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**FIELDs – addressing the current and Future skill needs for sustainability, digitalization, and the bio-Economy in agriculture: European skills agenda and Strategy**

## Introduction

This information is being gathered as part of a research project on current and future skill needs of workers in the Agri-food and Forestry sectors. The research project (FIELDs, ERASMUS+ SSA project) is being carried out by a consortium of 30 partners from 12 European countries.

Your views will help us to further develop training curricula in the context of the ERASMUS+ SSA project "FIELDs" which will eventually be used in training institutions in different European countries. You may, in the future, have some benefits from participating in this study as its aim is to ultimately help workers in the Agri-food and Forestry sectors to be better trained for current and future market and social demands.

The information provided below will remain totally confidential and will only be used in an aggregate manner to identify underlying trends and demands across European member states.

Please feel free to pass this survey on to as many persons within your broader value chain / stakeholder network, that operate in areas of Sustainability, Digitalisation, Bioeconomy, Soft Skills and Business/Entrepreneurship Skills.

Your time and interest in completing the survey is much appreciated.

***If there is any aspect of the project that you would like to discuss further, or feel you may need support with, please do not hesitate to get in touch via email to: [francesca.sanna@unito.it](mailto:francesca.sanna@unito.it)***

***For queries relating this Survey, please email: [billy.goodburn@icos.ie](mailto:billy.goodburn@icos.ie)***

**Project Erasmus+ FIELDs  
Agreement No. 612664-EPP-1-2019-1-IT-EPPKA2-SSA-B  
Task 1.4 Participating Countries & Organisations**

## Confidentiality Agreement

All information that is collected in this survey will be treated confidentially and processed anonymously. While results will be made available, it is guaranteed that neither you, your organisation, nor any organisation personnel will be identified in any report of the results of the study. Thus, we guarantee that all personal data will be handled with care and in full compliance with General Data Protection Regulation (EU) 2016/679.

### 1. Data Protection Agreement

#### Privacy Notice

I have read the privacy notice and agree to the terms



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### General Information

This section looks to capture general information

#### \* 2. Country Details

What country are you from? Please Specify.

#### 3. What is your Professional Job Profile?

	High Skills Level Job Profile	Medium Skills Level Job Profile	Low Basic Skills Job Profile
Owner / Manager	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Senior Business Leader	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Manager / Supervisor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technician / Technical	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Semi-Skilled	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Skilled Manual	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Operative Level	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**4. Which of the following, is your Primary Sector of Operation?**

- Agriculture
- Forestry
- Bio-based Industries
- Food
- Other

Other (please specify)

**5. What is your primary area of operation?**

- Education Provider (Formal)
- Education Provider (non-formal)
- Advisor
- Farmer
- Foresters
- Agri-Food Companies
- Forest Industries
- Co-operatives
- Other

Other (please specify)

**6. Who are your primary Stakeholders in your daily work?**

- VET Provider
- Higher Education Institutes
- Policy Makers
- Farmers
- Agri-Advisors
- Students
- Industry

**7. If you operate in the Agricultural Sector, what is your area of specialisation? You may list up to three.**

***(The purpose of this question is to identify the breakdown as to what is meant by the agricultural sector?)***

1.

2.

3.



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## SKILLS LISTS

Next you find a set of skills lists, relating to (1) Sustainability, (2) Digitalisation, (3) the Bio-economy, (4) Soft Skills and (5) Business and Entrepreneurship Skills. You will be asked to rank these in order of priority, relating specifically to the Sector you Represent.

### 8. What do you see as the future Skills Needs in the following sectors?

Sustainability	<input type="text"/>
Digitalisation	<input type="text"/>
Bioeconomy (Agriculture)	<input type="text"/>
Bioeconomy (Forestry & related industries)	<input type="text"/>
Bioeconomy (Food industry)	<input type="text"/>
Soft Skills	<input type="text"/>
Business & Entrepreneurship skills	<input type="text"/>

### 9. SUSTAINABILITY SKILLS - please rank the following sustainability skills as per their levels of importance.



**Sub-Heading: Climate change skills**



1. Mitigation and adaptation to climate change incl. Climate change competences (weather extremes; interdependency of climate systems and biospheres) and Climate change mitigation (e.g. fostered CO2 sequestration) and adaptation (e.g. species composition) via sustainable forest management)



**Sub-Heading: Sustainable management of resources**



2. Efficient use of resources and logistics



3. Improved agrifood system productivity incl. the Sustainable management of water, streams and energy in the food industry



4. Active management of natural resources



5. Integrated pest management incl. the Sustainable use of pesticides



6. Biodiversity incl. the Detection and support of biodiversity of plants and animals



7. Sustainable metrics and certification incl. Public and private schemes for certification (e.g. Green labels) and Life Cycle Assessment, Life Cycle Analysis data, including PEF (Product Environmental Footprint)



