

Chapter 3

Needed knowledge and skills for a successful entrepreneurial career in the framework of circular economy in Romania

by Liliana Topliceanu, Alisa Aruş

3.1 Introductions

European Commission introduced the circular economy within its policy. All the European countries adopted this line and emitted strategies and plans to pass from the linear economy to the circular ones. The transition needs people well prepared with transversal competences, adapted to specific economic area.

In order to find the skills and abilities desired by this economic branch, an opinion survey was carried out. The methodology of this survey was presented in the previous chapter. To this opinion poll participated 24 of companies and 7 institution, association and public authorities. For an easier understanding of the goal of the survey the questionnaire was translated into Romanian.

3.2 Survey results

3.2.1. General data

Companies

In the opinion poll there were involved four categories of companies, according to the number of employees: micro (1-10 employees), small (10-49 employees) medium (50-249 employees) large (over 250 employees)

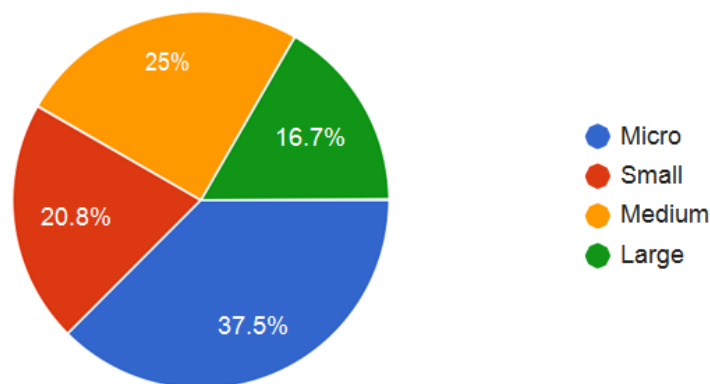


Figure 1 Distribution of companies by size

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the National Agency and Commission cannot be held responsible for any use which may be made of the information contained therein

The distribution of the companies according to their number of employees is in accord with the economic reality, the largest numbers of firms are micro, while large companies with over 250 employees are in a smaller number

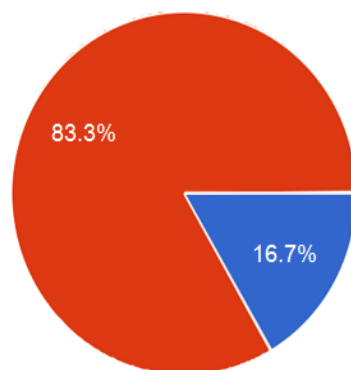
The date of establishment of the companies varies between years 1978 and 2016, so, the respondent of the questionnaire have a varied experience in the field of activity

The main activities of the companies participating in the survey are presented in the Table 1.

Table 1

The main activities of the companies participating in the survey	
• agriculture	• the manufacture of jams
• grain trade	• packaging production
• oleaginous and leguminous plants	• public catering
• poultry farming, chilled/frozen poultry meat, meat and meat products processing,	• consultancy in business management and access to European funds
• bakery, pastry-confectionery	• manufacture of industrial coolers
• manufacture of dairy products and cheeses	• production of sawdust pellets and briquettes
• brewing	• distribution and transportation

The transition to circular economy (CE) means opening to new, companies to have research activity and interest in innovation.



● Yes
● No

It is found that, from the point of view of the companies' involvement in research projects in the last five years, only 16.7% developed research projects, in general big companies. 4.3% didn't answer of this question, representing, together with those with negative answer, 83.3% from the total of the firms consulted.

Figure 2 Research activities in the last five years

Organisations

Regarding the classification of the organization addressed in the opinion survey, 25% are Regional Authority, 12.5% Municipal Authority, 12.5%, Chamber of Commerce, 12, 5% Cluster, 12.5% Trade or inter professional association, 25% others.



As the date of establishment of the questioned, organizations are included between the years 1992 and 2013. Concerning the main area of interest of these organisations there are presented in the Table 2.

Table 2

The main activities of the organisations participating in the survey	
• environment protection	• public services of general interest
• Evaluation, implementation, monitoring of projects financed by PNDR	• Rezolvarea problemelor economice și sociale de interes pentru autoritățile locale
• Promotion of cultural values and sustainable development	• Development and implementation of local environmental protection plans
• Implementation of agricultural policies in the territory, consultancy	• services to stimulate sustainable economic growth

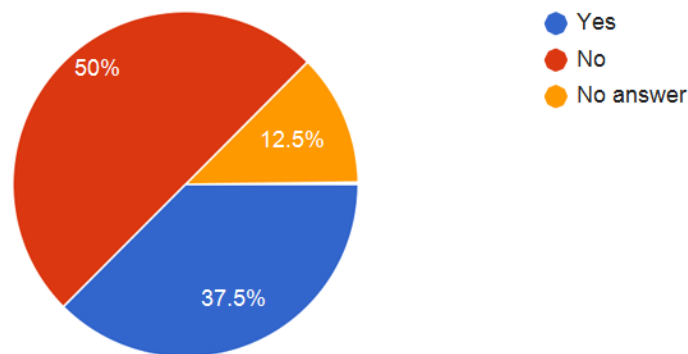
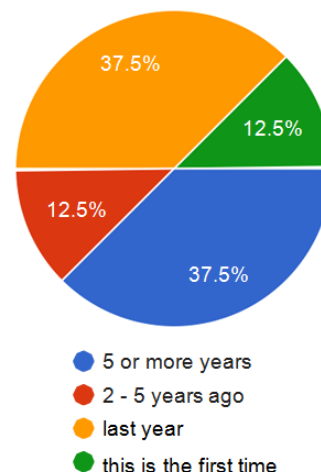


Figure 3 Activities of organizations related to the circular economy

Analysing the graph in this figure, it is found that 37.5% of the organizations have actions related with CE, 50% had no action and 12.5% did not answer present question. It is appositive situation comparing with the next answers of the companies

3.2.2 Knowledge of circular economy implementation in rural areas

First information about circular economy



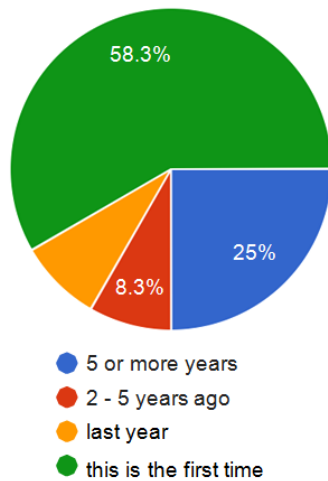


Figure 3 Time of first hearing about Circular Economy

Companies on the left; organisation on the right

It is very interesting to know how many information in the area of circular economy the companies and associations have, how quickly the decisions of the European Commission are transmitted in the territory and if they developed some actions in the direction of circular economy implementation.

