents rated this skill at level 2, suggesting that a significant number of people see some deficiency but not at a critical level.
 - 33% respondents rated this skill at level 4, indicating notable concern about the lack of these skills.
 - 33% respondents rated this skill at level 5, highlighting a critical need for improvement for a smaller but significant portion of respondents.
 - 7% respondents rated this skill as 1, suggesting that a small group feels very confident in their quality management skills.
2. **Moderate deficiency:** The majority rating this skill as level 3 suggests a recognized need for improvement in quality management, quality assurance, and quality control, but is not considered the most urgent deficiency.
 3. **Important need for criticism:** The combination of respondents who rated this skill as 4 or 5 (60%) shows that a substantial portion of respondents consider these skills to be significantly or critically lacking.
 4. **Lower levels of concern:** 13% of respondents rated this skill as 2, indicating that a good number of respondents recognize some deficiency but do not consider it very critical.

Implications for training and development:

- Improved training programs: There is a clear need for training programs that focus on quality management, quality assurance and quality control, including evaluation and sensory qualities.
- Comprehensive quality assurance workshops: Workshops that provide practical experience and real-world applications can help close the gap in practical skills.
- Continuous improvement initiatives: Implementing continuous improvement initiatives and regular audits can help maintain high standards and keep skills up to date.
- Certification and Standardization: Develop certification programs that ensure the comprehensive understanding and implementation of quality management practices.

Regarding the analysis of “Specific competencies for the bioeconomy - **'Food safety management, food hygiene and food safety control'**” we obtain the following results:



Graphic 29. Food safety management, food hygiene and food safety control

1. Distribution of responses:

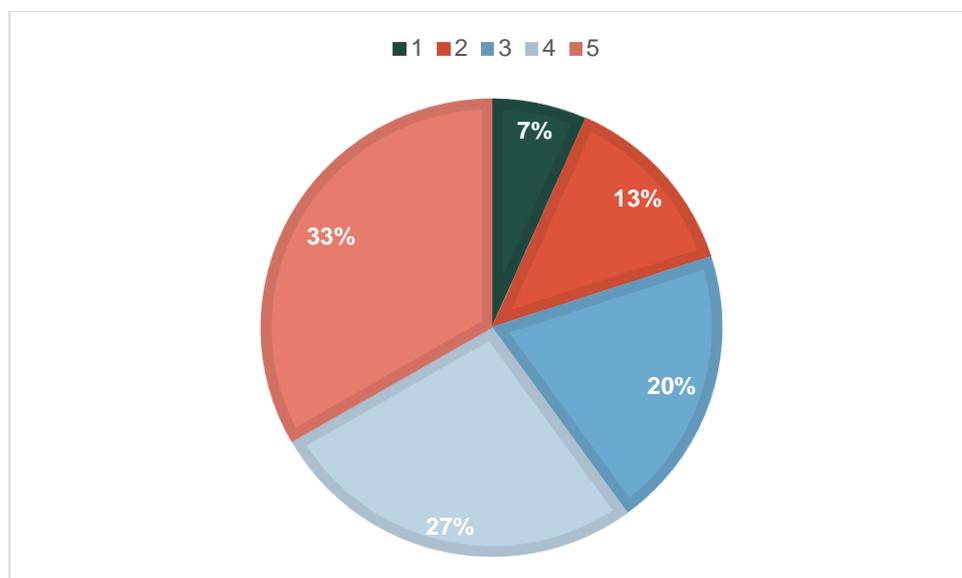
- The largest group of respondents (52) rated this skill at level 2, indicating a recognition of some deficiency in food safety management, food hygiene and food safety control, but not in a critical level.
- 51 respondents rated this skill at level 3, suggesting a moderate need for improvement.
- 34 respondents rated this skill as 1, showing a good level of confidence in their existing skills.
- 28 respondents rated this skill as 4, indicating notable concern about the lack of these skills.
- 24 respondents rated this skill as a 5, highlighting a critical need for improvement for a smaller but significant portion of respondents.

2. **Moderate deficiency:** Most rate this skill as level 2 and 3 suggests a recognized need for improvement but is not considered the most urgent deficiency.
3. **Significant need for criticism:** The combination of respondents who rated this skill as a 4 or 5 (52) shows that a substantial portion of respondents consider these skills to be significantly or critically lacking.
4. **Lower levels of concern:** 34 respondents rated this skill as 1, indicating that a small group feels very confident in their food safety management skills.

Implications for training and development:

- Improved training programs: There is a clear need for specific training programs that focus on food safety management, food hygiene and food safety control.
- Practical workshops: Workshops that provide practical experience in food safety protocols can help close the gap in practical skills.
- Periodic audits and evaluations: Regular implementation of food safety audits and evaluations can help maintain high standards and identify areas for improvement.
- Certification programs: Developing certification programs that ensure comprehensive understanding and implementation of food safety management practices can be beneficial.

Regarding the analysis of "**Specific skills for bioeconomy - Food security**", we found the following answers:



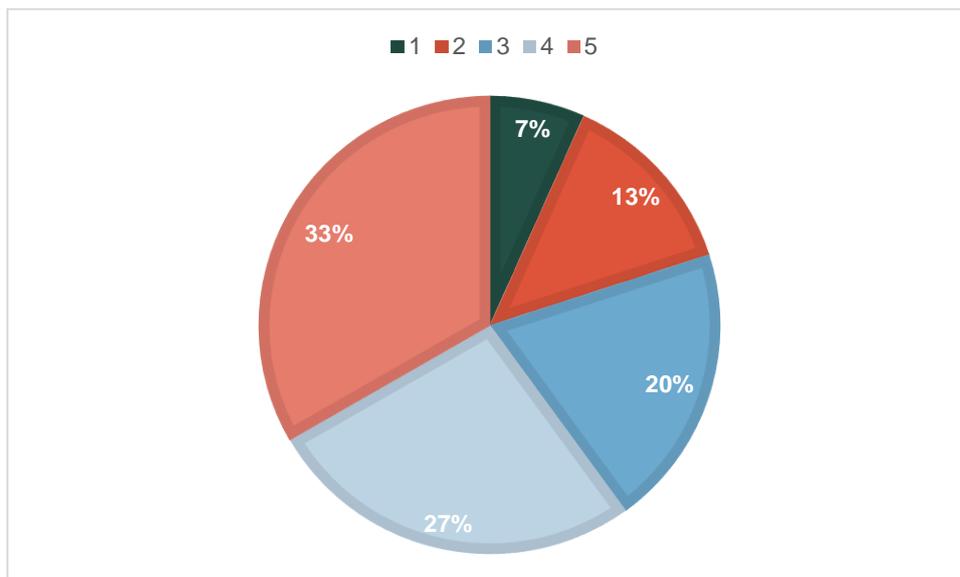
Graphic 30. Food security

1. Distribution of Responses:

- Most of respondents (49) classified this skill as level 2, suggesting that they consider it important, but not essential.

- A similar number of respondents (48) classified it as level 3, indicating that the perception of its importance is close to level 2.
 - A significant number of respondents (37) classified it as level 1, suggesting that they consider it to be a very important skill.
 - A smaller group of respondents (30) rated it as level 4, suggesting that some perceive the skill to be less crucial.
 - The smallest number of respondents (22) classified it as level 5, which indicates that a minority perceives this skill as the most absent.
2. **Mixed Perceptions:** Responses vary from levels where the skill is perceived as essential (1) to levels where it is seen as less crucial (5), suggesting a diversity of opinions among respondents.
 3. **Relative Importance:** Although most of respondents do not consider this skill to be the most absent, a considerable proportion classifies it at levels 2 and 3, suggesting a general perception of importance, but not as the main deficiency.

