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Ref. Ares(2024)5399079 - 25/07/2024

ERASMUS-EDU-2023-CBHE

Erasmus+ Programme (ERASMUS) Project: 101128611 — reZEB

Fostering Renewable energy technologies and energy Efficiency knowledge towards near Zero Energy Buildings of engineers and professionals in Western Balkan Countries

DELIVERABLE 2.1: Analysis of the survey results

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1. Project information, document control sheet and versioning history

Project information

Project Number	101128611	**Acronym**	reZEB
Full Title	Fostering Renewable energy technologies and energy Efficiency knowledge towards near Zero Energy Buildings of engineers and professionals in Western Balkan Countries		
Call	ERASMUS-EDU-2023-CBHE		
Topic	ERASMUS-EDU-2023-CBHE-STRAND-2		
Type of action	ERASMUS Lump Sum Grants		
Coordinator institution	University of Castilla-La Mancha (UCLM), Spain		
Project URL	https://rezebproject-eu.com/		
Project starting & ending date	01 November 2023 – 31 October 2026 (36 months)		

Document control sheet

Deliverable title	D 2.1: Analysis of the survey results			
Work package (WP) name & WP leader (WPL)	WP2: Preparation / WPL: University eCampus (UEC) (leader) & European University of Tirana (UET) (co-leader)			
Deliverable lead institution	UEC			
Author(s) (Names and affiliations)	Luca Cioccolanti			
Nature & Dissemination level	**Deliverable nature**	R – Report	**Dissemination level**	PU-Public
Date of delivery	**Contractual**	31/07/2024	**Actual**	25/07/2024

Versioning and contribution history

Rev. No.	Issue date	Author/Reviewer (Name and affiliation)	Action description
v0.1	15/07/2024	Luca Cioccolanti (UEC)	First draft
v0.2	16/07/2024	Juan José Hernández & Amparo Pazo (UCLM)	Minor modifications and corrections on the document layout and content
V0.3	25/07/2024	Project Executive Committee (PEC)	Approval of the draft and submission to EU

2. Deliverable description

This document presents the main results of the survey on the training needs in the labour market in the Western Balkan Countries involved in the project, i.e. Albania and Kosovo. The reZEB project, indeed, aims at providing enhanced professional knowledge and skills to students in renewable energy technologies (RETs) and energy efficiency (EE) in buildings in line with the current and future market needs. Hence, an online questionnaire has been designed by the WP leader UEC in cooperation with the co-leader UET and with the supervision of the coordinating institution UCLM. The questionnaire has been distributed to more than 90 organisations and in total 86 answers have been received.

Industrial, private and public organisations as well as NGOs have been interviewed as representative of the labour market in the energy and building sectors. Results of the survey show that the knowledge of the current employees on renewable energy technologies and energy efficiency measures in building is poor and that there is a need for enhanced knowledge and skills. These results are currently being used for defining the modernized content of the selected modules as well as for proposing new ones in order to provide fundamental and practical skills which could help for the deployment of RETs and EE measures in the building sector. The detailed results of the analysis are reported in Section 4 while in Section 3 the methodology is presented.

3. Methodology

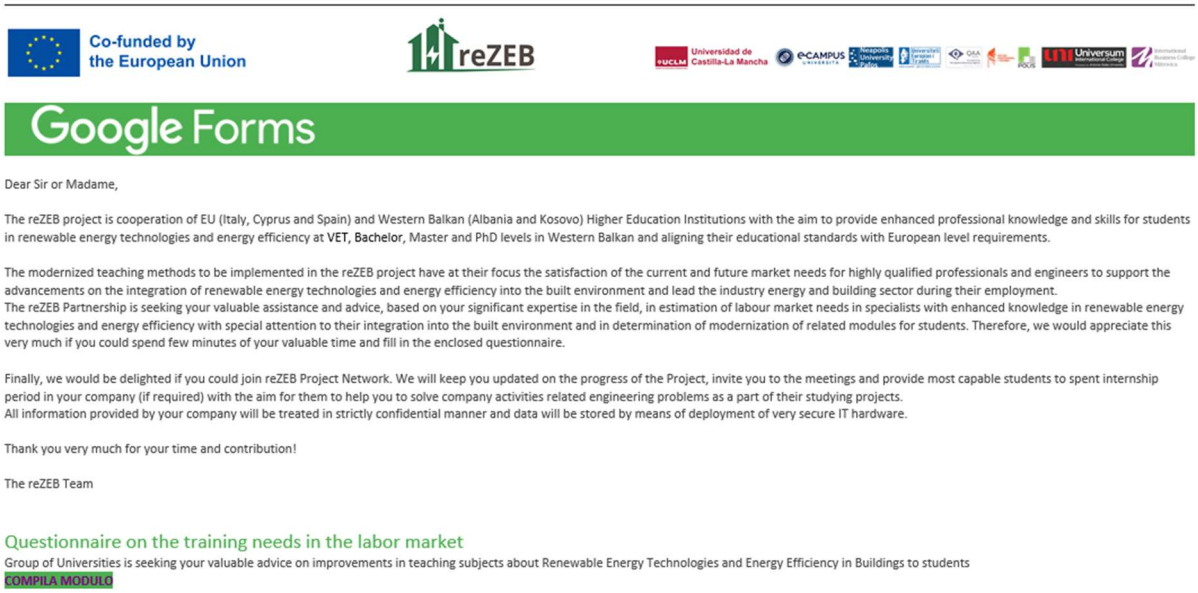
The online questionnaire has been developed in google forms and it is available at the following link:

