BioComp

Project-N° 2019-2019-1-CZ01-KA202- 061409

IO 01 - BBE COMPETENCES NAVIGATOR

Circulation	All partners
Authors	Hans Blankestijn, Elke Halm
Date	20-07-2020
Doc.Ref.	IO 01 – BBE competences navigator –
	Overview of the results of ranking for competences

Erasmus+

1. Introduction

This ranking list is part of the European project BioComp.

It aims to develop competence-based learning material which can be used in learning and training activities for the bio-based economy (=BBE). Based on a big number of interviews in companies the list of competences and skills was developed in three categories: personal, transversal and technical competences.

In the next step, the partners and their network were asked to rank the competences in the chapters:

Personal competences, transversal competences, technical competences (Biogas, Algae, Food for packaging and Setting up a BBE Company.

The ranking procedure was prepared online, structured in chapters and containing the competences to be assessed. The competences were to be rated from 1 (less important) to 10 (very important). This allows an objective assessment of the competences and a precise evaluation of the assessments.

2. Overview of participation for ranking the competences

Summary

The evaluation of the participation in the rating procedure leads to the conclusion that this method is suitable to achieve an evaluation of the different competencies. The evaluation scale has proved its value and was understood by the participants. The methodology of using the Online-form for the ranking has been a great success.

139 experts from all partner countries took part in the ranking process. Half of these experts came from companies and the other half from VET- and further education. That shows the serous interests by education institutes.

The table shows that the deviation of all ranked competences is small, between 7,88 and 8,41 ranking points.

Chapter	Average of the Ranking points
Personnel (social) competences – S1-S9	8,41
Entrepreneurial competences – E1-E8	8,31
Technical competences	
- Biogas – B1-B8	7,88
- Algae – A1-A7	7,97

- Food for packaging	
○ Tomatoes – T1-T6	8,21
○ Rice /Cereal production – C1-C4	8,10
○ Packaging process – P1 –P10	8,07
Setting up a BBE company – B 1-B10	7,92

This number of responses is big enough to draw realistic conclusions. Nearly all participants voted for personnel and entrepreneurial competences.

In the different categories of competences, a ranking has made based on the results of the ranking lists. The next step will be to develop the learning material (IO 02).
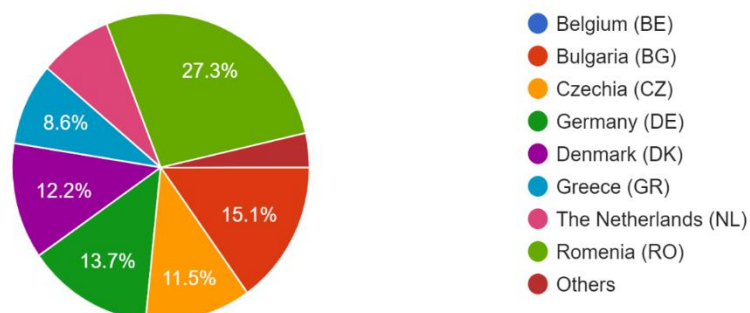
3. Result of the participants

Overall, 139 participants evaluated the competencies. Although the corona period is still problematic, the participation result can be considered very well.

a) Overview of the countries

By participating in the ranking procedure, all partner countries contributed to the success of the procedure with 10 votes. The highest participation (27.3%) in the ranking procedure was achieved by RO; followed by GR, DK, DE, CZ and BG.
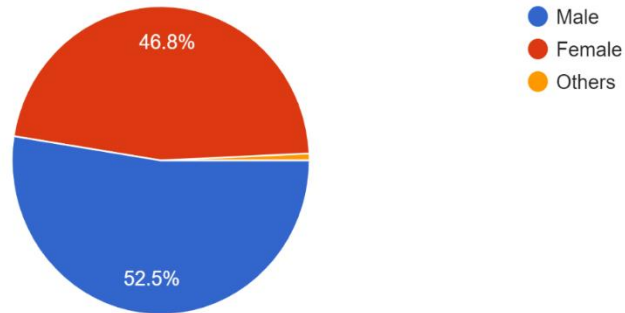
Where do you come from? Your country
139 responses

