MPowerBIO

eM-POWERing SME Clusters to help SMEs to overcome the valley of death

D1.2 Skills Gap and Training Needs Analysis

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1	Food & Bio Cluster Denmark http://foodbiocluster.dk/	FBCD	DK	Non-profit SME/Cluster
2	TechTour Global https://www.techtour.com/	TTG	BG	SME
3	CLIB https://www.clib2021.de/	CLIB	DE	Non-profit SME/Cluster
4	Corporacion Tecnologica de Andalucia https://www.corporaciontecnologica.com/es/	CTA	ES	Non-profit Research Centre/Cluster
5	Italbiotec https://www.italbiotec.it/	IBT	IT	Non-profit Research Centre/Cluster
6	FoodScale Hub https://foodscalehub.com/	FSH	RS	Non-profit Association /Cluster
7	EIT Food https://www.eitfood.eu/	EIT	BE	Non-profit Association
8	Irish Bioeconomy Foundation https://bioeconomyfoundation.com/	IBF	IE	Non-profit SME/Cluster
9	Q-PLAN INTERNATIONAL ADVISORS https://qplan-intl.gr/	QPL	GR	SME
10	Sustainable Innovations Europe https://www.sustainableinnovations.eu/	SIE	ES	SME

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1. Introduction

Albeit many European Small and Medium-sized Enterprises (SMEs) have a promising idea or product, they face difficulties in accessing private sources of finance. Ideally, to attract private investors, an SME needs to effectively pitch innovative ideas, have a strong business plan, design a clear market strategy, and clearly define its customer base. In this framework, European clusters need to be better suited to help SMEs to overcome the valley of death, i.e., the difficult task of finding sufficient investment to get from an idea level to business creation. Here is where the H2020 MPowerBIO project comes into play.

MPowerBIO is aimed at setting up and implementing a capacity building programme for 90 SME clusters (10 'train-the-trainers' events throughout Europe will be organised), along with an integrated business support programme for 350 selected SMEs from clusters' networks, empowering clusters to raise awareness and improve the investment readiness and pitching skills of their SMEs. The project will also build links with investors and directly connect investment-ready SMEs identified and supported at regional competitions with expert coaches, investors, and business partners.

Online training modules and regional trainers' events will assist clusters to train their SME members and give them the best possibilities for preparing and presenting high-quality projects to investors. The best SME projects from these events will be selected by investors and invited to one of two European finals. At the finals, the selected companies will present their ideas to a panel of investors and experts from large organisations and venture capital funds in Europe, to attract capital to grow and develop their business. Overall, 72 high investment-ready SMEs are expected to pitch at the two final events. The project will screen and support 250 SMEs towards this goal.

This report studies the available and missing skills of trainers in SME clusters, concerning two main aspects, namely trainers' skill level to (i) train clusters' SMEs that are developing innovative bio-based technologies, products and/or services to improve their investment readiness, as well as (ii) identify, prepare for and engage with suitable investors. Based on a combination of qualitative and quantitative research tools, including desk research, semi-structured interviews, and a pan-European online survey we reveal meaningful insights, setting the premises for the design of the MPowerBIO capacity building programme. To do so, we also conduct a skills gap analysis to identify and compare the required set of skills ("to-be condition") against the currently available skill-set ("as-is condition"), building on the collection and analysis of survey data.

The survey targets mainly trainers of SME clusters, which are active in the bio-based industry at a pan-European level, to uncover gaps and respective training needs to be addressed by the capacity building programme, meeting the SME clusters' expectations. Nevertheless, we also investigate the skills' level of a broader audience, including innovation consultancies, accelerators, incubators, and innovation agencies to increase the robustness of our analysis. The survey results drive a statistical and econometric analysis, using well-known tools such as regression analysis, to highlight important training needs of the cluster trainers in terms of anticipated modules and curriculum.

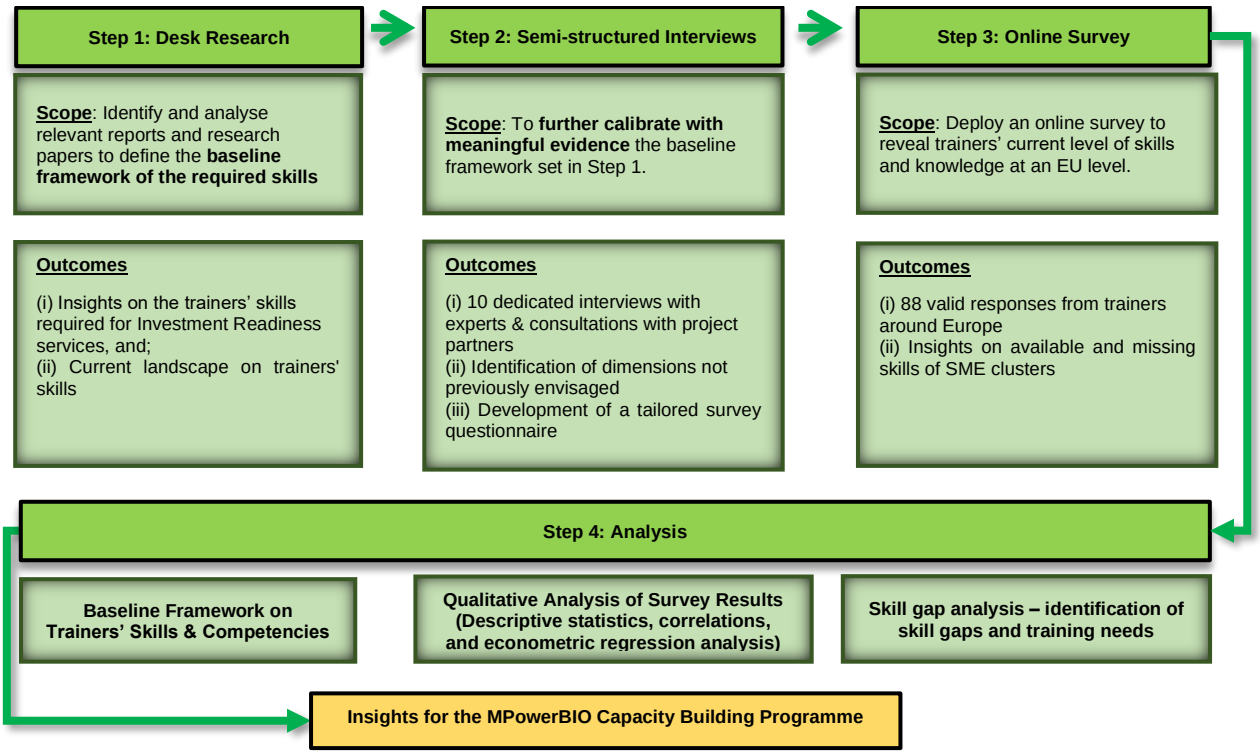
In this context, this report is structured as follows: At first, we elaborate in detail on the methodological approach that we followed and on the main characteristics of the survey respondents (**Section 2**). Next, we present the key insights of the survey and its underlying analysis, highlighting respondents' skills under different areas (**Section 3**). Prior to the concluding remarks (**Section 4**), we bring in also meaningful conclusions and suggestions to support the design of the MPowerBIO capacity building programme.

2. Approach

2.1 Methodology and sampling procedure

The methodological approach that we followed is depicted in the following figure.

Figure 1: Skills Gap and Training Needs Analysis methodological approach



Our approach comprises of four distinct but interconnected steps. We begin by conducting desk research on available online sources, including policy and business reports, scientific papers and relevant posts, so as to develop a baseline framework (see Annex I) for our analysis and identify the state-of-play in the provision of business support training landscape. The desk research was further discussed during a dedicated digital conference with consortium partners. By doing so, we enriched the baseline framework with evidence from the experience of MPowerBIO partners in delivering similar trainings and support services to the bio-based and other sectors. The second step in our approach is to further calibrate this framework to distinguish between the critical and non-critical skills required for better results, as well as to identify any dimensions not previously envisaged. This is based on 10 dedicated semi-structured interviews with expert trainers in clusters, accelerators, innovation agencies, consultancies, as well as prospective trainees from SMEs to cross-reference findings and reveal disparity points that may require further investigation. Ultimately, the results of Step 2 fuelled the development of a tailored survey, which was administered to a broader group of trainers in SME clusters across Europe. In turn, the survey was circulated and refined once more, across consortium partners. The final version of the survey (see Annex) was implemented by Q-PLAN on an online survey tool to ensure a broad and effective data collections process. In this respect, we decided to use the European Commission's official survey management tool, namely the EUSurvey tool. EUSurvey allows for the creation of official surveys of public opinion while providing a wide variety of elements used in forms, ranging from the simple (e.g. text questions and multiple-choice questions) to the advanced (e.g. editable spreadsheets, aggregated reports and multimedia elements). More importantly, the tool is hosted by the trusted servers of the European Commission's Department for Digital Services, ensuring the proper and secure storage of the