https://docs.google.com/forms/d/e/1FAIpQLSe96v4d6XWVRRKQr2bloywKbjB6zwoKEcxWCcsrQqQK0O-frQ/viewform?vc=0&c=0&w=1&flr=0

It consists of essentially three parts: in the first one information about the organisation profile, type of activity and market extent are gathered. The second part, instead, pays attention on the level of knowledge of the actual employees in the topic of the reZEB project which represent the benchmark for the modernization of the study programme in the Partner Countries Higher Education Institutions. Eventually, the third part aims at assessing the training needs of the labour market in terms of willingness of the company to hire Professionals, Bachelor, Master and PhD engineers with enhanced knowledge in RETs and EE in buildings in the next years, the rough estimation of their numbers, the main topic of specialization and the related knowledge and skills required. Moreover, this part also collects information with respect to interest for the project and to some activities related to the lifelong learning of people of industry which is among the goals of reZEB. Besides the training of new students, indeed, reZEB project intends to educate also present employees to support the transition of the workforce from carbon-based to renewables with a focus on their applications in buildings.

In accordance with the timeline defined in the proposal the questionnaire was designed in the first months of the project and it was made available to all the partners of the consortium to be sent around to their contacts in the mid of February 2024.

Below (Figure 1) is reported the text of the email which was used to reach the organisations asking for their feedback:



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Google Forms

Dear Sir or Madame,

The reZEB project is cooperation of EU (Italy, Cyprus and Spain) and Western Balkan (Albania and Kosovo) Higher Education Institutions with the aim to provide enhanced professional knowledge and skills for students in renewable energy technologies and energy efficiency at **VET, Bachelor**, Master and PhD levels in Western Balkan and aligning their educational standards with European level requirements.

The modernized teaching methods to be implemented in the reZEB project have at their focus the satisfaction of the current and future market needs for highly qualified professionals and engineers to support the advancements on the integration of renewable energy technologies and energy efficiency into the built environment and lead the industry energy and building sector during their employment.
The reZEB Partnership is seeking your valuable assistance and advice, based on your significant expertise in the field, in estimation of labour market needs in specialists with enhanced knowledge in renewable energy technologies and energy efficiency with special attention to their integration into the built environment and in determination of modernization of related modules for students. Therefore, we would appreciate this very much if you could spend few minutes of your valuable time and fill in the enclosed questionnaire.

Finally, we would be delighted if you could join reZEB Project Network. We will keep you updated on the progress of the Project, invite you to the meetings and provide most capable students to spent internship period in your company (if required) with the aim for them to help you to solve company activities related engineering problems as a part of their studying projects.
All information provided by your company will be treated in strictly confidential manner and data will be stored by means of deployment of very secure IT hardware.

Thank you very much for your time and contribution!

The reZEB Team

Questionnaire on the training needs in the labor market

Group of Universities is seeking your valuable advice on improvements in teaching subjects about Renewable Energy Technologies and Energy Efficiency in Buildings to students

COMPILA MODULO

Figure 1. Text of the email sent to the organisations

4. Results

For the scope of the survey, more than 90 organisations have been identified and so far, 86 organisations have answered to the questionnaire: 61 from Albania and 25 from Kosovo.

The initial questions were aimed at evaluating the current background of the organizations in terms of their size, market and type of activity involved in. In general, the size of the interviewed organisations is rather small and only 11 organisations have more than 100 employees. On the contrary, 21 of them have less than 10 employees, 29 are in the range of 10 to 50 employees, and 25 has a number of employees between 50 and 100. With reference to their market, more than 90% of them are focused at regional and national levels.

With respect to the type of activity in the topics of renewable energy technologies and energy efficiency in buildings, the overall result of the analysis has shown that the majority are involved in 'Building Construction'. Also 'Design & Engineering Development', 'Power Production', 'Energy Auditing and Energy Efficiency Solutions' and 'Monitoring, Inspection & Maintenance' represent other fields of application or interest as depicted in Figure 2.