Regarding the analysis of the question about specific skills for the bioeconomy in relation to the "Life Cycle Analysis (LCA)", we obtain the following results:

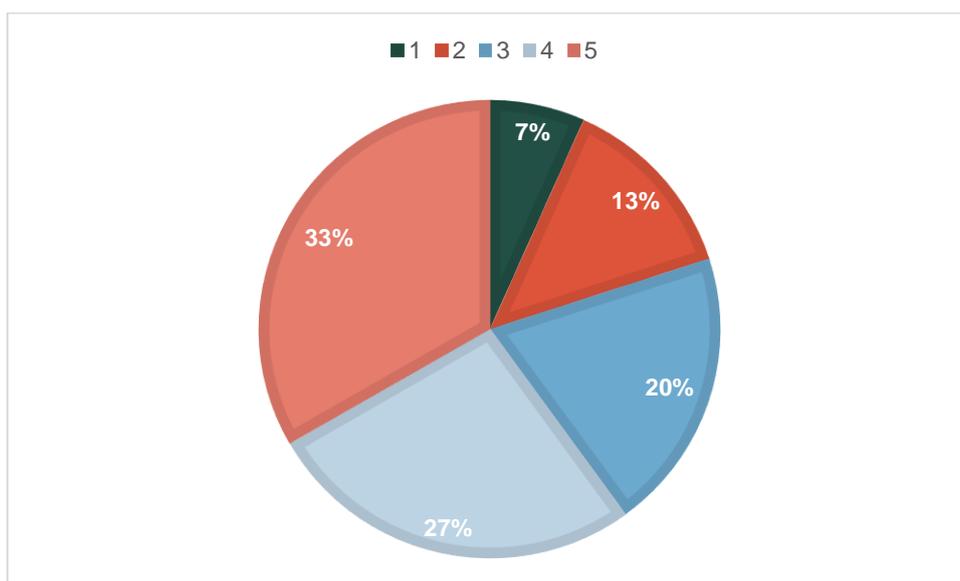


Graphic 31. LCA

1. **Distribution of Responses:**
 - Most respondents (56) classified this skill as level 3, suggesting a general perception of importance, but not as the main deficiency.
 - A significant number of respondents (46) rated it as level 4, indicating that some perceive the skill to be less crucial, but still important.

- A considerable number of respondents (38) classified it as level 2, suggesting that they consider it important, but not essential.
 - The smallest number of respondents (17) classified it as level 1, which indicates that a minority perceives this skill as the least absent.
 - A significant number of respondents (33) classified it as level 5, suggesting that a substantial portion consider this skill to be one of the most lacking.
2. **Mixed Perceptions:** Responses vary from levels where the skill is perceived as essential (1) to levels where it is seen as less crucial (5), suggesting a diversity of opinions among respondents.
 3. **Relative Importance:** Although most respondents do not consider this skill to be the most absent, a considerable proportion classify it at levels 4 and 5, suggesting significant concern about the lack of this skill in the context of the bioeconomy.

Regarding the analysis of the question on specific skills for the bioeconomy in relation to the "Analysis of waste streams", we found the following results:



Graphic 32. Analysis of waste streams

1. Distribution of Responses:

- Most respondents (68) classified this skill as level 3, suggesting a general perception of importance, but not as the main deficiency.
- A significant number of respondents (42) rated it as level 4, indicating that some perceive the skill to be less crucial, but still important.
- A considerable number of respondents (37) classified it as level 2, suggesting that they consider it important, but not essential.

- The smallest number of respondents (1) classified it as level 1, which indicates that a minority perceives this skill as the least absent.
- A significant number of respondents (32) classified it as level 5, suggesting that a substantial portion consider this skill to be one of the most lacking.
- 2. **Mixed Perceptions:** Responses vary from levels where the skill is perceived as essential (1) to levels where it is seen as less crucial (5), suggesting a diversity of opinions among respondents.
- 3. **Relative Importance:** Although most respondents do not consider this skill to be the most absent, a considerable proportion classify it at levels 4 and 5, suggesting significant concern about the lack of this skill in the context of the bioeconomy.

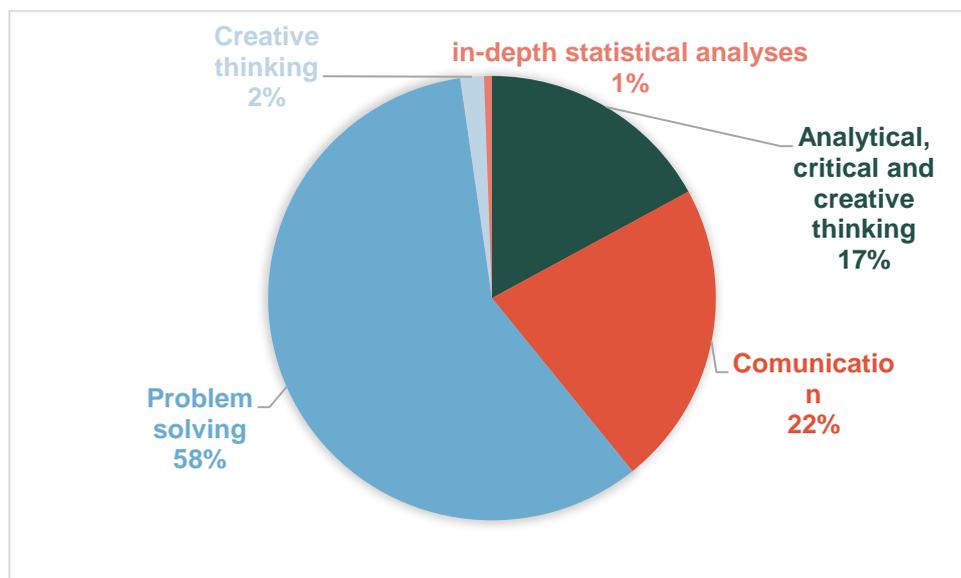
2.2.4. Mapping the skills landscape in the agrifood sector: soft skills

Soft skills play a fundamental role in professional success in any field, and the bioeconomy is no exception. These skills, which range from effective communication to problem-solving and teamwork, are increasingly valued by the labor market due to their ability to complement technical skills and enhance workplace efficiency and productivity.

In this analysis, we will examine the soft skills identified as lacking by workers and required by the labor market in the context of the bioeconomy. Understanding these needs will help identify key areas where workers may need development and improve their readiness to meet the demands of the constantly evolving bioeconomic industry.

In the dynamic environment of the bioeconomy, where innovation and sustainability are fundamental pillars, business and entrepreneurial skills play a crucial role in organizational success. As this industry continues to evolve, it becomes necessary to identify the skills that workers may lack and those that the labor market demands most urgently. By exploring the business and entrepreneurial skills deemed essential in the bioeconomy, as well as those currently absent among workers or in high demand by the labor market, we can better understand the challenges and opportunities faced by professionals and businesses in this rapidly changing sector.