**Sub-Heading: Sustainable Business and Governance Models and Environmental Policy**



8. Environmental Management Systems (EMS)



9. Corporate social responsibility associated with sustainability reporting/press releases



10. National, EU and international environmental policies, regulation, subsidy and support programmes



**Sub-Heading: Circularity**



11. By-products and co-products valorisation incl. the Treatment and reuse of reclaimed water, Inorganic waste management practices, Agricultural valorisation of organic fertilizers, Management of slurry in livestock farms, Biodegradable and compostable materials (incl. packaging), Valorisation of forestry residues and industrial side new technologies in pulp and paper manufacturing, Use of by-products of timber harvesting (nutrients circulation vs nutrients removal), Circular economy and recycling in the pulp and paper industry and Reuse, recycling and valorisation of raw materials, contact materials (packaging), by-products and waste in the food industry



**Sub-Heading: Energy**



12. Generation, storage and use of renewable energies incl. the Next generation bio-refineries and bio-product mills and their outlets, Residual forest wood products to produce energy and Design, building and operation of renewable energy systems



13. Identification of renewable energy systems suitable for the farm / business enterprise



14. Identification of raw materials and waste for energy production in the farm/business enterprise



15. Identification of energy consumption and demand on the farm / business enterprise



16. National and EU Energy Market



**Sub-Heading: Specific skills for sustainable agriculture**





17. Good Agricultural Practices incl. the Global GAP and international standards of good practices in agriculture



18. Water management incl. Water quality control and protection, Water saving cultivation, Tools and models for saving water and selecting the proper crop pattern at the farm level, Irrigation management and techniques, Advisor services for irrigation water management to improve training, information and knowledge transfer and Optimization of irrigation system design and management and the associated energy



19. Soil Nutrient and Health Management incl. Soil protection and improvement, Maintenance of permanent vegetal soil cover and minimum tillage, and Techniques for carbon sequestration in the soil



**Sub-Heading: Specific skills for sustainable forestry**



20. Impact of timber harvesting and other forest management practices in wildlife populations and habitats.



21. Protective role of forests and their management in mountainous areas



22. Multifunctional forests and ecosystem-services



**Sub-Heading: Specific skills for sustainable food industry**



23. Organic production requirements



24. Analysis of contaminants



25. Sustainable packaging

**10. DIGITALISATION SKILLS - please rank the following sustainability skills as per their levels of importance.**



**Sub-Heading: General Digital skills**



1. Everyday usage of digital technology to communicate (e.g. use of computer, tablet or mobile phone, word processing, sending emails, browsing the internet safely, making video calls, social media networks)



2. Data handling and analysis



3. Data protection



4. Cloud technology



5. Smart connected devices (e.g. general principles, categories, requirements, limitations, and vulnerabilities)



**Sub-Heading: Digitalisation for business**



6. E-commerce and e-marketing



7. Digital entrepreneurship



8. Digital information and services (e.g. product prices and standards, payment services, advisory services)



**Sub-Heading: Digital tools to support production and production management**



9. Digital supplier management systems



10. Digital product quality management systems



11. Warehouse management systems



12. Digital food traceability systems



13. Digital reversed logistics systems



14. Digital pest control systems



15. Decision support systems (DSS) incl. Control technology with decision support tools (DST) and Use of web SIG platforms (or ICT platforms) including sensors network models and tools for DSS within a feedback process



16. Robot and drone technology



**Sub-Heading: Specific skills for digital (smart) farming**



17. Farm Management Information Systems (FMIS)



18. Precision animal health and productivity management systems (incl. feed intake management)



19. Field operations management systems (incl. soil, plant, seed and yield management systems)



20. Digital irrigation control systems



21. Digital soil nutrient control systems



22. Weather data management systems/software



23. Climate control systems (incl. indoor and roofed farming (greenhouses and roofed fields))



24. Robot and drone technology in agriculture

**11. BIOECONOMY (AGRICULTURE) SKILLS - please rank the following sustainability skills as per their levels of importance.**



**Sub-Heading: Basic skills in production operations and production management**



1. Planning and coordinating production



2. Performing farming operations



3. Equipment maintenance



4. Logistics and storage incl. Storage techniques and requirements of different raw materials, Transportation of livestock (incl. droving), produce and supplies and Warehouse management



5. Calculating, handling and managing risk



6. Health and safety management and operations incl. to Drive and operate agricultural machines safely



7. Product traceability



**Sub-Heading: Technologies, products and production approaches**



8. Urban, peri urban and rural area agriculture



9. Conventional versus /and Organic farming incl. Organic farming and Hybrid farming (combination of organic and conventional farming methods)



10. Controlled Environment Agriculture



11. Crop diversification and rotation



12. Plant new breeding techniques



13. Agricultural biodiversity



14. Genetically Modified Crops



15. New industrial crops and bioproducts for the bioeconomy incl. Bioproducts: Biofuels, Bioplastics, Biochemicals, Textiles, Cosmetic & Pharmaceuticals and New industrial crops: cameline, hemp, castor, guayule, etc.