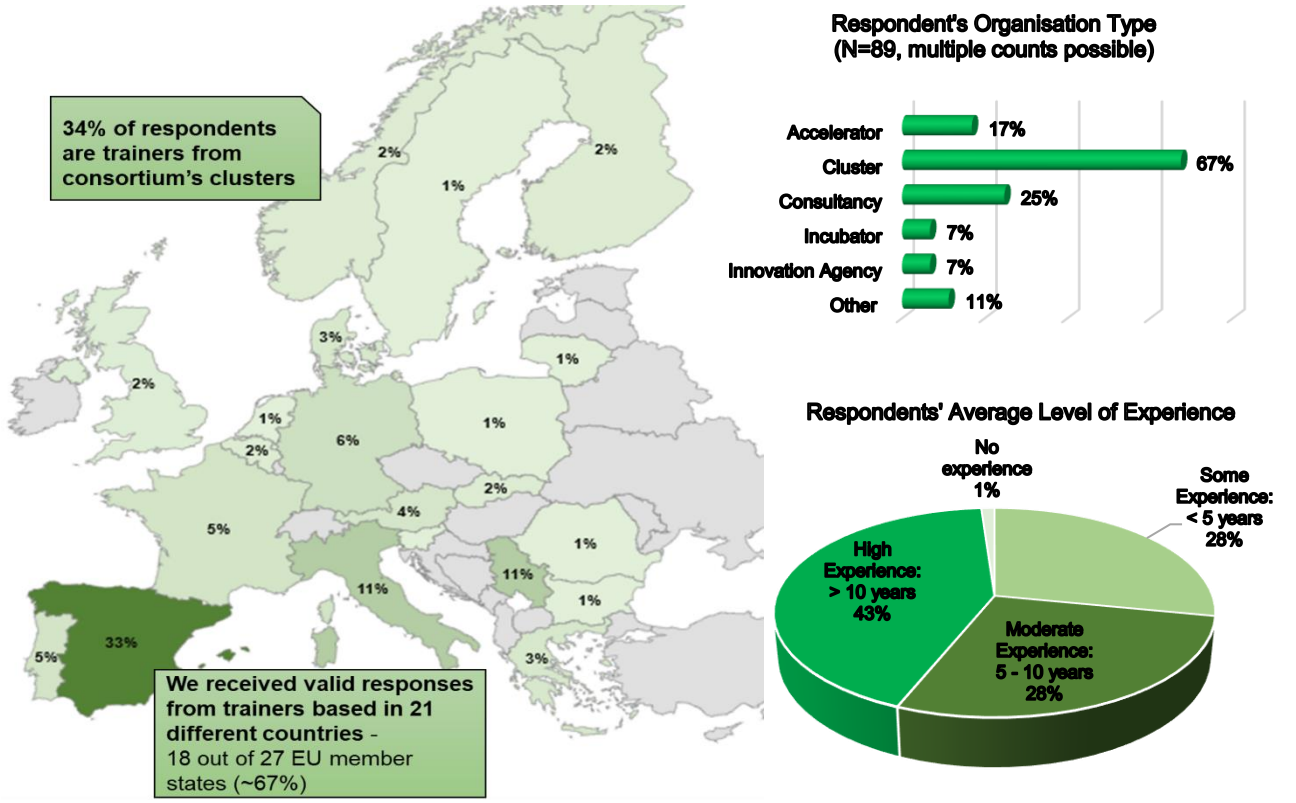
beneficiaries' views and insights. By doing so, we tried to reveal trainers' perceptions regarding their current level of skills and knowledge in providing investment readiness and business support services.

To reach out a sufficient number of suitable trainers around Europe, we invited SME clusters, members of the MPowerBIO consortium, as well as around Europe to circulate and complete the online survey among their experts and trainers. Furthermore, relevant experts from the consortium clusters' network were also invited to complete the survey – these experts include relevant trainers of innovation intermediaries around Europe, such as consultancies, accelerators, incubators, and innovation agencies. The online survey run for a period of approximately one month, namely from the 15th of September, 2020 until the 13th of October, 2020.

2.2 Respondents

In total, we received **89 valid answers** from SME trainers based in Europe. The following figures provide an overview of our sample profile along with its characteristics.

Profile of Respondents



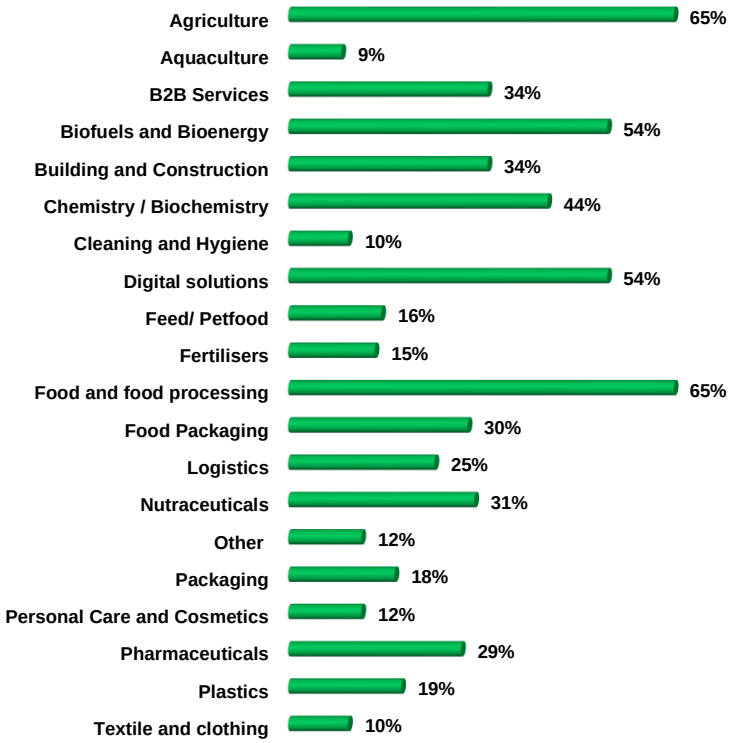
Source: Authors' calculations based on MPowerBIO survey, (N=89).

The employed dataset is of vital importance for this study. In line with our methodological framework, the attributes of our sample highlight its suitability and relevance with the scope and objectives of this survey, enhancing our results accordingly. The sample covers trainers based on 18 out of the 27 EU member states (approximately 67% of the total). Moreover, 30 of the respondents are trainers who belong to clusters within the MPowerBIO consortium (34% of the total) – ultimately, they constitute the key beneficiaries of the (train-the-trainers) MPowerBIO capacity building programme.

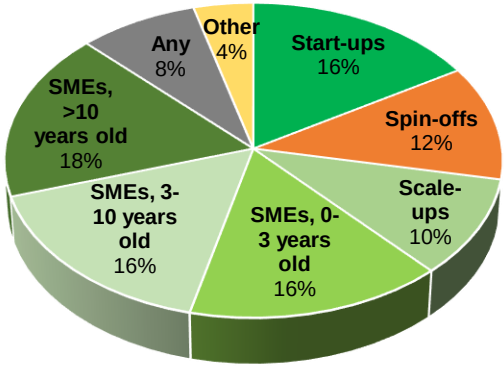
The comparatively large share of trainers within consortium clusters is also reflected in the respondents' organisation type. In this framework, the vast majority of our sample comprises of trainers within SME clusters that serve members in the bio-based industries (67% allowing multiple counts), followed by trainers in consultancies and accelerators, holding 25% and 17% respectively (again, multiple counts are allowed). Interestingly, most of the respondents are highly experienced trainers, on average, with over 10 years of professional experience, while almost all of respondents hold "hands-on" experience in providing business support services to companies (see figure on respondents' average level of experience). In a similar vein, we also investigate the business portfolio of the respondents in terms of industry type(s) they address, as well as the average company size of the members they serve – all this information is illustrated in the figures that follow.

Respondents' Client Portfolio

Cluster Members' Portfolio by Industry Domain
(N=89, multiple answers allowed)



Average Company size served by Respondents
(N=89, multiple counts possible)



Source: Authors' calculations based on the MPowerBIO survey.