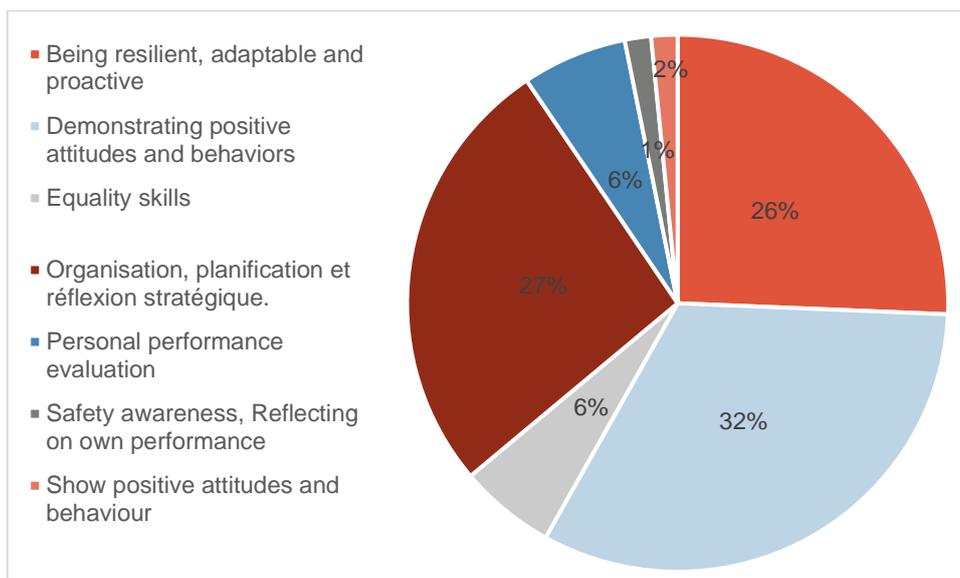
Regarding the question about specific **soft skills related to fundamental skills**, it is necessary to consider the answers provided by respondents that indicate the skills that are missing in workers and/or that are required by the labor market.



Graphic 33. Specific soft skills

1. **Problem Solving:** The problem-solving skill was the most frequently mentioned, with a total of 103 responses. This high frequency suggests that the ability to effectively address problems is considered critical by both respondents and the labor market.
2. **Communication:** Communication skill was mentioned in 39 responses, indicating that it is a skill widely recognized as necessary for success in the workplace. Effective communication is essential to collaborate, convey ideas, and resolve conflicts in diverse work environments.
3. **Analytical, Critical and Creative Thinking:** These skills were mentioned in a total of 30 responses, indicating an appreciation for the importance of thinking analytically, critically and creatively in today's work environment. These skills are essential for problem solving and generating new ideas and innovative solutions.
4. **Creative Thinking:** Although mentioned in only 3 responses, creative thinking was still identified as a desired skill by the labor market. The ability to think creatively can lead to innovation and the development of original solutions to challenges.
5. **In-depth Statistical Analyzes:** Mentioned in only 1 response, the ability to perform in-depth statistical analyzes appears to be less commonly recognized as necessary by the job market.

To analyze this question about the most missing skills in **self-management skills**, it is crucial to consider the answers provided by respondents indicating the skills they perceive to be most missing.



Graphic 34. Self-management skills

1. Demonstrating Positive Attitudes and Behaviors:

- Most respondents (62) identified demonstrating positive attitudes and behaviors as the most lacking skill in self-management.
- This suggests that there is a perceived need to promote positive mindsets and constructive behaviors in the workplace.

2. Organization, Planning and Strategic Reflection:

- A significant number of respondents (51) highlighted organization, planning and strategic reflection as skills missing in self-management.
- The ability to effectively manage time, set goals and reflect on progress is essential for effective self-management.

3. Being Resilient, Adaptable and Proactive:

- About half of the respondents (49) mentioned resilience, adaptability and proactivity as missing skills in self-management.
- These skills are essential to face challenges, adapt to changes and take the initiative in continuous improvement.

4. Equality Skills:

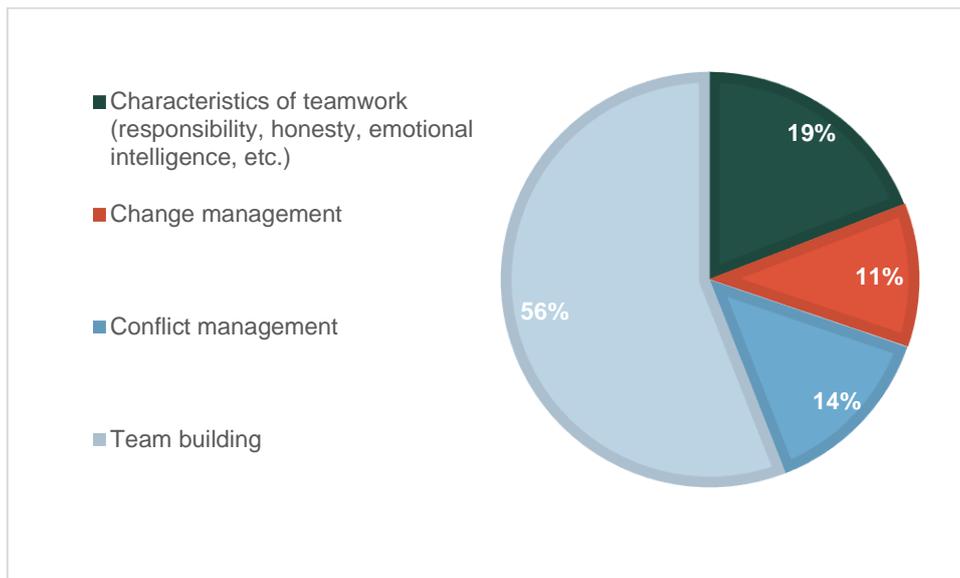
- Although less mentioned, a notable number of respondents (11) identified equality skills as missing in self-management.
- This may include the ability to treat everyone fairly and equitably, as well as promote diversity and inclusion in the workplace.

5. Personal Performance Evaluation:

- A moderate number of respondents (12) mentioned personal performance evaluation as a missing skill in self-management.

- This suggests a perceived need for skills to objectively evaluate one's own performance and look for opportunities for improvement.
- 6. **Safety Awareness, Reflecting on Own Performance:** Mentioned in a limited number of responses (3 each), safety awareness and reflecting on one's own performance are less frequently considered missing skills in self-management.

To analyze this question about the most missing skills in **teamwork and interpersonal skills**, it is essential to consider the answers provided by respondents that indicate the skills perceived as most absent.



Graphic 35. Missing skills in teamwork and interpersonal skills

1. Team Building:

- The overwhelming majority of respondents (85) identified team building as the most lacking skill in teamwork and interpersonal skills.
- This suggests a perceived need to improve the ability to form effective teams and foster collaboration and cohesion among team members.

2. Characteristics of Teamwork (responsibility, honesty, emotional intelligence, etc.):

- A significant number of respondents (29) highlighted teamwork characteristics, such as responsibility, honesty and emotional intelligence, as missing skills in this context.
- These skills are essential to establish relationships of trust and work effectively as a team.

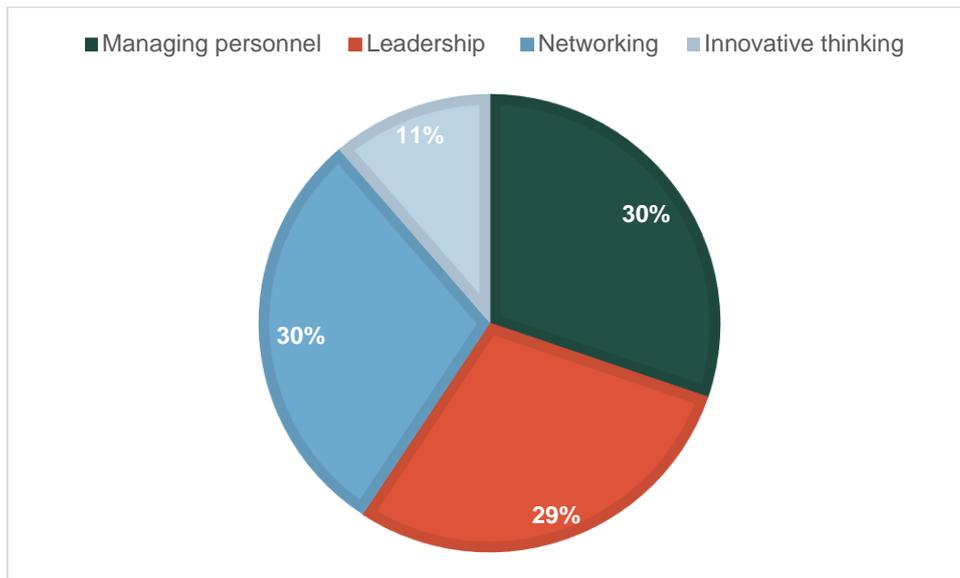
3. Conflict Management:

- A notable number of respondents (21) mentioned conflict management as a missing teamwork skill.
- The ability to effectively manage conflicts and resolve disputes constructively is essential to maintaining a harmonious and productive work environment.