It can be considered that the percentage of about 60% (58.3%) of companies which found out on the occasion of this opinion poll about the circular economy is very high and denotes the lack of a national information strategy regarding the concept and principles of the circular economy and the EU legislation related to them.

The organisations (association, NGO and authorities) are more connected with the European and national political decisions but not enough. The regional authority (Bacau County Council, Nord-East Regional Development Agency) should improve their actions so that the information reaches the economic recipient faster, namely the companies. This deficiency, lack of information, can be remedied by the actions of the Multitraces project.

Circular economy actions implemented in the last five years

Taking in consideration the small percent of the companies which were informed about circular economy, the option presented within the questionnaire helped them to identify the actions which were performed in the last five years and can be included in the area of CE.

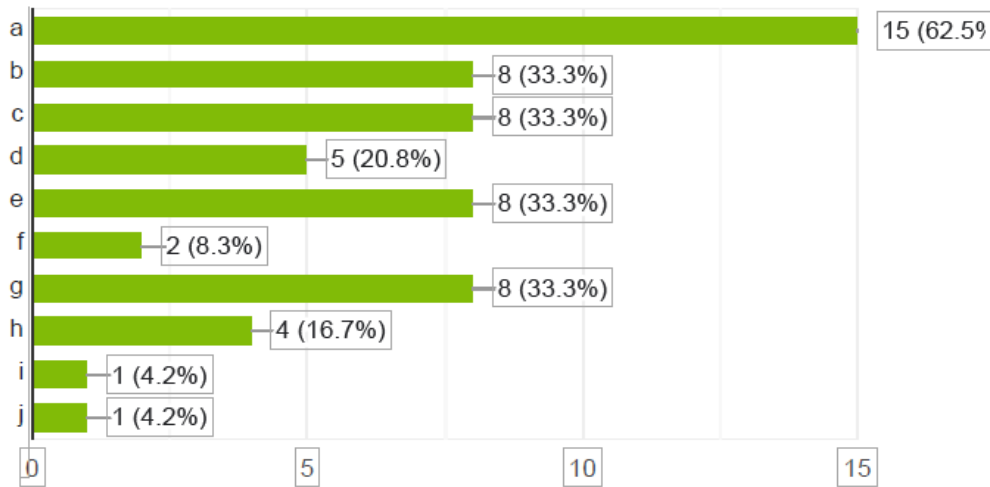


Figure 4 Actions performed by companies in the last five years

Legend

- | | |
|---|--|
| a Minimize waste by recycling or reusing waste or selling it to another company | f Make a Lifecycle Assessment |
| b Re-plan energy usage to minimize consumption | g Apply for and/or obtain environmental certifications |
| c Redesign products and services to minimize the use of materials or use recycled materials | h Use of renewable energy |
| d Re-plan of the way water is used to minimize usage and maximize re-usage | i Other |
| e Make an analysis of the material and energy flows that the company uses | j I don't know |

It can be observed that:

- 15 companies gave the answer that "*Minimizing waste by recycling or reusing it or selling it to another company*" was implemented in the last 5 years;
- 8 companies indicated that "*Re-planning energy use to reduce consumption*" ;
- 8 companies implemented "*Redesigning products and services to minimize material consumption or to use recycled materials*" in the last 5 years;
- 5 companies took actions for "*Re-plan of the way water is used to minimize usage and maximize re-usage*";
- 8 companies answered as "*Analysis of material and energy flows that the company use*" and "*Apply for and/or obtain environmental certifications*" ;
- Only 4 companies use renewable energy sources;
- 2 answers didn't mention anything.

We can conclude that the circular economy is identified by many firms with waste management, although it is much more than that. However, a part of the companies implemented two or three additional measures concerning the water re-use, energy saving, or minimise the raw material consumption.



According to the questionnaire especially prepared, the organizations were asked what circular economy measures they know to have been carried out by the companies. The same answer versions were indicated.

To this question, 6 organizations indicated „*Minimizing waste by recycling or reusing it or selling it to another company*” as the most widespread among companies in the organization's region. 5 organizations had information about "Use of renewable energy" as measure took by some companies. , 3 organizations answered that "Re-planning the use of energy to reduce consumption" is the most widespread among companies in the region of the organizations. The options c, e, g received 2 votes and d and f only one vote.

Circular economy actions which will be implemented in the next five years

The question offers the same possible answer options as the previous one. Considering the information already received by companies concerning the CE, it is expected that a large range of measures to be implemented by companies:

- 54.2% (13 companies) decided to use more efficient the energy (b);
- 45% of the respondents (11 companies) will focus on waste minimisation (a);
- 50% (12 firms) will make an analysis of the material and energy flows (e);
- 20.8% of companies will introduce three types of measures: Redesign products and services to minimize the use of materials or use recycled materials (c), Re-plan of the way water is used to minimize usage and maximize re-usage (d) and intend to use renewable energy (h);
- Life cycle assessment represents the option of only one company.

Benefits of circular economy actions

The result of this interrogation in presented in the Figure 5.