Agriculture, food, and food processing activities are among the most popular when it comes to respondents' industry portfolio. Most of the trainers in our sample support companies that deal with the transformation of biological land resources (complementary to the aforementioned are activities in biofuels, bioenergy and biochemistry as among the most notable ones), while a large share of companies addressed by trainers is involved in the digital solutions domain. In line with the scope of this study, most of the companies addressed by our survey's respondents are active in core domains of bioeconomy (to produce food, materials and energy), highlighting the relevance of our sample in extracting meaningful insights for designing a capacity building programme for clusters in bioeconomy. On top of that, respondents indicated that they serve a broad range of company sizes, varying from mature SMEs that are over 10 years old to spin-offs and start-ups, as most types of entities hold similar response share in the survey.

3. Key Insights

The results of the survey uncovered interesting insights into trainers' current level of skills (see the figure below). Despite the comparably experienced sample of trainers in providing business support services to companies in the bio-based industries, we identified several skill areas that need improvement. Our survey investigated a set of core business skills' areas, including the segments of **(i)** knowledge in the bio-based industry, **(ii)** competence to assess the investment readiness of SME members, **(iii)** competence to support the investment readiness of SME members, **(iv)** room for improvement in operational and digitisation skills (of trainers), and **(v)** level of trainers soft skills. To study in-depth each core skill area, we used a set of well-tailored Likert-scale survey questions, addressing specific business sub-element of each core skill area. To this end, we employed a 5-level scale, with 1 indicating low levels of performance and 5 indicating high levels of performance.

On average[1], respondents scored above the threshold in 4 out of 5 core skills' areas – the **benchmark** of our analysis corresponds to the value of three (3), where it signifies the mid-skill level (please note that for the case of "Operational and digital skills" we have employed a reverse scale). Respondents feel above-average confidence for their business support skills in the areas of knowing and understanding the main agents in the bio-based industry, as well as in their soft skills. In contrast, despite their above-average score, respondents feel less confident in assessing the investment readiness of the SME members of the clusters (lowest average score of all skill areas), as well as in their management and digital skills (below average, as reverse scaling is employed).

Overview of trainers' performances in the main areas of skill levels under investigation

Source: Authors' calculations based on the MPowerBIO survey, (N=89).

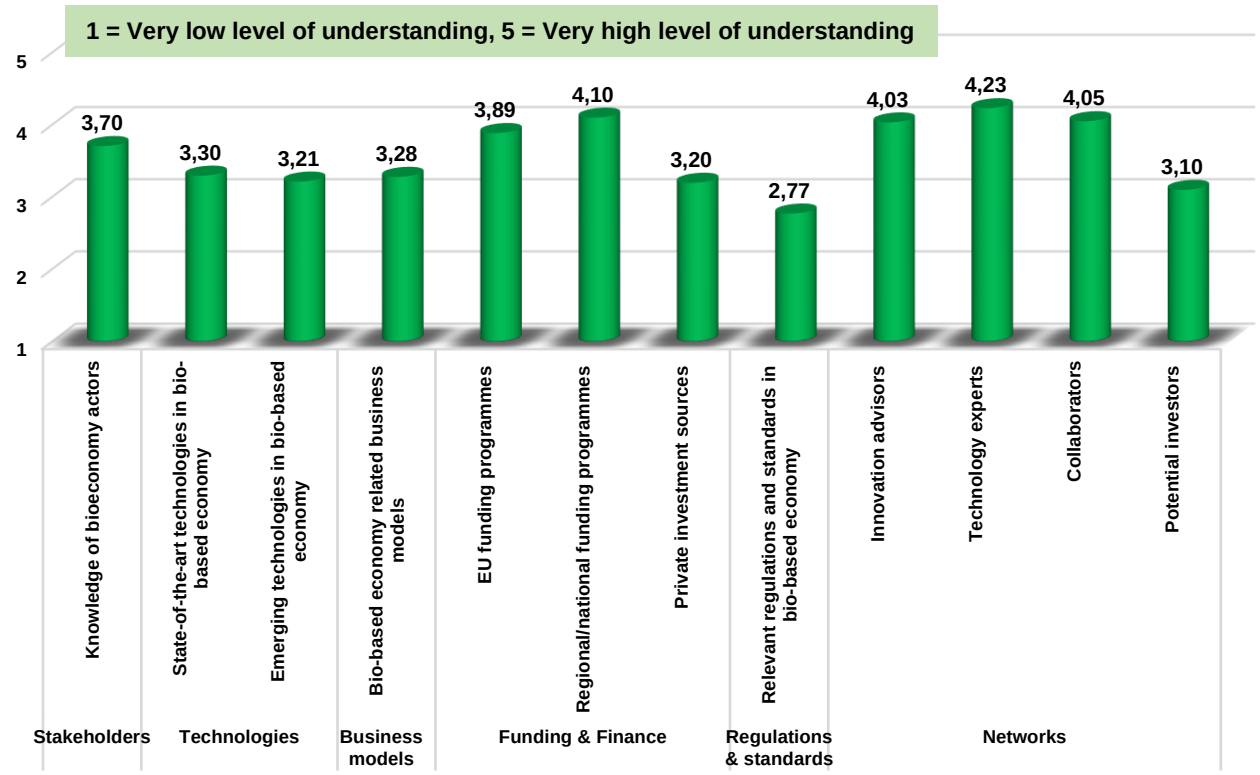
[1] The score level of each main skill category, as presented in the figure of trainers' performances, represents the average value of the constituent sub-questions of each main skill category.

Beyond this aggregated perspective, we found varying levels of trainers' expertise in the sub-elements of each skill area. The following sections provide an overview of the key insights gained.

3.1 Perceived Knowledge in the Bio-Based Industry

Since most respondents have considerable expertise in providing business support services to companies active in bioeconomy, they possess a decent level of knowledge in the different aspects of the bio-based industry, ranging from relevant technologies to existing funding sources and networks. In this respect, almost all the skills assessed are above the benchmark value (namely, 3 = moderate understanding of the element under assessment), as illustrated in the figure below. Notably, respondents seem to possess a very good understanding of the available regional and national funding programmes, as well as large networks of technology experts, innovation advisors and collaborators in bio-based domains.

Trainers' average level of understanding of key business aspects in Bio-based industry



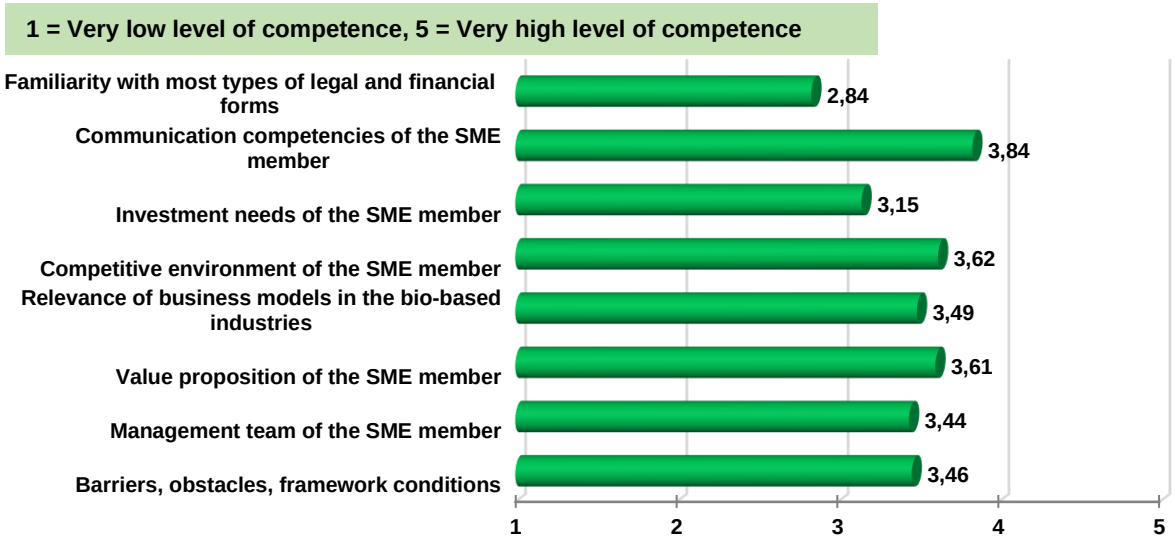
Source: Authors' calculations based on the MPowerBIO survey, (N=89).

Nevertheless, these outcomes should be interpreted with caution – there is still room for improvement in trainers' skills. Especially, we can trace two main skill areas of potential improvement, namely in trainers' **(i) understanding of relevant regulations and standards in the bio-based economy** (where they score below the threshold – 2.77); and **(ii) knowledge of private investment sources** and existence of **networks with private investors** (where they score slightly above the threshold). Moreover, the results indicate that trainers' knowledge of existing emerging technologies in the bio-based economy could also be improved.