4. Change Management:

- Mentioned in a smaller number of responses (17), change management was also identified as a missing skill in teamwork and interpersonal skills.
- The ability to manage and adapt to change effectively is crucial in dynamic work environments and in multidisciplinary teams.

To analyze this question about the most missing skills in **business soft skills**, it is important to consider the answers provided by respondents that indicate the skills perceived as most missing.



Graphic 36. Missing skills in business

1. Personnel Management:

- People management was identified by most respondents (75) as the most missing skill in business soft skills.
- This highlights the perceived importance of skills to effectively manage staff, including supervision, motivation and team development.

2. Leadership:

- Leadership was mentioned in a close number of responses (72), suggesting a significant need for leadership skills in the business environment.
- These skills are essential to inspire and guide teams towards achieving organizational goals and objectives.

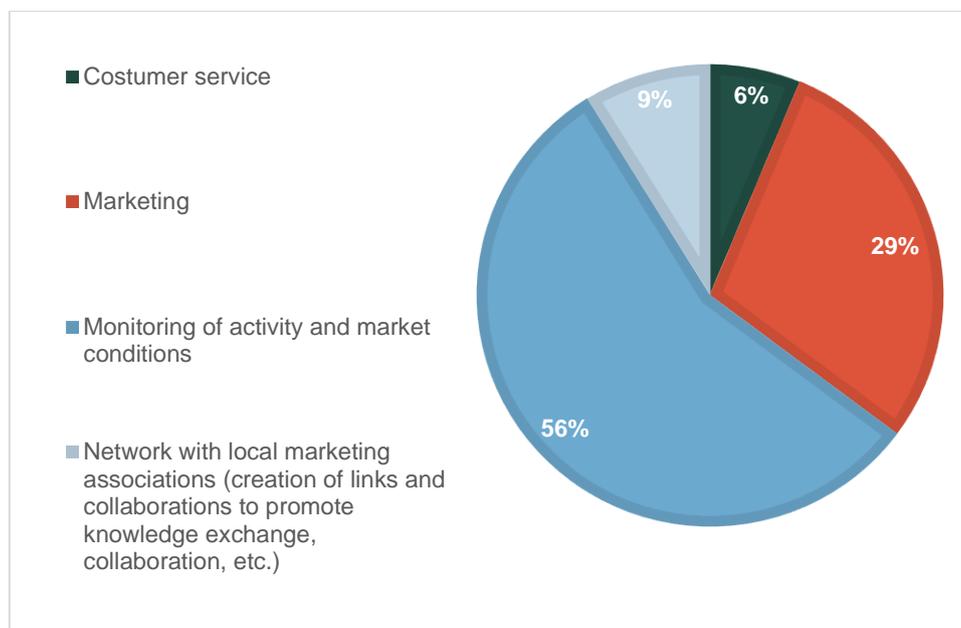
3. Networking:

- The ability to establish and maintain networks was identified by a substantial number of respondents (73) as a missing skill in business soft skills.
- The ability to build strong professional relationships can be crucial to professional growth and business opportunities.

- 4. Innovative thinking:** Although less mentioned than people management, leadership and networking skills, innovative thinking was also identified by a significant number of

respondents (28) as a missing skill in business soft skills. This skill is important to foster creativity and generate new ideas and solutions in the business environment.

To analyze this question about the most missing skills in **business and entrepreneurship skills**, it is crucial to consider the answers provided by respondents indicating the skills perceived to be most missing.



Graphic 37. Missing skills in business and entrepreneurship skills

1. Monitoring Activity and Market Conditions:

- The overwhelming majority of respondents (89) identified monitoring market activity and conditions as the most missing skill in business and entrepreneurship skills.
- This suggests a perceived need to improve the ability to analyze the market and understand trends and opportunities in an ever-changing business environment.

2. Marketing:

- A significant number of respondents (46) highlighted marketing as a missing skill in this context.
- This underlines the importance of understanding and using effective marketing strategies to promote products or services and reach the target audience.

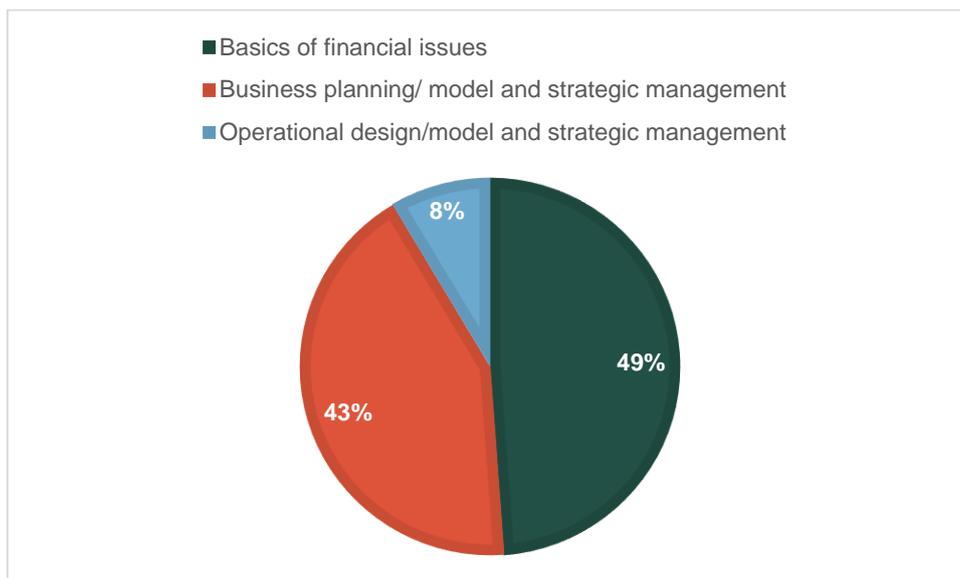
3. Network with Local Marketing Associations:

- A smaller number of responses (14) mentioned networking with local marketing associations as a missing skill in business and entrepreneurship skills.
- Although less mentioned than market monitoring and marketing skills, this skill is still considered important for establishing connections and collaborations in the field of marketing.

4. Customer Service:

- Although mentioned in fewer responses than activity monitoring and marketing skills, customer service was also identified by some respondents (10) as a missing skill.
- The ability to provide excellent customer service is essential to building strong customer relationships and fostering brand loyalty.

To analyze the responses provided regarding the most missing skills in **business and entrepreneurship skills**, specifically financial skills, it is essential to examine respondents' perceptions of core financial competencies and strategic business planning and management.



Graphic 38. Missing financial skills

1. Basic Concepts of Financial Affairs:

- Most respondents (63) identified the basics of financial matters as the most lacking skills in this area.
- This suggests a perceived need for understanding and competence in fundamental areas such as accounting, budgeting and cash flow.