- Belgium (BE)
- Bulgaria (BG)
- Czechia (CZ)
- Germany (DE)
- Denmark (DK)
- Greece (GR)
- The Netherlands (NL)
- Romenia (RO)
- Others

b) Overview of the participants

There is a balanced participation of the gender.
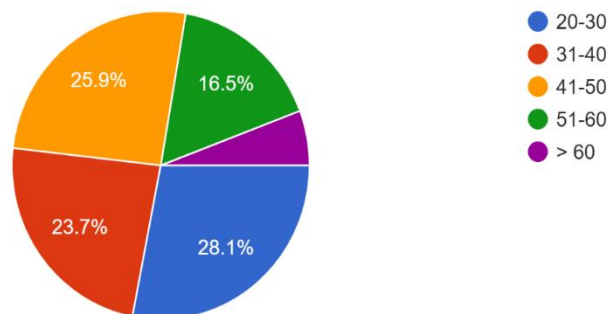
What is your gender?
139 responses

- Male
- Female
- Others

46.8%

52.5%

This chart shows that more than half of the respondents are between 20 and 40 years old.

How old are you?
139 responses

- 20-30
- 31-40
- 41-50
- 51-60
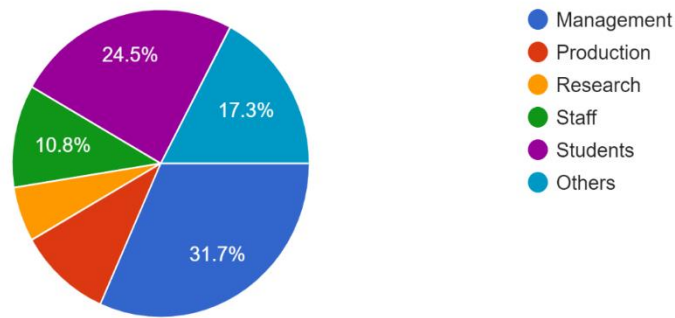- > 60

25.9%   16.5%

23.7%   28.1%

c) Overview about the companies

The largest participation in the ranking process, with 52.2%, was by managers and students. Staffs participated in this process with 10.8%.

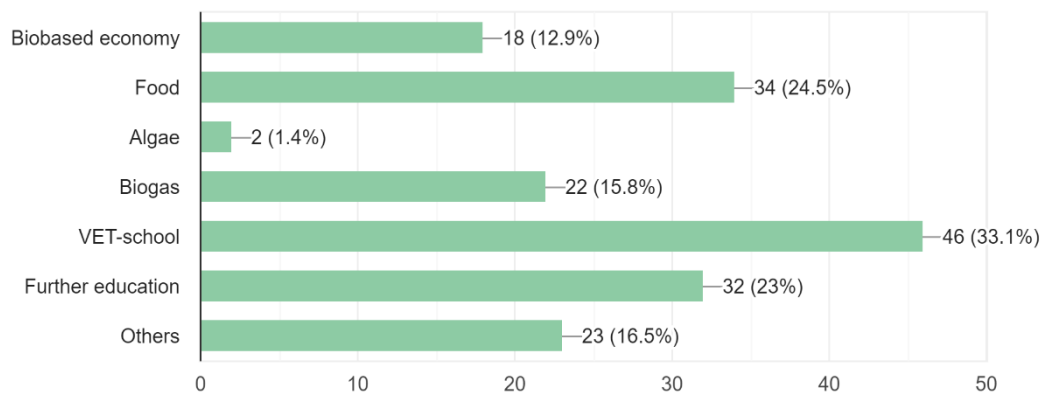Which area of your company / institution you are responsible for?
139 responses

This chart shows that representatives of educational institutions participated in the ranking process with the largest number; 76 participants work in the fields of work under evaluation.

In which area(s) your company is active? (Multiple answers are possible)
139 responses

Based on the results of the assessment of competences (ranking from 1 to 10), they can be described in the following ranking order:

I. *Personal (social) competences*
II. *Transversal competences*
    II.a Digital topics
    II.b Entrepreneur topics
III. *Technical competences*
    III.a Biogas
    III.b Algae
    IIII.c Food for packaging
        III.c-1 Tomatoes
        III.c-2 Cereal production
        III.c-3 Food for packaging
IV. Setting up a BBE company

I.   *Personal (social) competences*

Of the 139 participants, 129 voted for personal competences; on average, these competences received 8,41 ranking points (RP). This means that the designated competences were rated high in importance and significance at each working level (and beyond).Communication and collaboration were awarded the highest RP.