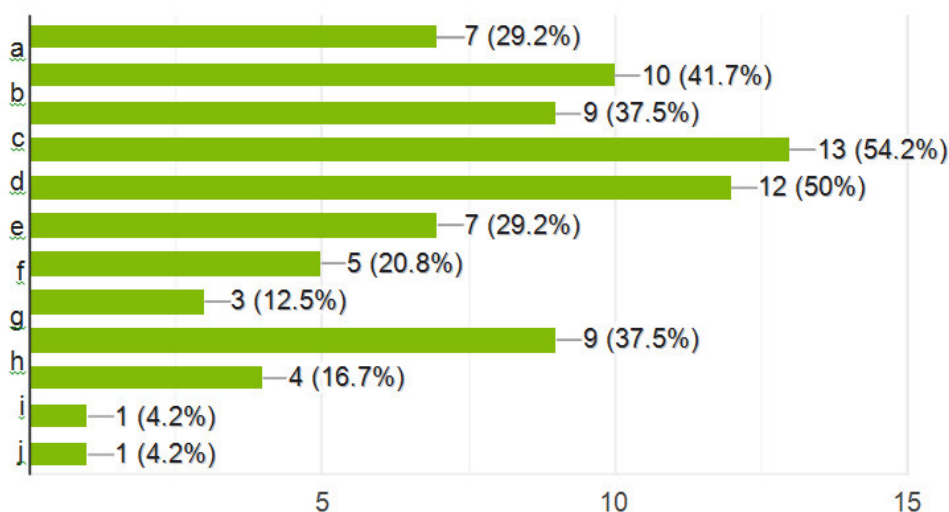


Figure 5. Benefits of the circular economy implementation in companies

Legend

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the National Agency and Commission cannot be held responsible for any use which may be made of the information contained therein

- | | |
|---|----------------------------------|
| a Fewer greenhouse gas emissions | g Demand for new services |
| b Better exploitation of renewable energy sources | h Employment growth |
| c Better management of natural resources | i More resources saved |
| d Economic growth | i Getting to know clients better |
| e New profit opportunities | j Others |
| f Safeguard supplies | k None |

The main benefits identified by companies are „*Better management of natural resource*” with 13 answers, „*Economic growth*” that received 12 answers and „*Better exploitation of renewable energy sources*” with 10 answer. With an equal position with 7 answers are the „*Reduction of greenhouse gases*” and „*New profit opportunities*”. Two firms do not they have no idea about the benefits of the circular economy.

The answers received indicate the interest of the management of the companies for the development of them business, for new profit opportunities by adopting the measures presented previously and, last but not least, concern for the protection of the environment. We can say that the companies participating in the survey have intelligent, ambitious management and demonstrate social responsibility. On the other hand it is obviously that more information actions has to be conducted in order to explain, especially to the small and medium ones, the advantage which can be gained through the implementation of CE

Classification of the regions the companies are based regarding implementation of Circular Economy actions in rural areas

As was underlined in the Chapter 2, it is very important that at the level of the entire region there is an emulation regarding the circular economy. When a current of opinion is created, companies are stimulated and they are in competition for the introduction of new measures.

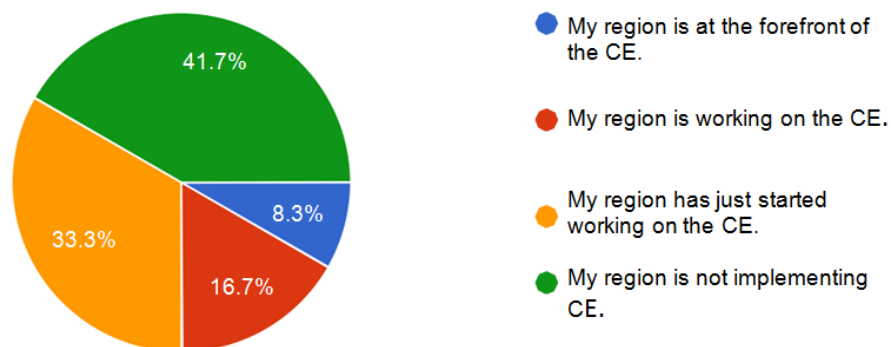


Figure 6 Implementation of the circular economy in the region-companies answers

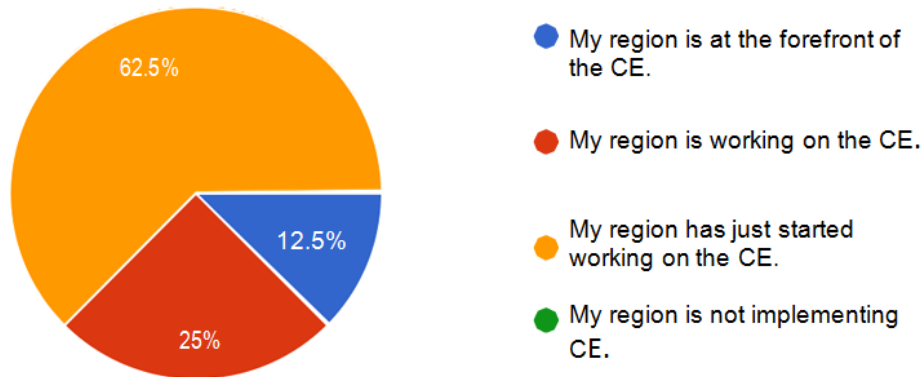


Figure 7 Implementation of the circular economy in the region-organisations answers

The organisations, some of them with regional competences (the Bacau County Council, the Northeast Regional Development Agency) are much better informed regarding the circular economy. In fact, part of the actions is generated by them, being part of their obligations. For these reason it is this discrepancy between the two figures. The small and medium size firms have fewer possibilities to receive information about the changes in the area if this information does not come from regional or county authorities.

Competences in terms of new employees/collaborators added over the past 5 years

Modernization of the agri-food economic branch, its transition to the circular economy, requires specific skills. The question is related to the importance that companies attach to training a staff prepared for the adoption of circular economy measures. Figure 8 shows the answers of this point of the opinion poll.

It is observed that:

- 11 companies answered "*Sales / marketing*", representing 48.5% from the answers;
- 10 companies have chosen "*Economy / finance*" representing 41.7% from the answers;
- 6 companies answered "*Production engineering*", and "*Communication*";
- 5 companies added new competences in the area of "*Energy management*" and "*Product design*";
- "*ICT / informatics*" and "*Lawful competences*" were chosen by 4 companies.