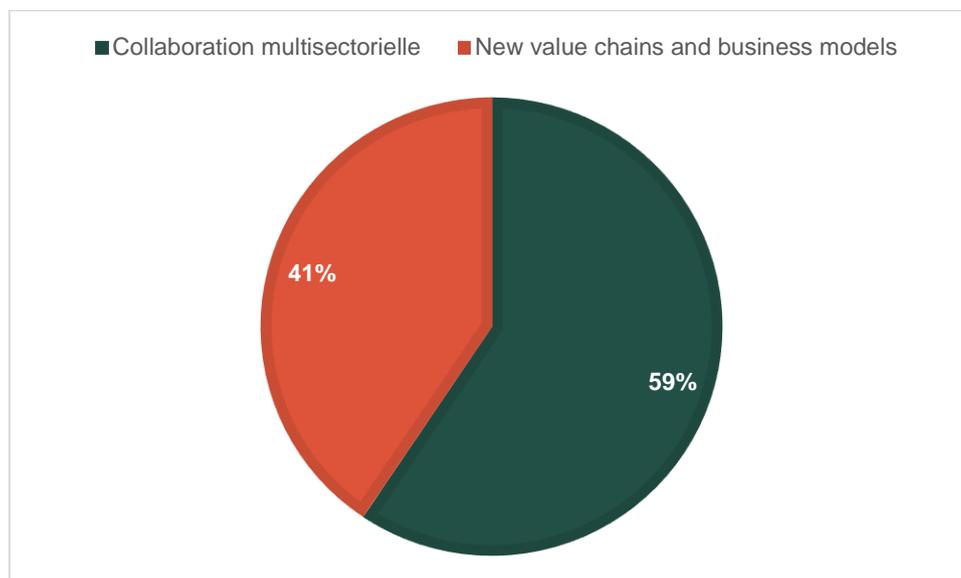
2. Business Planning/Model and Strategic Management:

- A significant number of respondents (55) highlighted business planning/modeling and strategic management as missing skills in financial skills.
- This highlights the importance of developing skills to develop solid business plans and strategically manage financial resources for long-term business success.

3. Design/Operating Model and Strategic Management:

- Fewer respondents mentioned design/operating model and strategic management (11) as missing skills in the financial context.
- However, it is still a prominent concern, suggesting a perceived need for skills to effectively design and manage business operations in line with strategic objectives.

To analyze this information on the most missing skills in creating fair, **collaborative and competitive value chains** in business and entrepreneurship skills, it is crucial to consider the answers provided by respondents that indicate the skills perceived as most missing.



Graphic 39. Collaborative and competitive value chains

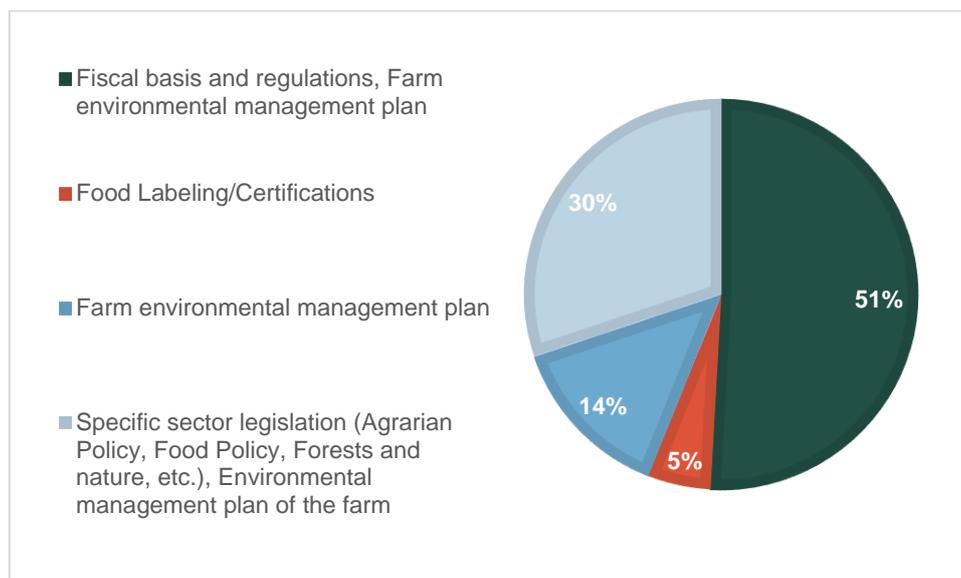
1. Multisector Collaboration:

- Multi-sector collaboration was identified by most respondents (101) as the most missing skill in creating fair, collaborative and competitive value chains.
- This highlights the perceived importance of working collaboratively with diverse stakeholders across different sectors to create more inclusive and sustainable value chains.

2. New Value Chains and Business Models:

- A significant number of respondents (69) mentioned the creation of new value chains and business models as a missing skill in this context.
- This underlines the importance of developing skills to identify emerging market opportunities, design innovative business models and adapt to changes in the business environment.

In the analysis of the question about business and **entrepreneurship skills** that are identified as the most lacking in the agri-food sector and the bioeconomy, we found the following results:



Graphic 40. Entrepreneurship skills

1. **Compliance with policies and legislation:** This skill is crucial to ensure that agricultural operations comply with relevant government regulations and environmental policies. Proper compliance can involve a deep understanding of policies related to agriculture, food security, the environment, and natural resource management. Failure to do so can result in fines, legal sanctions, and damage to the company's reputation.
2. **Environmental management on agricultural operations:** Effective environmental management is essential to minimize the environmental impact of agricultural operations and ensure long-term sustainability. This may include implementing on-farm environmental management plans, complying with environmental regulations, and adopting sustainable agricultural practices. Lack of this ability can lead to soil degradation, water pollution and loss of biodiversity.
3. **Tax and regulatory planning:** Understanding and complying with tax and regulatory regulations is essential to the financial viability and legal compliance of agricultural operations. This may include knowledge of tax laws related to agriculture, tax incentives available to farmers, and reporting obligations. Lack of this skill can result in financial problems, such as fines for tax evasion or poor tax planning.
4. **Food certifications and labeling:** Food certification and labeling are important to ensure the safety and quality of agricultural products. This may include understanding organic certification standards, nutrition labeling requirements, and food safety regulations. Lack of this skill can lead to the sale of non-compliant products, which could affect brand reputation and consumer trust.

The last question of the questionnaire reveals several additional areas of skills that workers identify as missing or required by the labor market. Here is an analysis of the mentioned skills:

1. **Green financing:** With increasing attention to environmental sustainability, access to green financing has become crucial for companies seeking to implement more sustainable business practices. This may involve understanding the green financing mechanisms available and how to access them for projects related to agriculture and the bioeconomy.
2. **Access to international markets:** The ability to access international markets is essential to expanding the reach of agricultural products and the bioeconomy. This may require skills in international trade, knowledge of trade regulations, and the ability to adapt to the demands and expectations of international markets.
3. **Valorization of waste and biomass resources:** In a context of circular economy and sustainability, the valorization of waste and biomass resources has become increasingly important. This involves the ability to identify and exploit opportunities to reuse and recycle agricultural materials and biomass in a profitable and sustainable manner.
4. **Fluent English:** In a globalized world, fluent English is a valuable skill in many sectors, including agriculture and the bioeconomy. It facilitates communication with international business partners, participation in international conferences and events, and access to online resources and knowledge.
5. **Plant innovation and increased productivity:** The ability to innovate on the plant and increase productivity is crucial to maintaining competitiveness in the international market. This may require skills in research and development, advanced agricultural technology and efficient resource management.
6. **Preservation and protection of biodiversity:** Given the importance of biodiversity in agriculture and the bioeconomy, its preservation and protection are critical skills. This implies knowledge of conservation practices and sustainable management of agricultural ecosystems.
7. **Mindset for green transition:** Mindset and attitude towards transitioning towards more sustainable practices are critical to success in an evolving agricultural environment. This may include a willingness to adopt new technologies, adapt to changes in agricultural practices, and commit to environmental sustainability.