Nr	Competence	Ranking points
S1	Collaboration - Being part of a relational system in which two or more stakeholders pool together resources, ideas and actions to meet common goals that neither could meet individually – with shared commitment and ownership.	8,78
S2	Communication - Using words, sounds, signs, or behaviours to express or exchange information, thoughts, ideas, and feelings to someone else. It may be vocally (using voice), written (using printed or digital media such as books, magazines, websites or emails), visually (using logos, maps, charts or graphs) or non-verbally (using body language, gestures and the tone and pitch of voice).	8,76

S3	Adaptability - The ability to be flexible and respond positively to a rapidly evolving environment, coming out the better for it (bouncing forward).	8,67
S4	Growth Mindset - Being motivated to reach higher levels of achievement by continuously learning new skills in order to move with a changing market. Essentially, it is being adaptable and willing to go beyond the soft and hard skills you already have.	8,52
S5	Critical Thinking - Skilful analysis and assessment of information, beliefs or knowledge, with ongoing reconstruction and improvement of one's thinking. It can bridge convergent (analytical) and divergent (creative) thinking.	8,48
S6	Wellbeing - Achieving a state of contentment, with low levels of distress, overall good physical and mental health, and good quality of life.	8,34
S7	Self-regulation - The ability to understand, activate, monitor, control and adapt emotions, thoughts, attention, behaviour and cognitive strategies.	8,31
S8	Empathy - The ability to understand, vicariously experience and respond to another person's feelings, emotions and thoughts (emotional, cognitive and perspective taking).	8,00
S9	Managing Learning - Knowledge of oneself (as learner, of strategies, tasks and context) and as regulation (applying it to plan, monitor and evaluate learning).	7,82

II   Transversal competences
II.a   Digital competences

In this chapter, a high level of participation in the ranking process can be observed (124-127 participants), which speaks for the great importance of digitalization in working life. The digital competences were rated on average 7,93 RP. It is noticeable (but not unexpected) that AR technology is perceived as not yet a direct learning method.

Nr	Competences	Ranking points
D1	Communication - Interacting through digital technologies - To interact through a variety of digital technologies and to understand appropriate digital communication.	8,50
D2	Collaboration - Collaborating through digital technologies - To use digital tools and technologies for collaborative process, and for co-construction and co-creation of data.	8,32

D3	Safety - Protecting the environment -To be aware of the environmental impact of digital technologies and their use.	8,27
D4	Safety - Protecting personal data and privacy - To protect personal data and privacy in digital environments. To understand how to use and share personally identifiable information while being able to protect oneself and others from damages. To understand that digital services use a "Privacy policy" to inform how personal data is used.	8,21
D5	Information and Data Literacy - Managing data, information and digital content: To organise, store and retrieve data, information, and content in digital environments. To organise and process them.	8,05
D6	Problem solving - Identifying needs and technological responses - To assess needs and to identify, evaluate, select and use digital tools and possible technological responses and to solve them. To adjust and customise digital environments to personal needs (e.g. accessibility).	7,91
D7	Problem solving - Solving technical problems - To identify technical problems when operating devices and using digital environments, and to solve them (from trouble-shooting to solving more complex problems).	7,89
D8	Problem solving - Creatively using digital technology - To use digital tools and technologies to create knowledge and to innovate processes and products. To engage individually and collectively in cognitive processing to understand and resolve conceptual problems and problem situations in digital environments.	7,89
D9	Problem solving - Identifying digital competence gaps - To understand where one's own digital competence needs to be improved or updated. To be able to support others with their digital competence development. To seek opportunities for self-development and to keep up-to-date with the digital evolution.	7,69
D10	Use of Augmented Reality (AR) - To identify the benefit of AR technology and possibilities of use in training and creatively using AR technology in training situations.	6,52

II.b   Entrepreneurial competences

The participation rate in the ranking process is as high here as in chapters I. and II.a. This also indicates a high importance and significance of these competencies in the work process (and use beyond). On average, some components were rated at 8,31 RP. The highest scores were given to the interactions "Working together" and cooperation" and "learning through experiences".