16. Biofertilizers, compost, bio digestates



**Sub-Heading: Healthy farm**



17. Animal care and animal welfare during transport and production



18. Livestock efficiency/ management/ biosecurity



19. Crop protection incl. the Prevention of crop disorders and the Use of plant protection products



20. Integrated pest/disease management



21. Plant and animal breeding for resilience and robustness

**12. BIOECONOMY (FORESTRY & RELATED INDUSTRIES) SKILLS - please rank the following sustainability skills as per their levels of importance.**



**Sub-Heading: Production operations, technologies and production approaches**



1. Characteristics of forests, geographical differences and ownership patterns



2. Sustainable forest management practices and planning



3. Reforestation, afforestation and restoration of forest ecosystems



4. Forest equipment/machinery and maintenance



5. Health and safety management and operations



6. Calculating, handling and managing risk



7. Products of forestry incl. Harvesting on the focus of high quality / high value logs (right shaping of logs), Logs for construction, Timber for pulp and paper industry and Timber for energy supply (material use before energy use)



8. Process operations in the pulp, paper, timber and cork industry



9. Safety and health in the pulp, paper, timber and cork industry



10. Equipment/machinery and maintenance in the pulp, paper, timber and cork industry



11. Automation in the pulp, paper timber and cork industry



12. New technologies in pulp, paper, timber and cork manufacturing



**Sub-Heading: Healthy forest**



13. Prevention and management of natural disturbances (e.g. floods, drought and forest fires)



14. Seedling damages (caused by e.g. deer, moose and other mammals)



15. Forest disease control and prevention



16. Water quality in forests

**13. BIOECONOMY (FOOD INDUSTRY) SKILLS - please rank the following sustainability skills as per their levels of importance.**



**Sub-Heading: Skills for food quality and food safety**



1. Quality management, quality assurance and quality control incl. Sensory evaluation and qualities



2. Food safety management, food hygiene and food safety control



**Sub-Heading: Skills for food production and manufacturing (industrial performance)**



3. Cleaning and preparation



4. Production operations and management incl. milk processing



5. Health & safety management



6. Engineering maintenance





7. Preservation and packaging



8. Shop floor control and other control operations



9. Risk assessment and management



10. Continuous improvement



**Sub-Heading: Logistics and supply chain skills**



11. Supply to production and supplier management



12. Transportation (modalities and planning) & logistics management



13. Management of inventories to Incl. Goods received, Pick and pack,  
Storage & storage systems (FIFO) and Stock management



14. Traceability



**Sub-Heading: Other skills**



15. Food security



16. Ethics for food



17. Emerging technologies



18. Food Labelling/Certifications



19. Food defense



20. Food fraud

**14. SOFT SKILLS - please rank the following sustainability skills as per their levels of importance.**



**Sub-Heading: Fundamental soft skills**



1. Communication - With others at work and in the daily life, Languages, Reporting and briefing, Public speaking and Press releases



2. Problem solving



3. Analytical, critical and creative thinking



**Sub-Heading: Self-management skills**



4. Demonstrating positive attitudes & behaviours



5. Being resilient, adaptable and proactive



6. Organisation, planning, visioning and strategic thinking



7. Equality skills (interculturalism, gender, empowerment, harassment)



8. Safety awareness



9. Reflecting on own performance



**Sub-Heading: Teamworking and interpersonal skills**



10. Team building (incl. conflict resolution, negotiation, flexibility)



11. Teamwork character (incl. responsibility, honesty, empathy)



12. Conflict management



13. Change management



**Sub-Heading: Business soft skills**



14. Providing leadership



15. Managing personnel (incl. delegating, motivating, assessing)



16. Networking



17. Innovative thinking



**Sub-Heading: Education skills**



18. Digital tools to support learning and distance learning



19. Learning at work to incl. Learning by doing, Learning from others (mentoring, shadowing...) and teaching each other



20. Learning continuously (lifelong learning)



21. Training others (training skills, training tools, course design, assessment...)



22. STEM knowledge (Science, Technology, Engineering and Mathematics) to understand and cooperate through the whole food/bioproducts value chains

**15. BUSINESS & ENTREPRENEURSHIP SKILLS - please rank the following sustainability skills as per their levels of importance.**