3. Conclusion

The analysis of the general questions of the questionnaire provides a comprehensive view of the composition and characteristics of the respondents in the study on vocational education and training in the agri-food sector. A survey was carried out, and 196 responses were received from various countries. Spain and France jointly contribute almost half of the total responses (45.92%). Italy and Belgium also show a significant participation, representing 33.17% of the responses, which underlines the relevance of these countries in the context of the agrifood sector. Portugal and Greece contribute approximately a fifth of the responses (20.41%), with

Portugal slightly ahead. Denmark shows the lowest participation with only one response (0.51%).

Most of the responses come from workers, who constitute 54.08% of the total. This highlights the importance of workers' skills and needs in the analysis. Employers also have a significant presence, representing 44.90% of responses, underscoring the importance of understanding the perspectives of those who manage and direct companies in the agri-food sector. The students' responses are minimal, representing only 1.02%.

Regarding the operation in the primary sector, the majority of respondents (56.12%) are dedicated to production, which highlights the importance of focusing on efficiency, innovation and sustainable practices within this primary operation. Services represent 11.73% of responses, showing the importance of service-oriented functions in supporting the sector. Research and education make up 16.83% of the responses, emphasizing the continued need for innovation and dissemination of knowledge in the sector. Areas such as transformation and marketing, although less represented, still show their importance in adding value and promoting products within the agri-food chain. Processing and technical support have an equal representation of 2.55% each, suggesting niche but essential roles in the sector. Human resources has the lowest representation (1.53%), indicating a limited but necessary focus on personnel management and organizational development.

Regarding the educational level of the participants, the largest group of respondents (32.49%) have a master's degree, indicating a high level of advanced education among the participants. This suggests that many are well-prepared for specialist roles in the agri-food sector. Bachelor's degree holders represent 21.32% of respondents, demonstrating that a significant portion have completed college education, which is critical for entry-level professional roles. Both technical/vocational training and doctorates have an equal representation of 10.66%, highlighting the presence of people with specialized practical skills and those with the highest level of academic achievement. Respondents with only a secondary education represent 8.63%, reflecting a smaller but notable group that could play more basic or operational roles within the sector. The smallest category (0.51%) indicates a minimal presence of respondents without formal education.

These preliminary findings highlight the need for advanced training programs and continuing professional development opportunities, given the high educational level of the participants. The significant presence of people with technical and professional training underscores the importance of these programs in preparing a qualified workforce that can meet the practical

demands of the agri-food sector. The variety of educational backgrounds among respondents suggests that training programs should be inclusive and adaptable to address different educational levels and skill sets.

Analysis of the digital skills landscape within the agri-food sector highlights significant variations in digital competencies among workers, identifying critical gaps and training needs essential for the sector's digital transition. Despite the general reliance on basic digital communication tools, specific areas such as data management, digital entrepreneurship, and the use of advanced technologies such as robotic and sensor solutions show substantial shortcomings. These gaps underscore the urgency of targeted training programs to improve digital literacy and practical skills across the workforce.

The findings indicate that a considerable portion of respondents feel confident in their daily use of digital communication technologies, and the majority rate their competence as high. However, moderate to significant gaps persist for a notable segment, underscoring the need to improve digital communication skills. Regarding data management and analysis, the analysis reveals a mixed level of competence, and a substantial number of respondents identified significant gaps. This suggests an urgent need for training programs focused on practical skills in data interpretation, visualization, and statistical analysis using tools such as Excel.

Digital entrepreneurship is another area with marked skills gaps, with the majority of respondents indicating moderate to significant deficiencies. Training programs that prioritize practical skills in online business creation, digital marketing, and e-commerce management are crucial to closing these gaps. Similarly, in the case of digital information and services, many respondents show moderate to significant gaps, highlighting the need for training in online data retrieval, digital content consumption, and effective use of the Internet.

Analysis of digital product quality management systems reveals considerable need for improvement, with significant gaps in skills related to quality assurance, testing procedures and performance monitoring. Training programs should emphasize practical skills and real-world applications to address these deficiencies. Digital supplier management systems also show substantial gaps, with a notable portion of respondents indicating moderate to significant deficiencies. Training should focus on practical skills in supplier onboarding, performance monitoring, communication, risk assessment and collaboration within the digital supply chain.

In terms of farm management information systems, while some respondents feel competent, many indicate substantial gaps, requiring training in farm planning, resource optimization, and

data-driven decision making. Similarly, field operations management systems show significant gaps, with the need for practical skills to plan, monitor and optimize field activities through digital tools.

Analysis of digital soil nutrient monitoring systems reveals a high level of skill gaps, indicating an urgent need for training in monitoring, analysis and management of soil nutrient levels using digital tools. Furthermore, the use of robotic solutions in agriculture shows substantial gaps, and a significant portion of respondents do not feel prepared to use these advanced technologies. Training programs should prioritize hands-on experience with robotic technologies for tasks such as planting and harvesting.

On the other hand, the use of sensor solutions in agriculture highlights critical gaps, with many respondents indicating substantial shortcomings. Training programs should focus on practical skills to integrate and implement sensor technologies for data collection, monitoring and analysis to improve accuracy and efficiency in agricultural processes.

Regarding the efficient use of resources and logistics, the results reflect a moderate deficiency in these skills. The majority of respondents point out the need for improvement in this area, suggesting that it is essential to develop training programs that cover both basic and advanced training, allowing workers to optimize the use of resources and improve logistics management.

Regenerative and carbon farming practices also show a significant deficiency. A large number of respondents perceive a considerable need for training in these practices. Training in these areas should include intermediate and advanced knowledge to improve the understanding and application of regenerative and carbon capture techniques in agriculture.

Climate adaptation measures are another area where skills gaps are identified. Many respondents recognize a moderate and significant deficiency in this area. It is essential to develop training programs that include the assessment of climate risks and the implementation of adaptation strategies, providing workers with the necessary tools to face climate challenges.

In the area of crop modelling and simulation, respondents indicate a significant need for training. Training programs should focus on simulation techniques, data analysis and the use of relevant software, allowing workers to improve crop efficiency and productivity.

Sustainable water and energy management also requires attention. Respondents highlight the need for training in sustainable practices for the management of these resources. Training programs should cover both intermediate and advanced training, focusing on optimizing the use of sustainable resources and technologies.

Soil health management is another critical area with skill gaps. Respondents indicate a significant need for training in soil health principles, nutrient management techniques, and sustainable practices. It is crucial to develop specific programs to improve understanding and practical skills in this area.

The analysis of environmental policies shows a considerable deficiency in the understanding and application of national and international environmental policies. Educational programs should focus on improving knowledge of environmental policies and their implementation in the agri-food sector.

Corporate social responsibility (CSR) and sustainability reporting also present skills gaps. Respondents highlight the need for CSR training, including practical skills and communication strategies. Training programs should provide workers with the tools necessary to effectively develop and communicate CSR practices.

Regarding the identification of renewable energy systems, the results show a significant need for training. It is essential to develop specialized programs that cover the identification and implementation of renewable energy systems suitable for farms and commercial businesses, contributing to the sustainability of the sector.