Nr	Competences	Ranking points
E1	Into Action - Working with others - To work together and cooperate with others to develop ideas and turn them into action. Network. Solve conflicts and face up to competition positively when necessary.	8,59
E2	Into Action - Learning through Experience - To use any initiative for value creation as a learning opportunity. Learn with others, including peers and mentors. Reflect and learn from both success and failure (your own and other people).	8,48
E3	Into Action - Taking the initiative: To initiate processes that creates value. Take up challenges. Act and work independently to achieve goals, stick to intentions and carry out planned tasks.	8,44
E4	Ideas and Opportunities - Creativity - Develop several ideas and opportunities to create value, including better solutions to existing and new challenges. Explore and experiment with innovative approaches. Combine knowledge and resources to achieve valuable effects.	8,38
E5	Ideas and Opportunities - Ethical and sustainable thinking - Assess the consequences of ideas that bring value and the effect of entrepreneurial action on the target community, the market, society and the environment. Reflect on how sustainable long-term social, cultural and economic goals are, and the course of action chosen. Act responsibly.	8,24
E6	Ideas and Opportunities - Valuing Ideas - Judge what value is in social, cultural and economic terms. Recognise the potential an idea has for creating value and identify suitable ways of making the most out of it.	8,18
E7	Resources - Mobilising resources - To get and manage the material, non-material and digital resources needed to turn ideas into action. Make the most of limited resources. Get and manage the competences needed at any stage, including technical, legal, tax and digital competences (for example through suitable partnerships, networking, outsourcing and crowdsourcing).	8,08
E8	Ideas and Opportunities - Spotting Opportunities - Identify and seize opportunities to create value by exploring the social, cultural and economic landscape. Identify needs and challenges that need to be met. Establish new connections and bring together scattered elements of the landscape to create opportunities to create value.	8,05

III. Technical competences
III.a Biogas

About 80 participants (57%) ranked the competencies of this chapter. This shows that many agricultural enterprises have biogas systems and attach great importance to competence development in this area. This evaluation behaviour can be traced back to the participant structure.

On average, the competences were evaluated with 7,88 RP. The competence "Management" received the highest scores; however, all competences received similarly high scores.

Nr	Competences	Ranking points
B1	Management - Identifying needs and mechanism of the overall managing the biogas production process.	8,19
B2	Operate biogas plant - Operate equipment, which treats energy crops, and waste from farms, called anaerobic digesters. Ensure the equipment functions correctly in the transformation of biomass to biogas, which is used for the generation of heat and electricity.	8,10
B3	Resolve equipment malfunctions - Identify, report and repair equipment damage and malfunctions; communicate with field representatives and manufacturers to obtain repair and replacement components.	8,00
B4	Composting of organic waste (Biomass) - Identifying needs and technological responses: to know the types of bio-waste, the recovery routes (composting, digestion, incineration).	7,98
B5	Recycling - Identifying needs and technological responses - To know the circular economy, the compost processing and the use of fermentation.	7,89
B6	Composting of organic waste (Biomass) - Identifying needs and technological responses: to know the chemistry and biology processes of composting.	7,80
B7	Bio conversion process - Identifying needs and technological responses - To assess needs and to identify, evaluate, control the heating process of biological material, control the combustion process, know and be able to analyse the chemical, thermal, and biochemical methods.	7,65
B8	Composting of organic waste and management - Identifying needs and technological responses - To assess needs and to identify, evaluate, control the heating process of biological material, control the combustion process, know and be able to analyse the chemical, thermal, and biochemical methods.	7,46

III.b   Algae

59 participants ranked the competences described here, although only 2 participants are active in this production area. This also shows that the interest in developing competences is higher than there are companies in the partner countries. The competences were evaluated with an average of 7.97 RP.