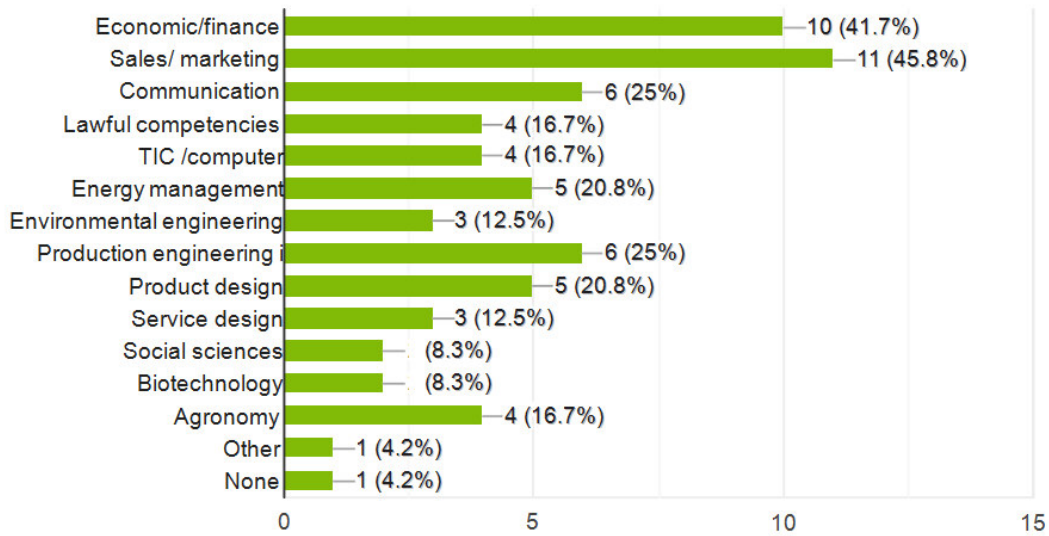


Figure 8 Competences of new employees/collaborators added over the past 5 years

Company needs for specialized professionals / experts to support the implementation of Circular Economy models

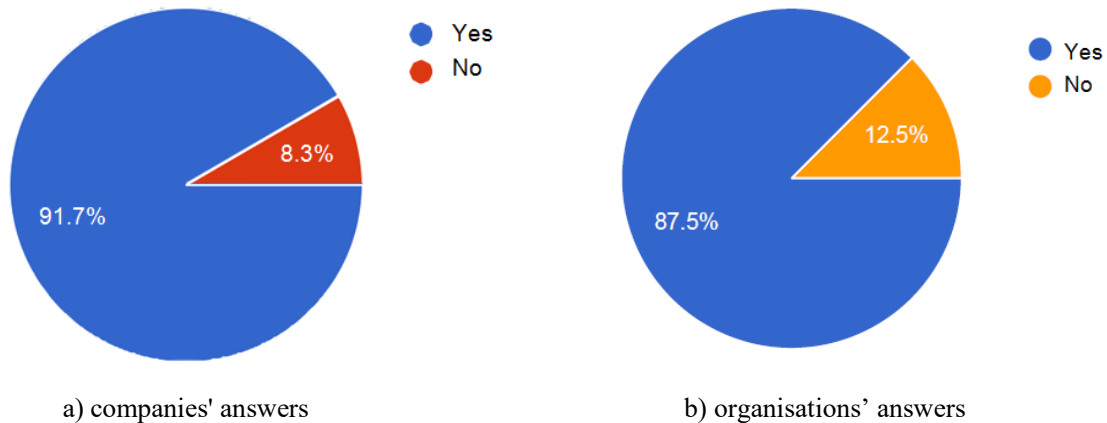


Figure 9 *Company needs for specialized professionals / experts in CE*

The difference between the answers of the companies and those of the organizations is interesting. It seems that companies better analyse the limits of their competence and the need to have employees prepared for the transition to the circular economy. The answer is correct considering the little information that the vast majority of companies have in the field of the circular economy, as was highlighted in the first answers in the questionnaire.

Competencies needed to be added to companies



If the companies have identified the need for specialized staff, it is interesting to see where this new staff is needed, in which departments it is necessary to add new skills or to strengthen the existing ones.

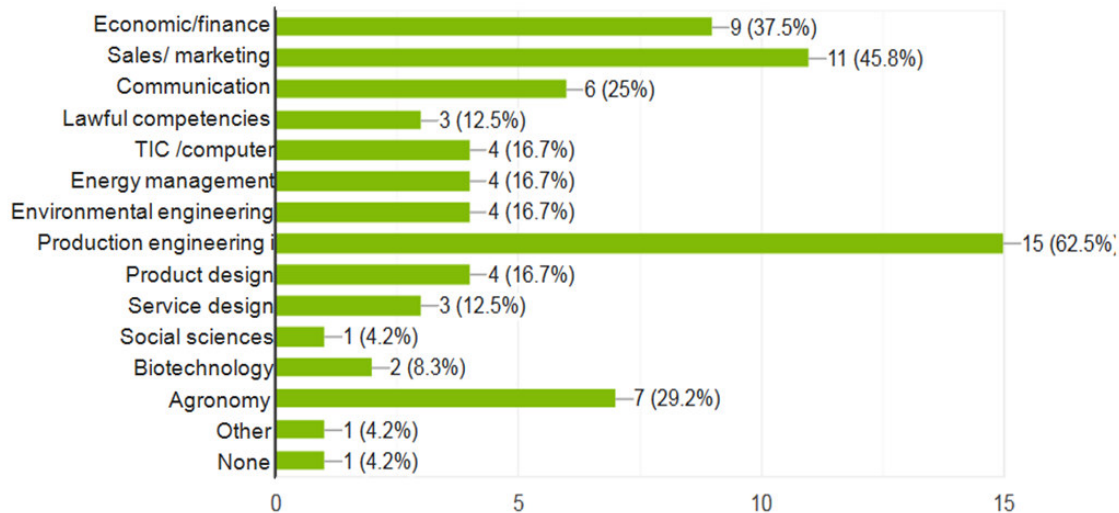


Figure 10. Competencies required by companies for CE implementation

It is a very good sign that on the first position in the options of companies is “*Production engineering*” which means the companies intend to re-think and reorganise the fabrication line in order to reduce the consume of raw materials and capitalisation of waste. The second option is “*Sales/ marketing*”, one of the problem, in the case of agri-food area being the sales of production and supply with the necessary materials. The competences in agronomy are also required considering the economic branch of respondents. On the similar positions with 16.7% of the options are: “*Product design*”, “*Environment engineering*”, “*Energy management*” and “*TIC/Computer sciences*”. The attention given by some companies to digitization is also a gratifying thing.