Finally, organic production requirements are an area in which many workers indicate a moderate deficiency. Training programs should focus on improving understanding and compliance with organic production requirements, ensuring that workers can apply these practices effectively.

Based on the conclusions provided, **20 relevant skills have been found that students should acquire based on the skills gaps identified in the agri-food sector:**

1. Advanced data management and analysis: This skill involves the ability to manage and analyze data in advanced ways, including interpretation and visualization techniques to extract meaningful information and make informed decisions.

2. **Practical skills in data interpretation and statistical analysis using tools such as Excel:** Refers to the ability to practically interpret data and perform statistical analysis using tools such as Excel to identify patterns, trends and relationships in the data.
3. **Digital entrepreneurship:** This skill involves the ability to create and manage online businesses, including digital business creation, digital marketing, and e-commerce management.
4. **Online data retrieval and digital content consumption:** Refers to the ability to search for and access information online effectively, as well as consume digital content critically and selectively.
5. **Quality assurance and testing procedures for digital product management systems:** Implies the ability to guarantee quality and perform testing of digital products, including quality control procedures and functional testing.
6. **Practical skills in supplier management:** This skill involves the ability to manage suppliers effectively, including onboarding processes, performance monitoring and risk assessment.
7. **Farm planning and resource optimization through farm management information systems:** Refers to the ability to plan and optimize resources in agriculture using farm management systems that allow efficient planning and optimal management of resources.
8. **Field operations management using digital tools:** Implies the ability to manage operations in the field using digital tools to plan, monitor and optimize agricultural activities.
9. **Soil nutrient monitoring and management using digital solutions:** This skill involves the ability to monitor and manage soil nutrients using digital solutions to optimize crop performance and soil health.
10. **Hands-on experience with robotic technologies for agricultural tasks:** Refers to practical experience in the use of robotic technologies to perform agricultural tasks, such as planting and harvesting, with the aim of improving efficiency and productivity.
11. **Integration and implementation of sensor technologies for data collection and analysis:** Implies the ability to integrate and use sensor technologies for data collection and analysis in agriculture, in order to improve precision and efficiency in agricultural processes.
12. **Optimization of resource use and logistics management through advanced training programs:** Refers to the ability to optimize the use of resources and manage logistics efficiently through advanced training programs that provide the necessary skills to improve operational efficiency.
13. **Intermediate and advanced knowledge of regenerative and carbon farming practices:** This skill involves intermediate and advanced knowledge of regenerative and carbon capture agricultural practices, which are essential to promote sustainability and resilience in agriculture.

14. **Assessment of climate risks and implementation of adaptation strategies in agriculture:** Refers to the ability to assess climate risks and apply adaptation strategies in agriculture to face the challenges of climate change and guarantee food security.
15. **Crop modeling, simulation techniques, and relevant software applications:** Involves the ability to use models and simulation techniques to improve crop efficiency and productivity, as well as knowledge of software relevant to agriculture.
16. **Sustainable water and energy management practices:** This skill implies the ability to sustainably manage water and energy resources in agriculture, in order to minimize the environmental impact and guarantee efficiency in the use of resources.
17. **Principles of soil health management and nutrient management techniques:** Refers to knowledge of the principles of soil health management and nutrient management techniques to improve soil fertility and crop yields in a sustainable manner.
18. **Understanding and application of national and international environmental policies in agriculture:** Involves knowledge and application of national and international environmental policies in agriculture to ensure compliance with regulations and promote sustainable practices.
19. **Corporate social responsibility practices and sustainability reporting:** This skill involves understanding and applying corporate social responsibility practices and sustainability reporting to promote transparency and accountability in agriculture.
20. **Identification and implementation of renewable energy systems suitable for agricultural operations:** Refers to the ability to identify and use renewable energy systems suitable for agricultural operations, in order to reduce dependence on non-renewable energy resources and promote sustainability in agriculture.

These skills are essential to address the needs and challenges identified in the study on vocational education and training in the agri-food sector. Each of these skills contributes to closing the knowledge and skills gaps that currently exist in key areas such as data management, digitalization, environmental sustainability, resource management and the application of innovative technologies in agriculture.

Acquiring these skills will not only prepare workers and professionals to meet the current challenges of the agri-food sector but will also position them to take advantage of emerging opportunities in an increasingly digitalized and sustainable environment. Furthermore, these skills are essential to improve the efficiency, productivity, and resilience of the agricultural sector in the face of climate changes and global market demands.

4. Annexes

○ 4.A. Questionnaire



AGRIFOOD
4Future

AF4F_Questionnaire for skill needs assessment

This questionnaire is created in the framework of the project "[Agrifood for future](#)" co-funded by Erasmus+ Programme of the European Union. The aim of the questionnaire is to identify the skill gaps in workers including digital skills, capacities of managing sustainable farming models, green entrepreneurship, etc., as well as the skills requested by the labour market including hard and soft skills that are currently requested to ensure more sustainable farming practices.

Adreça electrònica *

Registra  com el correu electrònic que s'inclourà a la meua resposta

Information on data protection

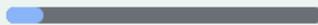
In compliance with what is established by the new General Data Protection Regulation, GDPR, 2016/679, on the Protection of Personal Data and Law 34/2002, on Information Society Services and Electronic Commerce, your data will be processed by AgriFood4Future, to manage its relationship with the entity, make communications about activities or other services that may be of interest to you and carry out internal studies and reports with the aim of improving its user services. Legitimation is based on consent. Your data will not be communicated unless there is a legal obligation. You can exercise your rights of access, rectification, cancellation, opposition, portability and limitation on your data by contacting memona.dalichampt@pole-valorial.fr. You can find additional information about data processing and the Privacy Policy on the website <https://agrifood4future.com/privacy-policy/>



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Següent



Pàgina 1 de 8

[Esborra el formulari](#)

General questions

Data Protection Agreement *

Based on the Regulation (EU) 2016/679 of the European Parliament and the of The Council of 27 April 2016 , on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) please confirm your consent to processing your answers so you can proceed with completing the questionnaire

What is your country? *

La vostra risposta _____

Which is you region? *

La vostra risposta _____

Which is your professional profile? *

- Worker
- Employer

Which is your Primary Sector of Operation? *

- Processing
- Production
- Marketing
- Inspection
- Altres: _____

What is your highest level of education? *

- No schooling completed
- High school
- Technical/Vocational training
- Bachelor's degree
- Master's degree
- Professional degree
- Doctorate
- Altres: _____

DIGITAL TRANSITION

Skills missing by workers and required by the labor market for the digital transition in the Agri-Food Sector. Please rate the following skills depending on the extent to which workers lack these skills and/or depending on what the labor market is looking for.