3.2 Investment Readiness Assessment and Support Skills

To investigate the level of Investment Readiness (IR) services offered by the SME clusters, we delve into the **(i)** trainers' skills in assessing the IR potential of an SME member and **(ii)** the pertinent IR support skill of trainers. With respect to the former segment, survey results indicated a **relatively low level of trainers' familiarity with the current legal and financial frameworks**, scoring below the benchmark of our analysis. Furthermore, trainers face **difficulties to understand the investment needs of the SME member** of their cluster, marking this aspect amongst the lowest scoring one. All in all, the rest of IR assessment competencies were above the benchmark, while they recorded a low variance in their competence levels.

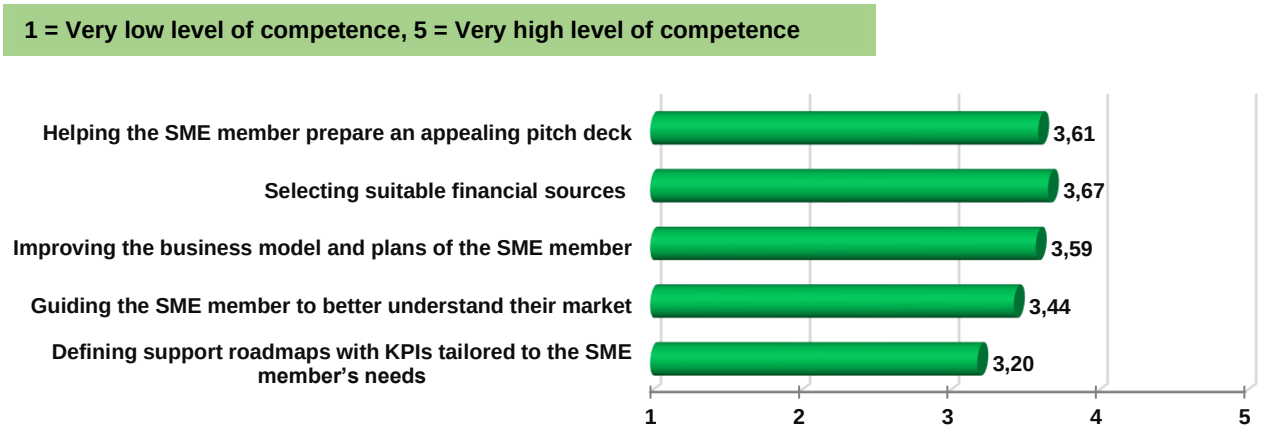
Trainers average level of competence in assessing SME members' investment readiness



Source: Authors' calculations based on the MPowerBIO survey, (N=89).

With regards to trainers' competencies in providing effective business support to the SME members, we can mainly highlight that **(i)** respondents indicated the lowest score in their ability to define meaningful growth roadmaps with dedicated KPIs that are tailored to the SME needs and **(ii)** again, as in the assessment of IR skills, the variability in the skills' levels of trainers is low and above the threshold. This highlights that trainers feel relatively confident about their skill in providing effective IR support to SMEs while they are slightly less confident in assessing the level of SMEs' IR.

Trainers average level of competence in supporting SME members' investment readiness

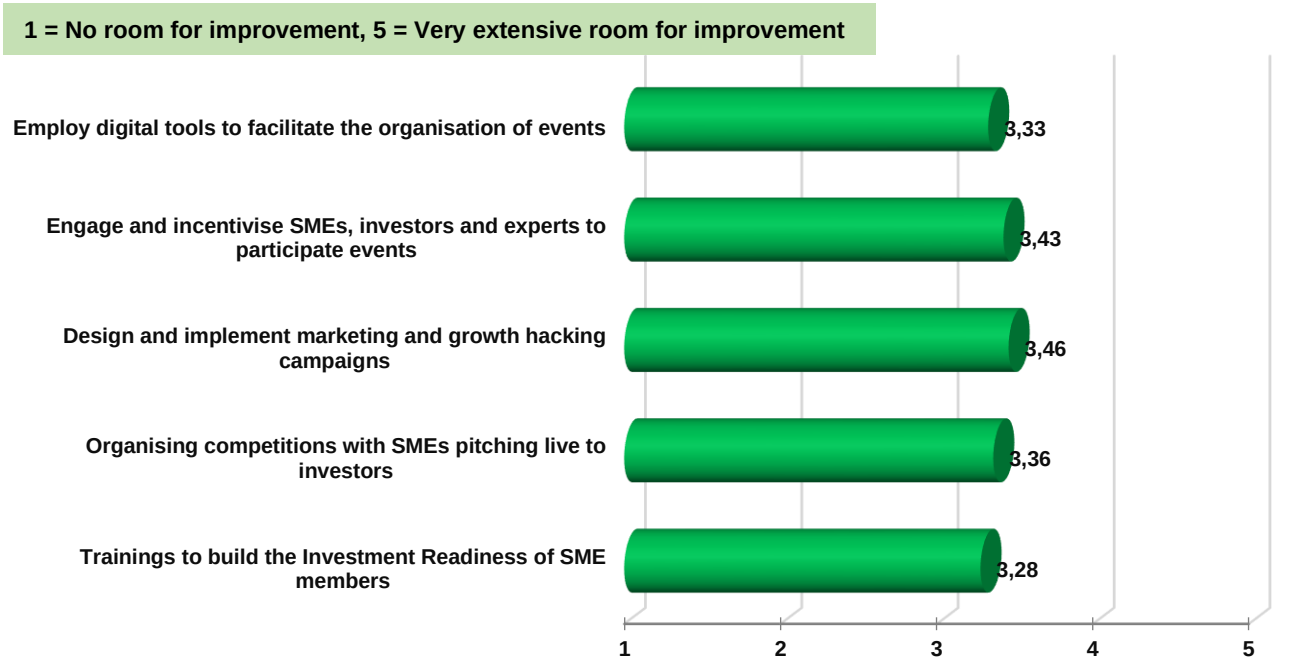


Source: Authors' calculations based on the MPowerBIO survey, (N=89).

3.3 Operational and Digital Skills

Operational and digital skills leave severe room for improvement. The consistency by which the different skills in this area have been evaluated close to “very extensive room for improvement” clearly point significant training needs (see the figure below). Respondents need mainly support in designing and implementing marketing and growth campaigns for the SME members, which records the highest score in the category. There is also still room for improvement in trainers’ ability to effectively engage and incentivize several groups of stakeholders (such as investors, experts and SMEs) to participate in their events. In general, the low variance in the scores points at a considerable improvement potential under this skill category – training modules addressing these broad operational and digital skill gaps need to be balanced with respect to breadth and depth.

Trainers’ average room for improvement in operational and digital skills



Source: Authors’ calculations based on the MPowerBIO survey, (N=89).

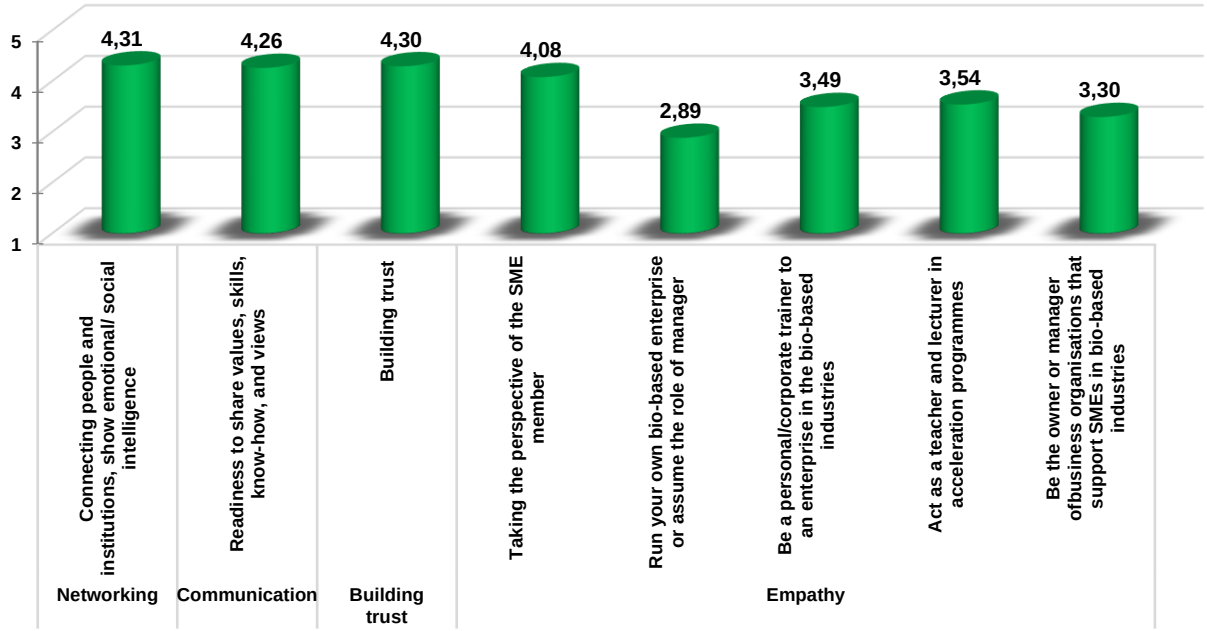
3.4 Soft Skills

Overall, received the highest score amongst the different skill areas under study, as illustrated by the figure below. More specifically, under this area, we trace some of the highest-scoring trainers’ skills, including their ability to establish trust with SME members, the readiness to share knowhow and skills, as well as their levels of emotional intelligence. At the same time, we also identify areas that deem for improvement through dedicated modules.