The organisation answers are underlined different options. On the first position in their answers are two competences: *Energy management* and *Biotechnology*. It is obvious that the organizations understand the importance of valorising secondary products and waste. The minimisation of energy consumed is considered having the same importance, taking in consideration the possibility to use renewable energy sources, to reduce the environment impact and also the invoice. *TIC/computer sciences* and *Products design* are on the next position, followed by *Communication*, *Environmental engineering*, *Production engineering*, and *Services design*. The rest of the competences proposed by questionnaire received the rest of the votes.

3.2.3 Knowledge required by the labour market for an entrepreneurial career in circular economy in rural areas

In the following paragraphs, the most important professional skills from the point of view of employers will be presented.

Circular Economy area

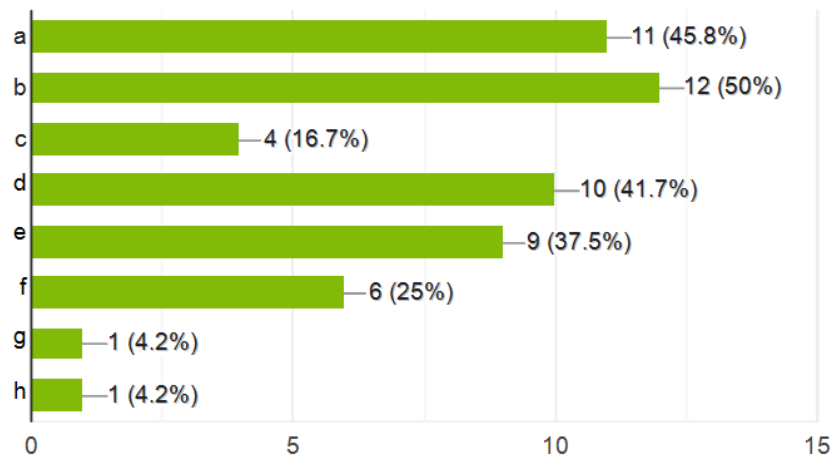


Figure 11 Knowledge in the area of circular economy, companies' options

Legend

- | | |
|---|--|
| a the regional supply chains of the local rural economy | e the IT solutions for circular economy (block chain, resource mapping, etc.) |
| b the methodologies to enhance the sustainable development of rural territories towards CE | f the impact of economic decision on social sustainability |
| c the mapping of the local potential actors and stakeholders for creating new collaborations (for example based on the by-product management). | g others |
| d the communication techniques to facilitate project dissemination and the understanding of the system complexity | h no answer |

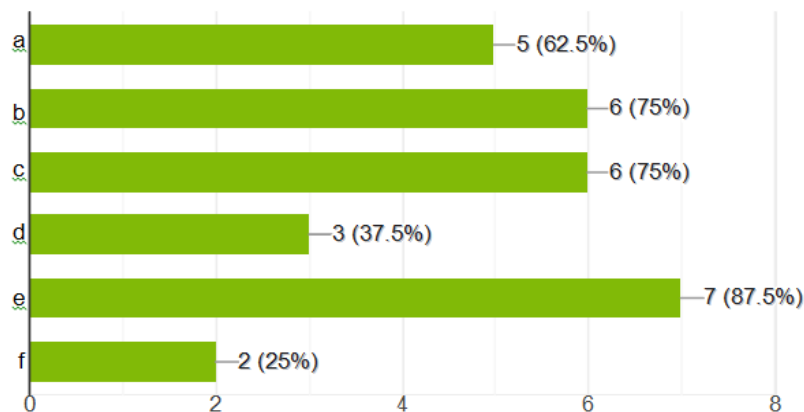


Figure 12 Knowledge in the area of circular economy, organisations' options

Legend: similar as above

The companies need personnel with competences in the sustainable development of rural area, the first recommendation of the organisation is IT solutions for circular economy (block chain, resource mapping, etc.).

Industrial Processes area

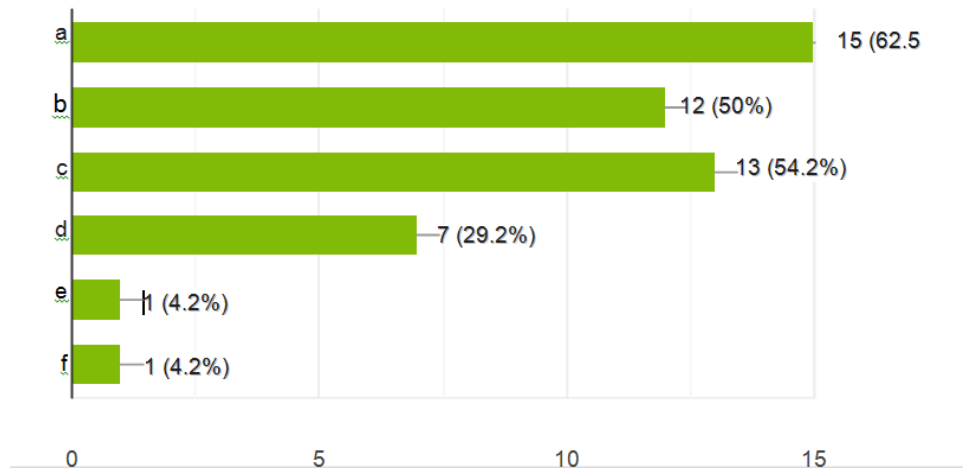


Figure 13 Knowledge in the area of Industrial processes – Companies

Legend

- | | |
|---|---|
| a the processes for the higher valorisation of by-products resulting from primary processing processes | d the technological innovation in circular economy |
| b the waste management in the local context | e others |
| c the measurement of the environmental impact of industrial processes | f no answer |