Nr	Competences	Ranking points
A1	Circular economy - knowing the complete process of algae production.	8,07
A2	Production and environmental data - Ensure that operations comply with standards for sustainable aquaculture.	8,07
A3	Maintaining equipment - Measure and control water quality	8,03
A4	Identify diseases or parasites - Monitor the health, based on feeding and general behaviour. Interpret environmental parameters and analyse mortalities.	8,03
A5	Breeding, reproduction, structure and cultivating - To know about structure, breeding rearing, and production.	8,00
A6	Harvest of algae - Ensure that careful, superficial and automated algae harvest.	7,93
A7	Monitoring and documentation - Compose work-related reports that support effective relationship management and a high standard of documentation	7,61

III.c   Food for packaging
III.c-1 Tomatoes

Here again, it is clear that this is a specialist area; 69 participants gave their evaluations; 22 participants stated that they worked in the food sector. The competences were ranked with an average score of 8,21 RP, which indicates that the competences are highly significant and that competences are transferable to other "greenhouse" products.

Nr	Competences	Ranking points
T1	Working in a greenhouse - Identifying the instructions of climate control (light, heat, humidity).	8,42
T2	Cultivation of tomatoes - Identifying the monitor the growing process and the quality control of it.	8,35
T3	Working in a greenhouse - Identifying of preparing the soil and nutrition/water system and planting.	8,32
T4	Working in a greenhouse - Identifying of the management biological pest control.	8,15
T5	Harvesting tomatoes - Identifying the management of harvesting of tomatoes and post harvesting activities.	8,06
T6	Harvesting tomatoes - Identifying the plant and implement harvesting of the tomato plant.	7,94

III.c-2 Rice production / Cereal production

65 participants with an average score of 8,10 RP ranked these competences of this special field.

In the progress of the ranking process, it has become evident that the title of the chapter III.c-2 "Rice" is not entirely correct. The described competences cover the entirety of "cereal". For this reason, this chapter will be renamed "cereal".

Nr	Competences	Ranking points
C1	Harvesting rice - Identifying of management of harvest methods; the estimation of by-products biomass potential.	8,12
C2	Energy uses - Identifying by-products for non-energy and energy uses.	8,11
C3	Biomass evaluation - Identifying of biomass as a by-product of food production process that can be re-used.	8,11
C4	Biomass production and management -Identifying of plan, organize and perform farming operations to grow.	8,06

III.c-3   packaging process

This rapidly developing area was evaluated by around 76 participants with an average score of 8,07 RP. This figure reflects the growing importance in the circular economy, on the way to more sustainability through recycling, re-use, dismantling and reprocessing.

Nr	Competences	Ranking points
P1	Control of process - Identifying the monitor manufacturing quality standards.	8,35
P2	Ecological benefits - Identifying benefits of bio packaging.	8,21
P3	Production of bio-packaging material - Identifying technological and chemistries responses: to know the process of fermentation, the processing methods / types.	8,14
P4	Biobased material - Identifying physical and mechanic features / characteristic of Biobased material.	8,13
P5	Production of bio-packaging material - Identifying new packaging concepts.	8,12
P6	Quality control - Identifying the testing procedures.	8,11
P7	Control of process - Identifying the Standard Operating Procedures (SOP).	8,04
P8	Quality control - Identifying the test procedures and the ICT systems.	7,99
P9	Production of bio-packaging material - Identifying the technical features, benefits and limits of bio packaging.	7,84
P10	Logistics - Identifying the manufacturing deadlines pressure.	7,81

IV   Setting up a BBE company

Although 24 (17%) of the participants stated that they work in management, 104 participants assessed the competences. This clearly shows that in small structured companies a so-called management level is missing, but knowledge in circular economy, planning within companies (business-, marketing-, and Human resources plan) is essential for every company. The described competences were ranked with an average of 7,92 RP.

Nr	Competences	Ranking points
B1	Business plan - To Identify, monitor and develop a BBE-strategy.	8,05
B2	Business plan - To analyse BBE-resources, markets, financial and technical aspects.	8,04
B3	Circular economy - To know about the bio-based value chains.	8,02
B4	Circular economy - To Identify European and regional strategies.	7,89
B5	Business plan - To Identify legal and financial aspects for setting up a BBE-company.	7,94
B6	Business plan - To monitor market activities.	7,92
B7	Marketing plan - To identify measures and marketing tools to create a marketing plan.	7,86
B8	Human Resource plan - Identifying of measures and methods to develop a human resource plan / management.	7,83
B9	Marketing plan - To establish a partnership.	7,78
B10	Control- Identifying control mechanism.	7,75