In fact, respondents do not feel that they possess the **required management skills**, on average, to run their own bio-based business or assume the role of manager. This constitutes an important soft skill for trainers. Management skill, especially under real operation environments, will enable trainers to transfer this knowledge to SME members more effectively and practically than before. This outcome is also correlated with the respondents’ low scoring in a similar question, namely their **ability to manage a venture that supports SMEs in bio-based industries**. It is also worth noting that the level of variance was the highest under the dimension of soft skills. This is translated into wide differences in the respondents’ scoring under the various questions of this dimension.

Trainers average level of competence in soft skills

1 = Very low level of competence, 5 = Very high level of competence



Source: Authors' calculations based on the MPowerBIO survey, (N=89).

3.5 Identified Correlations and Regression Analysis

3.5.1 Analysis of Correlation Coefficients

We enhance our analysis by employing relevant statistical tools to identify patterns and relationships among the different sets of skill areas. To this end, we conducted a correlation analysis based on the Spearman rank correlation; Spearman's coefficient is a nonparametric (distribution-free) rank statistic proposed as a measure of the strength of the association between two variables. It is mostly used when the distribution of data makes the typical correlation coefficient (Pearson's correlation) undesirable or misleading.[2] To complement our analysis and ensure the validity of the calculated coefficients, we also investigate the statistical significance of our results – meaning whether or not the calculated correlation coefficients are statistically different from zero.

The correlation analysis, as presented in Table 1, revealed interesting insights on the way each skill areas are linked to each other. As expected, we identified a highly positive and statistically significant relationship between the trainers' skill levels in IR assessment and IR support. In practice, this means that as the level of trainers' ability to assess the investment readiness of SMEs increases, there is also an associated increase in their skills to support these SMEs in building their investment readiness and vice-versa. Trainers' knowledge in the BBI is also positively correlated with the rest of the skill areas, having on average among the highest correlation coefficients that are also statistically significant.

[2] In our case, we analyse a 5-level Likert scale data where the assumptions of parametric correlation coefficients such as (i) continuous scale of data and (ii) normal distribution of data are violated, supporting the employment of a non-parametric correlation coefficient such as Spearman's.

Table 1: Spearman's Correlation Coefficient for the Main Skill Areas

	BBI Knowledge	IR Assessment	IR Support	Operational and Digital Skills	Soft Skills
BBI Knowledge	**1.00**	**0.44****	**0.44****	**-0.16**	**0.38****
IR Assessment	**0.44****	**1.00**	**0.77****	**-0.08**	**0.46****
IR Support	**0.44****	**0.77****	**1.00**	**-0.07**	**0.33****
Operational and Digital Skills	**-0.16**	**-0.08**	**-0.07**	**1.00**	**-0.02**
Soft Skills	**0.38****	**0.46****	**0.33****	**-0.02**	**1.00**

** Indicates statistically significant coefficient at the 5% level.

Source: Authors' calculations and insight extraction based on the MPowerBIO survey.

Interestingly, we also found that respondents' operational and digital skills are positively associated with all of the rest skill areas – since we use reverse scaling for measuring the skill levels in Digital and operational skills (negative values reported in the table are translated into positive relationships). However, the latter finding does not deliver any statistical significance.

3.5.2 Regression Analysis

While correlation quantifies the direction and strength of the relationship between two skill areas, as shown in the previous section, in this part we introduce and estimate a multiple linear regression econometric model, based on the Ordinary Least Squares (OLS) method. In doing so, we are assessing the association among the different skill areas (namely, BBI knowledge, IR assessment, IR support, operational and digital skills, as well as soft skills) using data collected through the MPowerBIO survey[3] (N = 89 observations).

Our econometric approach models the various skill areas (treating them as a set of variables) through a stohastic equation of the form:

$$Y = a + b_1X_1 + b_2X_2 + b_3X + b_4X_4 + e \quad (\mathbf{1})$$

where ***a*** is the constant parameter, ***b*$_1$**, ***b*$_2$**, ***b*$_3$**, and ***b*$_4$** are the regression coefficients[4] to be estimated, which measure the relationship between the dependent and independent variables, and ***e*** is the error term (residuals) of the regression model. In this framework, we have estimated a set of 5 different equations, one for each skill area, using the GRETL package for econometric analysis. Each time, the skill area that is under investigation enters the model as an independent variable, while the rest of the skill areas enter the equation on the right-hand-side as independent variables of the model. Statistical tests (based on the t-statistic) have also been performed to assess whether each regression coefficient is significantly different from zero. Eventually, through this multiple linear regression model, we aim to identify **(i)** how strong the relationship is between the independent variables and the dependent variable, and **(ii)** the direction (sign) of this relationship. The following

[3] The dataset is comprised of the aggregated average skill level of each of the 89 respondents in each of the main skill areas under investigation.

[4] Each regression coefficient represents the change in Y relative to a one unit change in the respective independent variable. In the multiple regression situation, b_1, for example, is the change in Y relative to a one unit change in X_1, holding all other independent variables constant.

table presents the outcome of the estimation of equation (1), along with the tests for coefficients' statistical significance.

Table 2: Estimated OLS Regression of the Main Skill Areas

Estimation of the OLS model N = 89, Heteroskedasticity and Autocorrelation-Consistent (HAC) standard errors									
Dependent Variable	**Independent Variables**								
BBI Knowledge	**IR Assessment**		**IR Support**		**Operational and Digital Skills**		**Soft Skills**		
	coeff.	*p-value*	*coeff.*	*p-value*	*coeff.*	*p-value*	*coeff.*	*p-value*	***R^2***
	0.1	0.51	0.2	0.11	-0.11	0.15	**0.25****	0.04	**0.28**
IR Assessment	**BBI Knowledge**		**IR Support**		**Operational and Digital Skills**		**Soft Skills**		
	coeff.	*p-value*	*coeff.*	*p-value*	*coeff.*	*p-value*	*coeff.*	*p-value*	***R^2***
	0.06	0.53	**0.59*****	0	-0.03	0.6	**0.24*****	0	**0.64**
IR Support	**BBI Knowledge**		**IR Assessment**		**Operational and Digital Skills**		**Soft Skills**		
	coeff.	*p-value*	*coeff.*	*p-value*	*coeff.*	*p-value*	*coeff.*	*p-value*	***R^2***
	0.17*	0.07	**0.81*****	0	-0.01	0.98	-0.05	0.67	**0.6**
Operational and Digital Skills	**BBI Knowledge**		**IR Assessment**		**IR Support**		**Soft Skills**		
	coeff.	*p-value*	*coeff.*	*p-value*	*coeff.*	*p-value*	*coeff.*	*p-value*	***R^2***
	-0.21	0.16	-0.08	0.65	-0.01	0.97	0.1	0.51	**0.04**
Soft Skills	**BBI Knowledge**		**IR Assessment**		**IR Support**		**Operational and Digital Skills**		
	coeff.	*p-value*	*coeff.*	*p-value*	*coeff.*	*p-value*	*coeff.*	*p-value*	***R^2***
	0.25***	0.02	**0.39*****	0.01	-0.06	0.64	0.05	0.51	**0.28**

* Indicates statistically significant coefficient at the 10% level.

** Indicates statistically significant coefficient at the 5% level.

*** Indicates statistically significant coefficient at the 1% level.

Source: Authors' regression estimations based on the MPowerBIO survey.