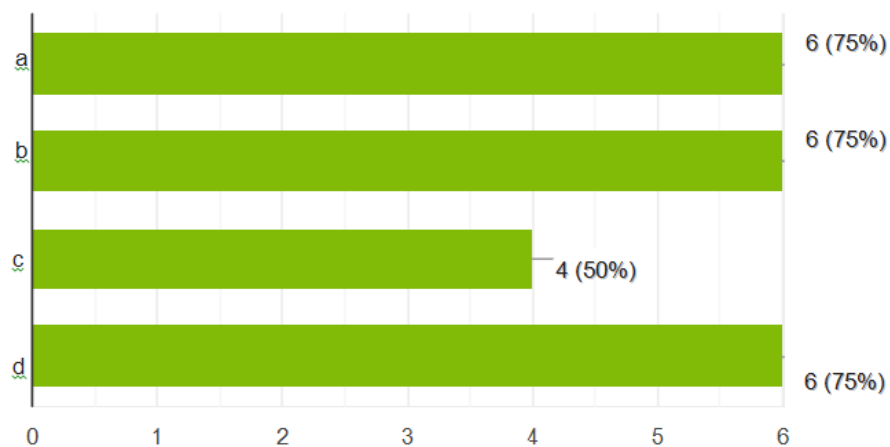


Figure 14 Knowledge in the area of Industrial processes – Organisations

Legend: similar as above

The Companies have as first option the valorisation of the by-products followed by the measurement of the environmental impact of industrial processes while the organizations give the same importance to the options a, b and d.

Resource Management area

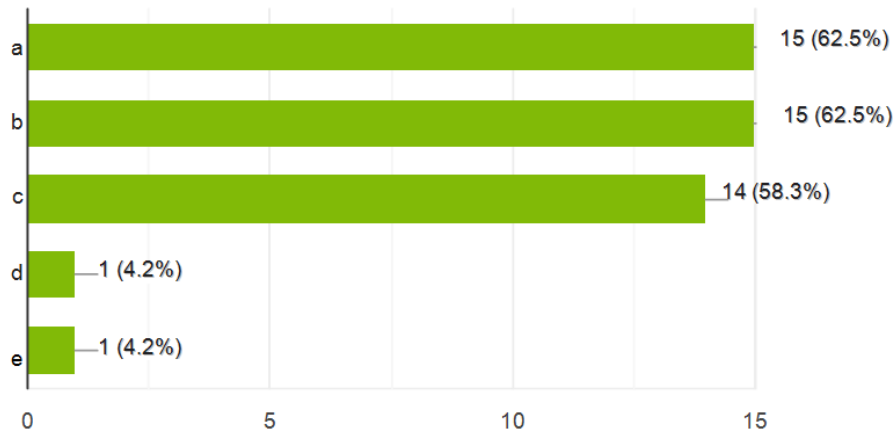


Figure 15. The main knowledge in the area of Resources Management- Companies

Legend

- | | | | |
|----------|---|----------|---|
| a | the assessment of the natural resource capacity of the territory: agricultural land, forests, water (rivers, groundwater, etc.) | c | the technologies for sustainable exploitation of the local raw materials (from crops, breeding) |
| b | the technologies for sustainable exploitation of renewable energy sources (sun, wind, biomass, hydro and geothermal) | d | others |
| | | e | No answer |

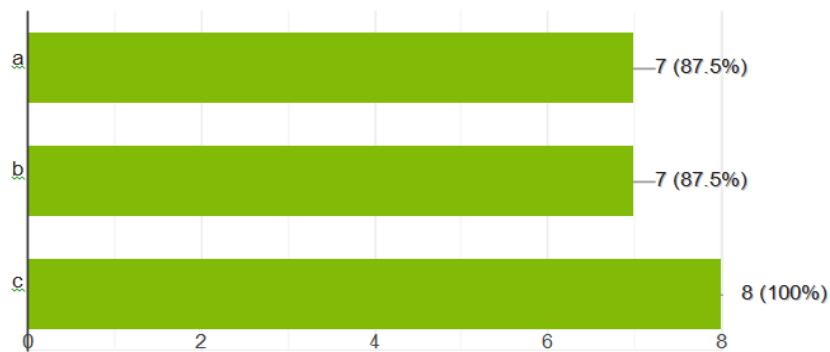


Figure 16. The main knowledge in the area of Resources Management- Organisation

Legend: same as above

All the proposed knowledge are considered very important by companies and also organisation. The difference appears in option 3. *The “technologies for sustainable exploitation of the local raw material”* is the most important for organisation and the least

important for companies. The companies think more pragmatically, the first options being related to the success of the business

Business area

The options of the companies and organisation concerning the best knowledge for a successful business are presented in the Figure 17 and 18.

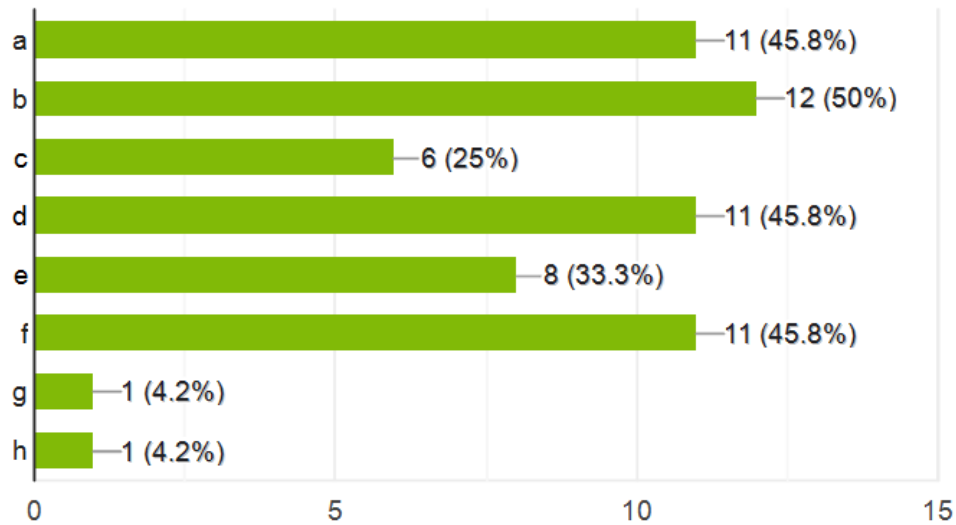


Figure 17. The main knowledge of Business area- Companies

Legend

- | | | | |
|----------|---|----------|---|
| a | the characteristics of business management in rural areas | e | the marketing plan design |
| b | Business Management in the frame of circular economy | f | the opportunity investments for circular economy in rural areas |
| c | the new circular business models in rural areas | g | others |
| d | the business plan development | h | no answer |