**Sub-Heading: Marketing Skills**



1. Monitoring market activity and conditions



2. Direct marketing in agriculture, food industry and forestry



3. Sales and marketing



4. Local marketing associations



5. Selling skills – Building buy-in to an idea, a decision, an action, a product, or a service



6. Customers service



**Sub-Heading: Financial skills**



7. Business planning/model and strategic management incl. Scenario/foresighting/forecasting, Recognize and realize business opportunities, Key Performance Indicators (KPIs) management, Knowledge management and Stakeholder management



8. Basics of financial issues incl. Balance sheets analysis



9. Purchasing/renting (equipment, structures, seeds, fertilizers, herbicides, animal feed and other supplies)



**Sub-Heading: Fair, collaborative and competitive value chains**



10. Cooperatives (values, legal framework and management)



11. New value chains / new business models incl. Values-based supply chains and Short food supply chains



12. Collaboration/cooperation across all sectors in the food chain



**Sub-Heading: Skills for research, development and innovation**



13. Social expectations/Consumers science & behaviour



14. Interdisciplinary knowledge to assess the whole value chain



15. Funding opportunities



16. Product development incl. Laboratory and desk research



17. Project management



18. Knowledge transfer in the bioeconomy chains



19. Innovation management and its deployment on-site



20. Scale-up issues per sector (technical difficulties, costs and volume calculations)



21. Protection of intellectual property rights



**Sub-Heading: Compliance with policy and legislation**



22. Fiscal basis and regulations



23. Specific sector legislation incl. Agricultural policy and legislation, Food policy and legislation, Forest and nature related policies (EU and national legislations and marked-based systems covering natural resources and their management)



24. Food Labelling/Certifications



25. Farm environmental management plan

**16. Are there any skills not accounted for in previous sections, relating to (1) Sustainability (2) Digitalisation (3) Bioeconomy (4) Soft Skills and (5) Business/Entrepreneurship Skills. Please indicate what these might be and explain your reasoning.**

Sustainability	<input type="text"/>
Digitalisation	<input type="text"/>
Bioeconomy (Agriculture)	<input type="text"/>
Bioeconomy (Forestry & related industries)	<input type="text"/>
Bioeconomy (Food industry)	<input type="text"/>
Soft Skills	<input type="text"/>
Business & Entrepreneurship skills	<input type="text"/>



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## Education & Training

**17. Based on your experience, is the available training suitable to cover the previously identified training needs?**

- Yes
- No

**18. Considering the training available in your jurisdiction, what training if anything is Missing? Please Specify.**

**19. How Important is achieving a formal qualification?**

- Not Important
- Somewhat Important
- Very Important



**20. On a Scale of 1-4, how would you rate the following? (where 1 is the least important and 4 is the most important)**

	1	2	3	4
Having the Skills to perform the task - for the individual	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Getting Recognition through a Formal Qualification - for the individual	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having the Skills to perform the task - for the Organisation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Getting Recognition through a Formal Qualification - for the Organisation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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## Industry Insights

**21. What do you see as the top three challenges facing your business over the next 2-3 years?**

1.

2.

3.

**22. Do you see any emerging trends over the next 1-2 years, that may require training support to address them?**

1.

2.

3.

**23. What specific trends are influencing these changes?**

1.

2.

3.

**24. How would you define your organisation's Business Model?**

**25. What does the core strategic focus for your business model look like?**

- Business Growth
- Sustainability
- Increased Competitiveness
- Innovation Focused
- Digital Transformation
- Stabalisation - Securing the business
- All of the Above
- No Change - Business as Usual
- Other (please specify)

**26. How relevant are the following BUSINESS STRATEGY SKILLS to your Core Business Model?**

	Very Relevant	Somewhat Relevant	Not Relevant
Business Strategy, Development, Implementation and Analysis	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Governance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Business Continuity Planning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Business Planning / Modelling and Strategic Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recognising & Realising Business Opportunities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Growth Mindset	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Global Curiosity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Commercial Creativity & Innovation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
New value Chains & Business Models to incl. values-based supply chains & Short-Food Supply chains	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Collaboration & Co-operation across all sectors of the Food Chain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Data Analytics	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Change Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Providing Leadership	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**27. How does your core business model operate?**

- B2B - Business to Business
- B2C - Business to Consumer
- Other (please specify)

**28. Which of the following Analytical tools have you used to analyse and understand your businesses operating environments?**

- Porter Five Forces Model - Markets
- PESTLE Analysis - Society
- PESTLE Analysis - technology
- Enterprise Risk Management (ERM) - Risk & opportunity
- Risk Heat Maps - Risk & Opportunity
- SWOT Analysis - Risk & Opportunity
- Scenario Analysis - General
- Strategic / Balanced Score Card - General
- Other (please specify)

Thank you very much for taking the time to complete our Skills & Industry Analysis Survey.

If there is any aspect of the project that you would like to discuss further, or feel you may need support with, please do not hesitate to get in touch via email to: [francesca.sanna@unito.it](mailto:francesca.sanna@unito.it)

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