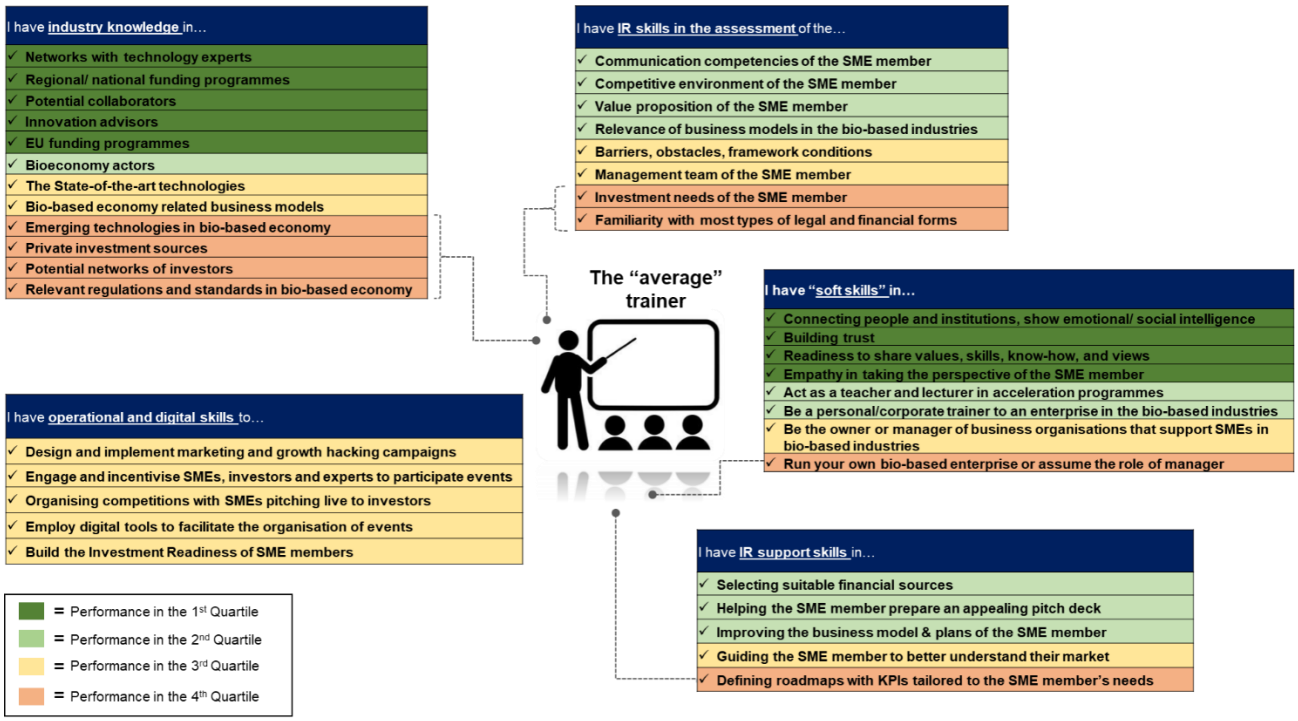
In summary, the key results of the regression analysis are presented as follows. To extract meaningful inferences, from a statistical point of view, we concentrate only on the estimated coefficients that are **statistically significant** (either at the 1%, 5%, or 10% accordingly).

- BBI knowledge and soft skills of respondents are linked. If the soft skills' level of the surveyed trainers increases by one unit (e.g., on a Likert scale from 3 – the average level of competence to 4 - Moderately high level of competence) then, the level of BBI knowledge will be increased by 0.25 units.
- If the level of trainers skills in IR support increases by one unit then, their respective level of IR assessment skills will be increased by 0.59 units. A similar increase in soft skills (one unit) will result in an increase in the IR assessment skill level by 0.24 units.
- As expected, the results of the econometric analysis yielded that **the most strong relationship is existent between the levels of IR support and IR assessment**. In fact, the regression analysis points out that a one-unit increase in the skill level of IR assessment will be accompanied by a 0.81 unit increase in trainers ability to provide effective IR support.
- Increase in surveyed trainers' skill levels in BBI knowledge and IR assessment will also impact positively on their level of soft skills.

3.6 Conclusion on trainers' skill gaps and training needs

The survey and its analysis uncovered interesting insights into trainers' current level of skillset. Overall, the level of skills under each area along with potential areas for their improvement are presented in the following figure, which presents the skill levels of the "average" trainer.

Overview of average skill levels of SME clusters' trainers



Source: Authors' calculations and insight extraction based on MPowerBIO survey.

The constituent sub-skills of each main skill area have been classified based on their quartile segmentation, in 4 different groups. The skills that belong to the 4th quartile are classified as those who need the most improvement and, thus, those that the topics and curriculum of the MPowerBIO capacity building programme should focus on (see Annex III for more details on the classification).

The "average" trainer demonstrates significant potential for improvement (red shaded parts – 4th quartile) in some skill aspects under the areas of knowledge in BBI and its relevant aspects and actors, as well as of skills associated with investment readiness assessment and support. However, in both aforementioned areas respondents indicated that they also possess strong competencies and skills, as highlighted by the green shaded parts. The average level of soft skills is also one of respondent's strong competencies. Finally, the results demonstrate that the surveyed intermediaries have, on average, a medium level of performance mostly in their operational and digital skills.

The following tables highlight the main missing skills of trainers that need to be improved, as well as the aspects where trainers have strong skills, respectively.

Table 3: "Average" trainer's main missing skills with potential for improvement

As the "average" trainer, I need to improve my:	
	Knowledge in emerging technologies in the bio-based economy.
	Knowledge in relevant regulations and standards applied in the bio-based economy.
	Knowledge and familiarity with the most types of legal and financial forms.
	Ability to spot and identify private investment sources for the SME members.
	Ability to define roadmaps and KPIs that are tailored to the needs of the SME member.
	Network with private investors, to facilitate the access-to-finance of the SME members.
	Skills to assess the investment needs of the SME member.

Table 4: "Average" trainers' strong skills

As the "average" trainer, I am strong at my ability to:	
	Establish networks with technology experts.
	Identify relevant regional/ national funding programmes.
	Find potential collaborators for the SME member.
	Find innovation advisors for the SME member.
	Identify relevant EU funding programmes.
	Build trust.
	Share values, skills, know-how, and views.
	Take the perspective of the SME member (Empathy).

The level of competencies is mirrored to the level of training needs. Consequently, the greatest training needs exist with respect to assessing the investment needs of SME and facilitating the access-to-finance process in general, through the knowledge of relevant private financing schemes, networks, and contacts with investors. Knowledge in legal aspects, including existing regulations and financial processes to be followed also constitutes a skill area of trainers that can be improved. Skills within these skill areas should receive primary attention when developing the MPowerBIO capacity building programme, "train-the-trainers" topics, as well as training curriculum.

4. Conclusions and way forward

This report was developed in the frame of the H2020 MPowerBIO project, to identify and analyse the skill levels and the consequent potential areas for improvement of SME cluster trainers around Europe. In doing so, we conducted, at first, a thorough desk research to set-up the initial framework of our analysis. Then, through insights from dedicated interviews with experts and trainers, we enhanced our initial framework with meaningful information on the skills that are most important for business support trainers, ultimately leading to the development of a well-tailored survey questionnaire. This survey was deployed on-line for one month, leading to a set of 89 valid responses that fuelled our study with interesting data. Finally, the survey data were analysed using several research methods, including descriptive statistics, correlation coefficients and multiple linear regression models. This revealed valuable insights about **(i)** the association between trainers' different main skill areas and **(ii)** the trainers' skill areas that need for improvement. These results will fuel the development of the MPowerBIO capacity building programme both in terms of training modules, as well as in terms of the training curriculum.