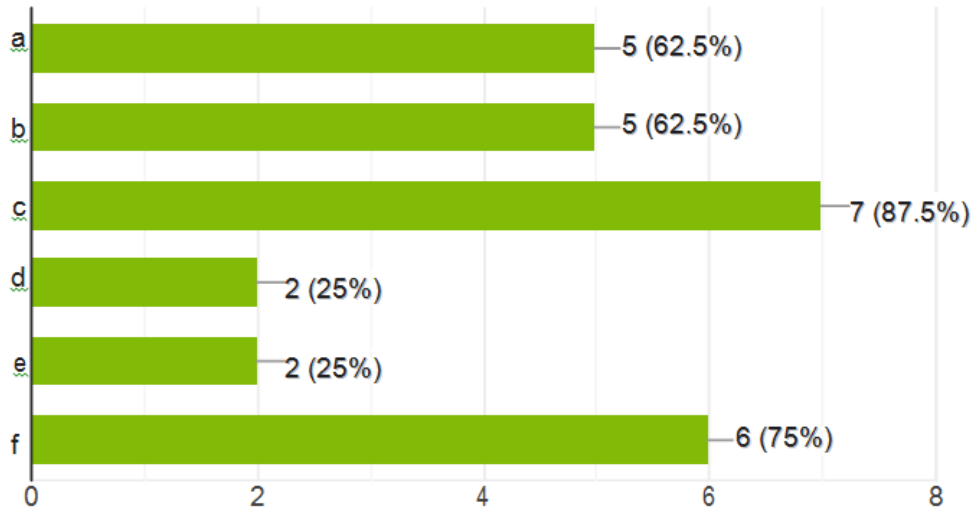


Figure 17. The main knowledge of Business area- Organisations
Legend: same as above

Concerning the business area companies need knowledge concerning the management of activities that can be developed in the framework of circular economy, the opportunities for investment, the marketing plan. In fact, the companies need people with complete knowledge of conducting business on the principles of the circular economy. Two companies did they did not express their opinion, their information about the circular economy being still poor

The organisations consulted during the opinion poll consider of first importance the knowledge concerning the business plan under the CE principles and about the investment opportunities for development of new model business in rural area.

Legislation area

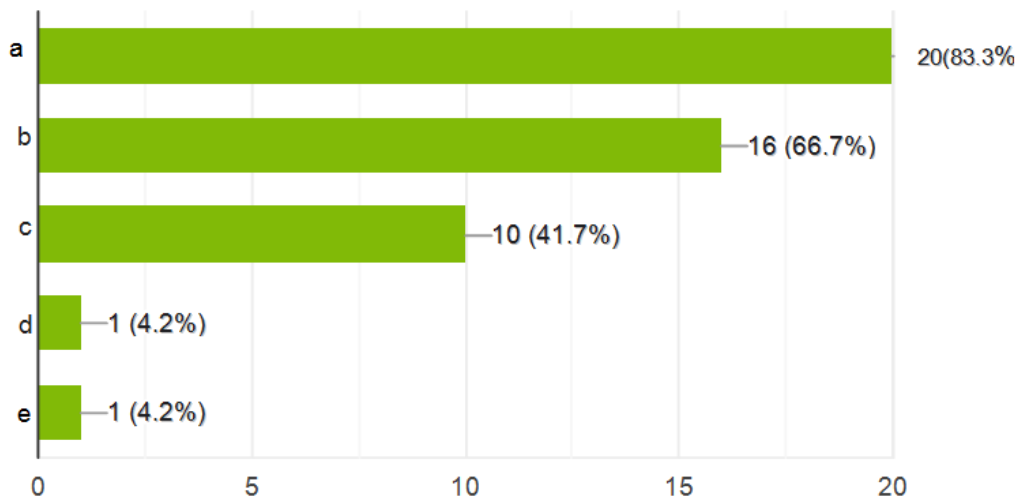


Figure 18. The main knowledge of Legislation area- Companies

Legend:

- | | | | |
|----------|--|----------|--|
| a | norms and legislation for environmental protection | c | the cost of meeting standards or regulations |
| b | norms and legislation for waste management | d | others |
| | | e | no answer |

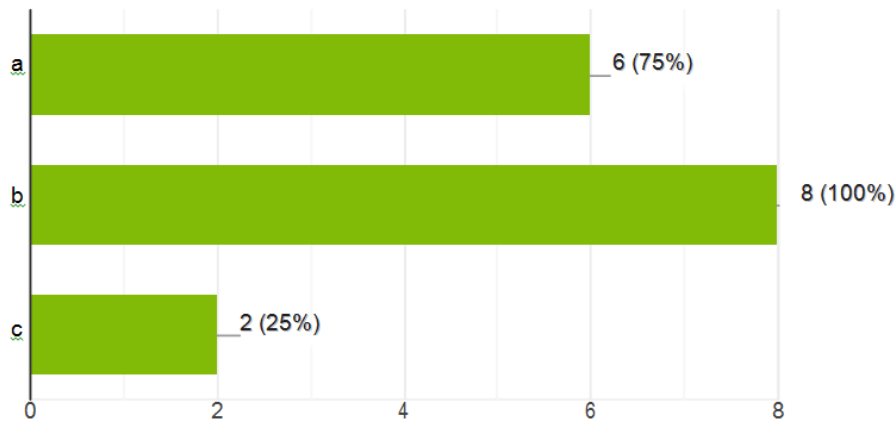


Figure 19. The main knowledge of Legislation area- organisations

Legend: same as above

The answers of companies concerning legislation are underlined the need of knowledge concerning the legislation in the field of environmental protection (83.3%), waste management (66.7%) followed by knowledge about the cost regarding compliance with these legislative norms.

The organisations give the first position to waste management, norm and legislation in the field, the other answers being the same as in case of firms' answers.