General digital skills - "Everyday usage of digital technology to communicate" (e.g. email, messaging apps, other digital communication tools)

	1	2	3	4	5	
the least missing	<input type="radio"/>	the most missing				

General digital skills - "Data handling and analysis" (e.g., excel for data interpretation, visualization, statistical analysis)

	1	2	3	4	5	
the least missing	<input type="radio"/>	the most missing				

Digitization for business - "Digital Entrepreneurship" (e.g., online business creation, digital marketing, e-commerce management, social media)

	1	2	3	4	5	
the least missing	<input type="radio"/>	the most missing				

Digitization for business - "Digital information and services" (e.g., online data retrieval, digital content consumption, internet use)

	1	2	3	4	5	
the least missing	<input type="radio"/>	the most missing				

Digital tools to support production and its management - "Digital product quality management systems" (e.g., implementation of digital quality assurance, testing procedures, performance monitoring)

1 2 3 4 5

the least missing the most missing

Digital tools to support production and its management - "Digital supplier management systems" (e.g., platforms for efficient supplier on-boarding, performance tracking, communication, risk assessment, and collaboration in the digital supply chain)

1 2 3 4 5

the least missing the most missing

Specific skills for smart farming - "Farm Management Information Systems (FMIS)" (e.g., technological tools and software facilitating farm planning, resource optimization, data-driven decision-making, and overall farm operation management)

1 2 3 4 5

the least missing the most missing

Specific skills for smart farming - "Field operations management systems" (e.g., digital tools for planning, monitoring, and optimizing field-based activities, including task scheduling, resource allocation, and real-time data tracking)

1 2 3 4 5

the least missing the most missing

Specific skills for smart farming - "Digital soil nutrient control systems" (e.g., technology for precise monitoring, analysis, and management of soil nutrient levels to optimize agricultural productivity and sustainability)

1 2 3 4 5

the least missing the most missing

Specific skills for smart farming - "Use of robotic solutions" (e.g., application of automated machinery and robotic technologies for tasks such as planting, harvesting, and other precision agricultural operations)

1 2 3 4 5

the least missing the most missing

Specific skills for smart farming - "Use of sensor solutions" (e.g., integration and deployment of sensors for data collection, monitoring, and analysis to enhance precision, efficiency, and decision-making in various agricultural processes)

1 2 3 4 5

the least missing the most missing

Specific skills for smart farming - Please mention other skills missing

La vostra risposta

GREEN TRANSITION AND SUSTAINABILITY OF FOOD SYSTEMS

Skills missing by workers and required by the labor market for the Green transition and the Sustainability of Food Systems.

Please rate the following skills depending on the extent to which workers lack these skills and/or depending on what the labor market is looking for.

Sustainable management of resources - "Efficient use of resources and logistics of food industry" (e.g., strategic management of inputs, production processes, and distribution channels to optimize resource utilization, reduce waste, and enhance overall supply chain efficiency)

	1	2	3	4	5	
the least missing	<input type="radio"/>	the most missing				

Sustainable management of resources - "Regenerative practices and/or carbon farming practices" (e.g., sustainable agricultural methods focused on soil health, biodiversity, and carbon sequestration to promote ecological resilience and mitigate climate change impacts)

1 2 3 4 5

the least missing the most missing

Sustainable management of resources - "Climate adaptation measures" (e.g., strategies and actions implemented to adjust agricultural practices and systems in response to climate change)

1 2 3 4 5

the least missing the most missing

Sustainable management of resources – “Crop modeling and simulation: to simulate the growth, yield, and performance of crops under different climate scenarios”

1 2 3 4 5

the least missing the most missing

Sustainable management of resources - "Improved system productivity including water, and energy sustainable management" (e.g., enhancing overall efficiency in resource usage, particularly focusing on sustainable practices for water and energy management)

1 2 3 4 5

the least missing the most missing

*

Sustainable management of resources – “Soil health management: Soil ecosystems, nutrient cycling, and Implementation of practices to improve soil health.”

1 2 3 4 5

the least missing the most missing

Sustainable management of resources - "Soil properties, irrigation, erosion etc."

1 2 3 4 5

the least missing the most missing

Sustainable Business and Governance Models and Environmental Policy -
"National, EU and international environmental policies, regulation, subsidy and support programmes"

1 2 3 4 5

the least missing the most missing

Sustainable Business and Governance Models and Environmental Policy -
"Corporate social responsibility associated with sustainability reporting/press releases" (e.g., commitment to ethical and sustainable practices communicated through transparent reporting and public relations efforts)

1 2 3 4 5

the least missing the most missing

Energy - "Identification of renewable energy systems suitable for farm/ business enterprise"

1 2 3 4 5

the least missing the most missing

Specific skills for sustainable food industry - "Organic production requirements" (e.g., adherence to guidelines and standards that govern organic farming, emphasizing natural processes, soil health, and avoiding synthetic chemicals)

1 2 3 4 5

the least missing the most missing

Specific skills for sustainable food industry - "Analysis of contaminants" (e.g., examination and assessment of potentially harmful substances or impurities, ensuring product safety and compliance with quality standards)

1 2 3 4 5

the least missing the most missing

BIOECONOMY

Bioeconomy skills missing by workers and required by the labor market.
Please rate the following skills depending on the extent to which workers lack these skills and/or depending on what the labor market is looking for.

Specific skills for bioeconomy - "Quality management, quality assurance and quality control incl. Sensory evaluation and qualities" (e.g., comprehensive oversight of processes to ensure high standards)

	1	2	3	4	5	
the least missing	<input type="radio"/>	the most missing				

Specific skills for bioeconomy - "Food safety management, food hygiene and food safety control"

	1	2	3	4	5	
the least missing	<input type="radio"/>	the most missing				

Specific skills for bioeconomy - "Food security"

	1	2	3	4	5	
the least missing	<input type="radio"/>	the most missing				

Specific skills for bioeconomy - "Life Cycle Analysis (LCA)"

	1	2	3	4	5	
the least missing	<input type="radio"/>	the most missing				

Specific skills for bioeconomy - "Waste stream analysis" *

	1	2	3	4	5	
the least missing	<input type="radio"/>	the most missing				

SOFT SKILLS

Soft skills missing by workers and required by the labor market. Please select the skills missing by workers and/or required by the labor market.

Specific soft skills - "Fundamental soft skills" *

- Communication
- Problem solving
- Analytical, critical and creative thinking
- Autres: _____

Specific soft skills - " Self-management skills" *

- Demonstrating positive attitudes and behaviors
- Being resilient, adaptable, and proactive
- Organisation, planning, visioning and strategic thinking
- Equality skills
- Safety awareness
- Reflecting on own performance
- Autres: _____

Specific soft skills - "Team working and interpersonal skills" *

- Team building
- Teamwork character (responsibility, honesty, empathy etc)
- Conflict management
- Change management
- Autres: _____

Specific soft skills - "Business soft skills" *

- Providing leadership
- Managing personnel
- Networking
- Innovative thinking
- Altres: _____

BUSINESS & ENTREPRENEURSHIP SKILLS

Skills missing by workers and required by the labor market. Please select the skills missing by workers and/or required by the labor market.

Business & Entrepreneurship skills - "Marketing skills" *

- Monitoring market activity and conditions
- Direct marketing in agriculture, food industry, and agroforestry
- Sales and marketing
- Network with local marketing associations (establish connections and collaborations to foster knowledge exchange, partnerships, etc.)
- Selling skills
- Costumer service
- Altres: _____

Business & Entrepreneurship skills - "Financial skills" *

- Business planning/ model and strategic management
- Basics of financial issues
- Purchasing/renting
- Altres: _____

Business & Entrepreneurship skills - "Fair, collaborative and competitive value chains" *

- Cooperatives
- New value chains and business models
- Collaboration/cooperation across all sectors in the food chain
- Altres: _____

Business & Entrepreneurship skills - "Research, development and innovation" *

- Social expectations/Consumers science & behaviour
- Interdisciplinary knowledge to assess the whole value chain
- Funding opportunities
- Product development incl. Laboratory and desk research
- Project management
- Knowledge transfer in the bioeconomy chains
- Innovation management and its deployment on-site
- Scale-up issues per sector (technical availability, financial opportunities etc.)
- Protection of intellectual property rights
- Autres: _____

Business & Entrepreneurship skills - "Compliance with policy and legislation" *

- Fiscal basis and regulations
- Specific sector legislation (Agricultural Policy, Food policy, Forest and nature etc)
- Food Labelling/Certifications
- Farm environmental management plan
- Autres: _____

Other skills

Do you identify other skills that are missing by workers and/or required by the labor market?

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