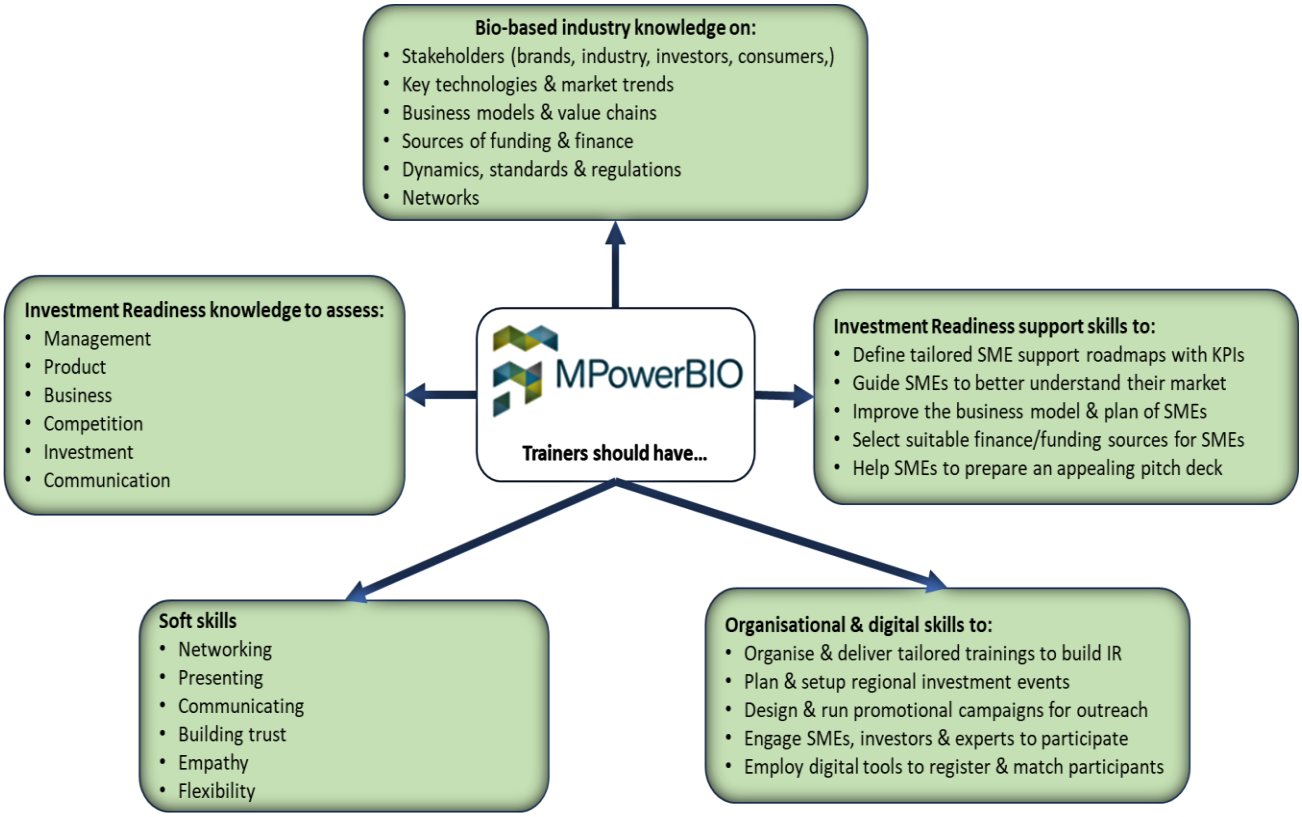
We identified skill gaps with respect to all of the main skill areas under investigation, namely BBI knowledge, IR assessment and support skills, operational and digital skills, as well as soft skills. In more detail, respondents reported that they need improvement mostly in skill pertaining to their knowledge in BBI emerging technologies and the overall framework of regulations and standards that is applied in the industry. On top of that, trainers' knowledge and skill levels in identifying legal and financial forms, as well as relevant private investment sources constitute a significant area for improvement. In parallel, the capacity building programme should also focus on helping trainers in better assessing the investment needs of the SME members and linking these SMEs with potential investors in the domain.

Finally, it has been already highlighted that, as a next step, this report will fuel the development of the various aspects of the MPowerBIO capacity building programme. The latter will be meticulously designed in order to be offered through dedicated 'train-the-trainers' events to SME clusters active in the Bioeconomy industry, at a European level.

Annex I – Baseline Framework of the Analysis

Based on the initial desk research and insights from consortium partners, we developed the initial framework that set the premises for the consequent analysis on cluster trainers' skills and competencies. This framework is presented in detail in the figure below.

Baseline framework for the identification and analysis of trainers' available and missing skills



Annex II – Survey on Skill Gaps & Training Needs of Clusters' Trainers

Contact details

Title	Title	Mr / Ms / I prefer not to answer
First name	First name	Free text
Last name	Last name	Free text
Organisation	Organisation	Free text
Type of organisation	How you would describe your organisation? *(Select those the one that better describes your organisation)*	*Check boxes (multiple answers allowed)* • Cluster • accelerator, • innovation agency, • incubator, • consultancy, • other (please specify)
Website	Website	*Free text*
Email address	Email address	*Free text*
Next steps	Would you like to stay informed about the MPowerBIO project to benefit from our project outputs?	*Yes / No*

Background information

Topic	Question as implemented in the survey	Answer options
Country	Which country are you based in?	Free text *(I will check the possibility to have a drop-down menu mentioning the European countries and 'other')*
Member, size	In terms of company's size, what types of members do you support (on average)? *(Please distribute the share of your total working hours according to the following types of companies you support - rough estimate is sufficient)*	*Check boxes (multiple answers allowed)* • Start-ups, • spin-offs, • scale-ups • Small and Medium sized companies that are 0-3 years old • Small and Medium sized companies that are 3-10 years old • Small and Medium sized companies older than 10 years • Any • Other (please specify):…
Members, sector	Please describe your portfolio of members by indicating the industry domain they belong to *(please select an industry only if you spend 10% or more of your working hours on supporting members in the respective domain)*	*Check boxes (multiple answers allowed)* • Agriculture • aquaculture, • forestry, • Chemistry / biochemistry • fertilisers • food and food processing, • Digital solutions, • B2B services • logistics, • packaging, • Feed/Petfood • Pharmaceuticals • plastics, • Cleaning and hygiene

Topic	Question as implemented in the survey	Answer options
		• personal care and cosmetics • Textile, clothing, sports and toys • Food packaging, disposable tablewear • Biofuels and bioenergy • Building, construction and restoration (e.g. paintings, decorations, furniture, etc.) • Nutraceuticals, environmental bioregulation and biological sensors • other (please specify)
Experience	Please indicate the years of your professional experience in providing support services to companies	*Radio buttons (one answer is allowed)* • < 5 years • 5- 10 years • > 10 years • No experience

Bio-based industry knowledge

Topic	Question as implemented in the survey	Answer options
	To what extent do you agree with the following statements: I have a good understanding of…	
Stakeholders	• …who the bioeconomy actors are (e.g. feedstock providers, bio-based products producers, brands/retailers, biobased industry, R&D teams)	Scale from 1 to 5 [1=Strongly disagree; 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree]
Technologies	• …the state-of-the-art technologies in bio-based economy	Scale from 1 to 5 [1=Strongly disagree; 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree]
	• …the emerging technologies in the bio-based economy	Scale from 1 to 5 [1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree]
Business models and value chains	• … the bio-based economy related business models	Scale from 1 to 5 [1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree]
Sources of funding and finance	• … the available EU funding programmes	Scale from 1 to 5 [1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree]
	• … the available reginal/national funding programmes	Scale from 1 to 5 [1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree]
	• … relevant private investment sources in bio-based economy (e.g. business angels, venture capitals, corporate investors, etc.)	Scale from 1 to 5 [1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree]
Regulations and standards	• … the most relevant regulations and standards in bio-based economy (e.g. safety regulation, labelling)	Scale from 1 to 5 [1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree]
Networks	I have access to a large network of • … innovation advisors	Scale from 1 to 5 [1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree]
	• … technology experts	Scale from 1 to 5 [1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree]
	• …. collaborators (e.g. potential suppliers, members, etc.)	Scale from 1 to 5 [1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree]
	• … potential investors	Scale from 1 to 5 [1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree]

Investment Readiness assessment

Topic	Question as implemented in the survey	Answer options
	How competent do you consider yourself in assessing the investment readiness when it comes to:	
Barriers, obstacles, framework conditions	Key success factors, the main challenges, the needs and the barriers to SMEs in the bio-based industries	Scale from 1 to 5 [1=not competent at all; 2= little competent, 3=Neutral, 4=competent, 5=very competent]
Management	Assessing the management team of the member (e.g. CEO, CFO, CTO, sales, etc.)	Scale from 1 to 5 [1=not competent at all; 2= little competent, 3=Neutral, 4=competent, 5=very competent]
Product	• Evaluating the value proposition of the member (product and/or service) and positioning	Scale from 1 to 5 [1=not competent at all; 2= little competent, 3=Neutral, 4=competent, 5=very competent]
Business	• Evaluating the business models in the bio-based industries, the relevance, and some cases from the sector	Scale from 1 to 5 [1=not competent at all; 2= little competent, 3=Neutral, 4=competent, 5=very competent]
Competition	• Understanding the competitive environment of the member (e.g. competitive products/solution, differentiation and competitive strategy, etc.)	Scale from 1 to 5 [1=not competent at all; 2= little competent, 3=Neutral, 4=competent, 5=very competent]
Investment	• Assessing the investment needs of the member (e.g. cash flow position, financials, etc.	Scale from 1 to 5 [1=not competent at all; 2= little competent, 3=Neutral, 4=competent, 5=very competent]
Communication	• Evaluating the communications competencies of the member (e.g. pitch deck, etc.)	Scale from 1 to 5 [1=not competent at all; 2= little competent, 3=Neutral, 4=competent, 5=very competent]
Legal and finance	• Familiarity with most types of legal and financial forms that allow successful and sustainable enterprises to be carried out in the biobased sector	Scale from 1 to 5 [1=not competent at all; 2= little competent, 3=Neutral, 4=competent, 5=very competent]