3.2.4 Personal skills required for a successful implementation of circular economy in rural areas

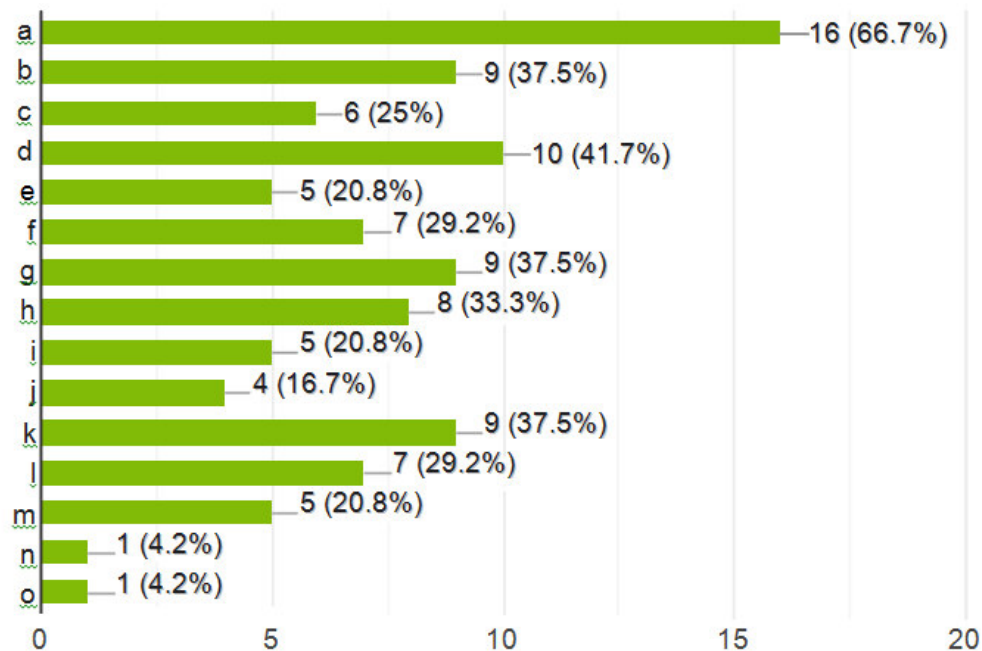


Figure 20. Personal skills required for a successful implementation of circular economy in rural areas - Companies

Legend

- | | |
|---|---|
| a Managing an interdisciplinary team with different professionals and backgrounds on CE. | h Dealing with changes in business activities |
| b Working in a team with different competences in circular economy | i Self-motivation in carrying out the tasks |
| c Mentoring / coaching skills for newcomers in the circular economy team | j Ability to work under pressure and time management |
| d Organizing activities and assigning tasks | k Ability to make quick and effective decisions |
| e Negotiation and conflict resolution skills to deal with partners and stakeholders | l Flexibility in accepting and solving new tasks arising from the implementation of circular economy |
| f Communication skills- to be able to adapt the speech to the audience | m Digital competences |
| g Observation skills and curiosity to look for innovative solutions | n Other |
| | o No answer |

Leading a group of people, proposing a new business model based on circular economy principles, requires certain personal qualities. In order to train the students from this point of view as well, the companies were asked what qualities they appreciate in their employees.

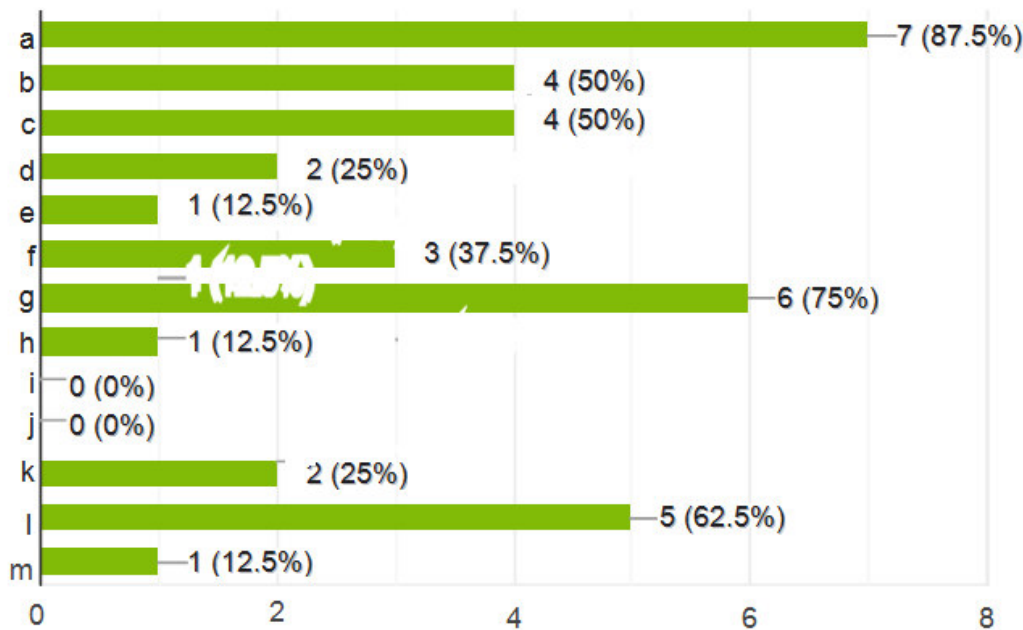


Figure 21. Personal skills required for a successful implementation of circular economy in rural areas-Organisations

Legend: same as above

The companies consider as the biggest challenge the “*Management of an interdisciplinary team with different professionals and backgrounds on CE*”, so, they wish a person with such abilities to be part of their team. On the second position is the capacity “*to organise activities and assigning tasks*” followed by “*Working in a team with different competences in circular economy*”, “*Observation skills and curiosity to look for innovative solutions*”, “*Ability to make quick and effective decisions*”. The skills asked by companies are very tight connected with an efficient management with the capability to lead and organise a team,

The first position in case of organisation is the same option chose by company “*Management of an interdisciplinary team with different professionals and backgrounds on CE*”. The second one is “*Observation skills and curiosity to look for innovative solutions*” and then “*Flexibility in accepting and solving new tasks arising from the implementation of circular economy*”. The organisations, apart from management skill, asked for more flexibility and curiosity, the capacity to be a mentor for newcomers as members of the team.