Investment Readiness support

Topic	Question as implemented in the survey	Answer options
	How competent do you consider yourself in enhancing the investment readiness when it comes to:	
Roadmap	Defining support roadmaps with KPIs tailored to the member's needs	Scale from 1 to 5 [1=not competent at all; 2= little competent, 3=Neutral, 4=competent, 5=very competent]
Market understanding	• Guiding the member to better understand their market	Scale from 1 to 5 [1=not competent at all; 2= little competent, 3=Neutral, 4=competent, 5=very competent]
Business model and plans	• Improving the business model and plans of the member	Scale from 1 to 5 [1=not competent at all; 2= little competent, 3=Neutral, 4=competent, 5=very competent]
Access to finance	• Selecting suitable financial sources (private investors and/or funding programmes) tailored to the needs of the member	Scale from 1 to 5 [1=not competent at all; 2= little competent, 3=Neutral, 4=competent, 5=very competent]
Pitching	• Helping the member prepare an appealing pitch deck	Scale from 1 to 5 [1=not competent at all; 2= little competent, 3=Neutral, 4=competent, 5=very competent]

Operational and digital skills

Topic	Question as implemented in the survey	Answer options
	Please indicate how much room for improvement you consider yourself having in terms of	
Investment readiness training	• Organising and delivering tailored trainings to build the Investment Readiness of your members	Scale from 1 to 5 1=No room for improvement; 2=Minimal room for improvement; 3=Moderate room for improvement; 4=Extensive room for improvement; 5=Very extensive room for improvement]
Investment pitching competitions	• Organising competitions with SMEs pitching live to investors	Scale from 1 to 5 1=No room for improvement; 2=Minimal room for improvement; 3=Moderate room for improvement; 4=Extensive room for improvement; 5=Very extensive room for improvement]
Promotional campaigns	• Design and implement marketing and growth hacking campaigns	Scale from 1 to 5 1=No room for improvement; 2=Minimal room for improvement; 3=Moderate room for improvement; 4=Extensive room for improvement; 5=Very extensive room for improvement]
Stakeholder engagement	• Engage and incentivise SMEs, investors and experts to participate in your events	Scale from 1 to 5 1=No room for improvement; 2=Minimal room for improvement; 3=Moderate room for improvement; 4=Extensive room for improvement; 5=Very extensive room for improvement]
Digital tools	• Employ digital tools to facilitate the organisation of your events (e.g. registration, networking, matching, etc.)	Scale from 1 to 5 1=No room for improvement; 2=Minimal room for improvement; 3=Moderate room for improvement; 4=Extensive room for improvement; 5=Very extensive room for improvement]

Soft skills

Topic	Question as implemented in the survey	Answer options
	Please indicate your competence level in each of the following areas:	
Networking	• Connecting people and institutions, show emotional/ social intelligence and readiness to do so on a voluntary basis if needed	Scale from 1 to 5 [1=No level of competence – no experience in the skill area 2=Low level of competence – little experience in the skill area 3=Average level of competence – some experience in the skill area 4= Moderately high level of competence - good experience in the skill area 5=High level of competence - extensive experience in the skill area]
Communication	• Readiness to share values, skills, know-how, and views with other people; demonstrated individual approach and tolerance	Scale from 1 to 5 [1=No level of competence – no experience in the skill area 2=Low level of competence – little experience in the skill area 3=Average level of competence – some experience in the skill area

Topic	Question as implemented in the survey	Answer options
		4= Moderately high level of competence - good experience in the skill area 5=High level of competence - extensive experience in the skill area]
Building trust	• Building trust (e.g. between you and the member)	Scale from 1 to 5 [1=No level of competence – no experience in the skill area 2=Low level of competence – little experience in the skill area 3=Average level of competence – some experience in the skill area 4= Moderately high level of competence - good experience in the skill area 5=High level of competence - extensive experience in the skill area]
Empathy	• Taking the perspective of the member	Scale from 1 to 5 [1=No level of competence – no experience in the skill area 2=Low level of competence – little experience in the skill area 3=Average level of competence – some experience in the skill area 4= Moderately high level of competence - good experience in the skill area 5=High level of competence - extensive experience in the skill area]
	To what extent do you agree with the following statements: I have the skills, attitude and sufficient experience to:	
	• Run your own bio-based enterprise or assume the role of manager	Scale 1 to 5 [1=Strongly disagree; 2=Disagree,3=Neutral,4=Agree, 5=Strongly agree]
	• Be a personal/corporate mentor, coach, advisor, consultant to an enterprise in the bio-based industries	Scale 1 to 5 [1=Strongly disagree; 2=Disagree,3=Neutral,4=Agree, 5=Strongly agree]
	• Act as a teacher and lecturer in acceleration programmes	Scale 1 to 5 [1=Strongly disagree; 2=Disagree,3=Neutral,4=Agree, 5=Strongly agree]
	• Be the owner or manager of institutions or business organisations that support SMEs in bio-based industries	Scale 1 to 5 [1=Strongly disagree; 2=Disagree,3=Neutral,4=Agree, 5=Strongly agree]

To ensure compliance with personal data and GDPR regulations, our team prepared an 'Information Sheet' that accompanied the online questionnaire, providing detailed information about the scope of the survey and inviting them to consent participating in the survey. Any personal data collected/generated in the framework of MPowerBIO survey will be processed according to the principles laid out by the Regulation (EU) 2016/679 of the European Parliament and 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 which has entered into force in May 2018 aiming to protect individuals' rights and freedoms in relation to the processing of their personal data, while also facilitating the free flow of such data within the European Union.

Annex III – Quartile Scoring under each Skill Area

#	Skill Area	Specific Question	Average Value
1st Quartile (3.85 – 5)	Soft Skills	Connecting people and institutions, show emotional intelligence	4.31
	Soft Skills	Building trust	4.30
	Soft Skills	Readiness to share values, skills, know-how, and views	4.26
	BBI Knowledge	Networks with technology experts	4.23
	BBI Knowledge	Knowledge in regional/ national funding programmes	4.10
	Soft Skills	Empathy in taking the perspective of the SME member	4.08
	BBI Knowledge	Network with potential collaborators	4.05
	BBI Knowledge	Networks with innovation advisors	4.03
	BBI Knowledge	Knowledge in EU funding programmes	3.89
2nd Quartile (3.48 – 3.84)	IR Assessment	Assessment of the communication competencies of the SME member	3.84
	BBI Knowledge	Knowledge of bioeconomy actors	3.70
	IR Support	Support in selecting suitable financial sources	3.67
	IR Assessment	Assessment of the competitive environment of the SME member	3.62
	IR Support	Helping the SME member prepare an appealing pitch deck	3.61
	IR Assessment	Value proposition of the SME member	3.61
	IR Support	Improving the business model and plans of the SME member	3.59
	Soft Skills	Act as a teacher and lecturer in acceleration programmes	3.54
	Soft Skills	Be a personal trainer to an enterprise in the bio-based industries	3.49
	IR Assessment	Relevance of business models in the bio-based industries	3.49
3rd Quartile (3.28 – 3.47)	IR Assessment	Barriers, obstacles, framework conditions	3.46
	Operational & Digital	Design and implement marketing and growth hacking campaigns	3.46
	IR Support	Guiding the SME member to better understand their market	3.44
	IR Assessment	Assessment of the management team of the SME member	3.44
	Operational & Digital	Engage SMEs, investors, and experts to participate events	3.43
	Operational & Digital	Organising competitions with SMEs pitching live to investors	3.36
	Operational & Digital	Employ digital tools to facilitate the organisation of events	3.33
	Soft Skills	Be the manager of organisations that support SMEs in BBI	3.30
	BBI Knowledge	State-of-the-art technologies in bio-based economy	3.30
	BBI Knowledge	Bio-based economy related business models	3.28
	Operational & Digital	Trainings to build the Investment Readiness of SME members	3.28
4th Quartile (0 – 3.27)	BBI Knowledge	Emerging technologies in bio-based economy	3.21
	IR Support	Defining roadmaps with KPIs tailored to the SME member's needs	3.20
	BBI Knowledge	Knowledge in private investment sources	3.20
	IR Assessment	Assessment of investment needs of the SME member	3.15
	BBI Knowledge	Networks with potential investors	3.10
	Soft Skills	Run your own bio-based enterprise or assume the role of manager	2.89
	IR Assessment	Familiarity with most types of legal and financial forms	2.84
	BBI Knowledge	Knowledge in relevant regulations & standards in bio-based economy	2.77