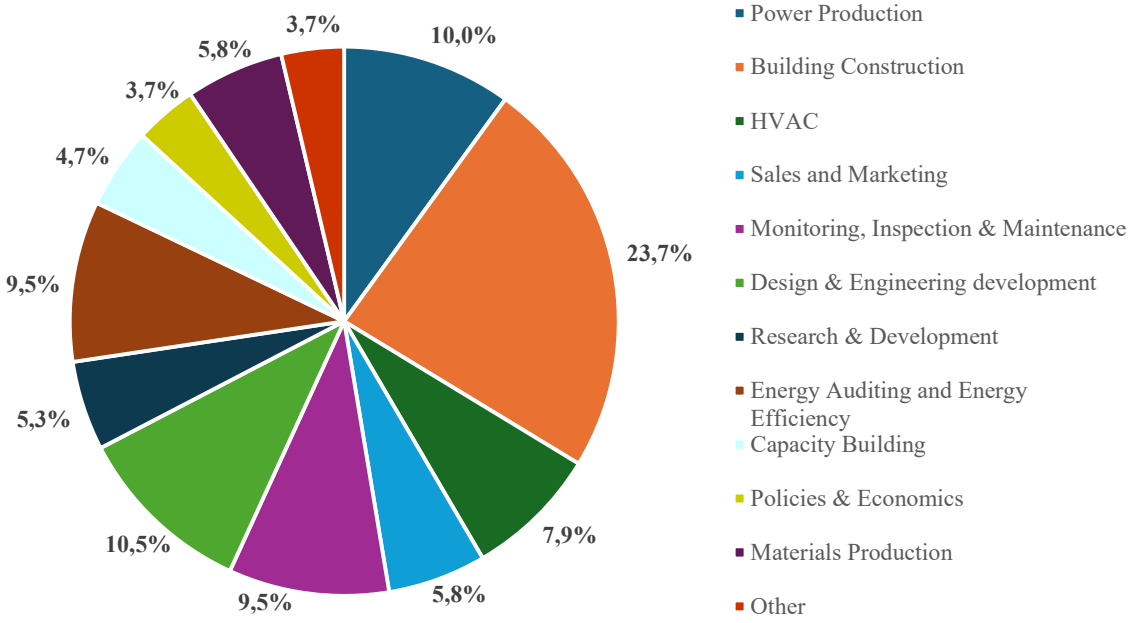

Figure 2. Type of the activity on RETs and EE in buildings

In the second part of the questionnaire, the level of knowledge of the present employees is assessed. More precisely the following results have been obtained (Table 1 and Figures 3 and 4):

Table 1. Range of qualification of the present employees of the organisations

Range of qualification	Number of organisations
Professional	27
Bachelor	51
Master	50
PhD	8

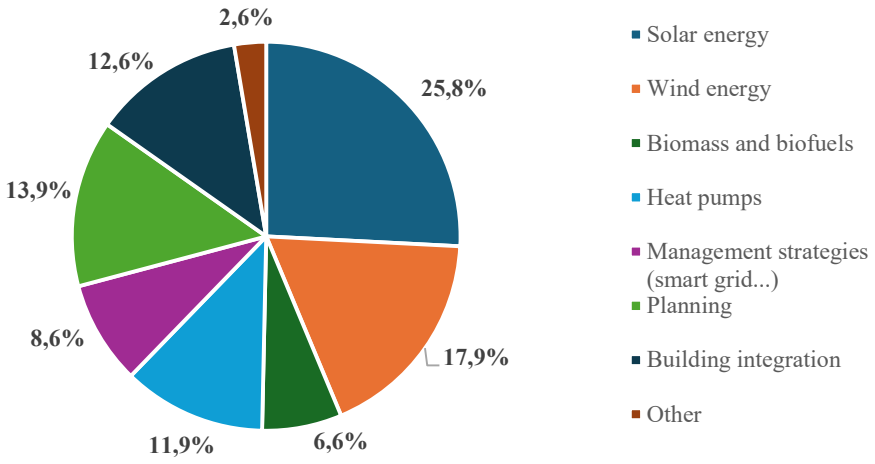

Figure 3. Knowledge of present employees on renewable energy

With respect to their knowledge on renewable energy technologies (Figure 3), most of them are on solar (25.8%) and wind energy (17.9%). These results are similar to those obtained in a previous survey with reference to some Asian Countries conducted few years ago [1]. However, in the latter heat pumps and biofuels were considered the most important topics besides solar energy.

Focusing on the solar energy source, 49.1% have expertise on solar thermal, 33.3% of them on PV and an appreciable percentage of about 17.5% on Concentrated Solar Technologies (CSTs). Many organisations, indeed, recognise concentrated solar power as an emerging and more efficient technology than traditional solar thermal solutions.

As regards their knowledge on buildings it is mainly related to building renovation as shown in Figure 4:

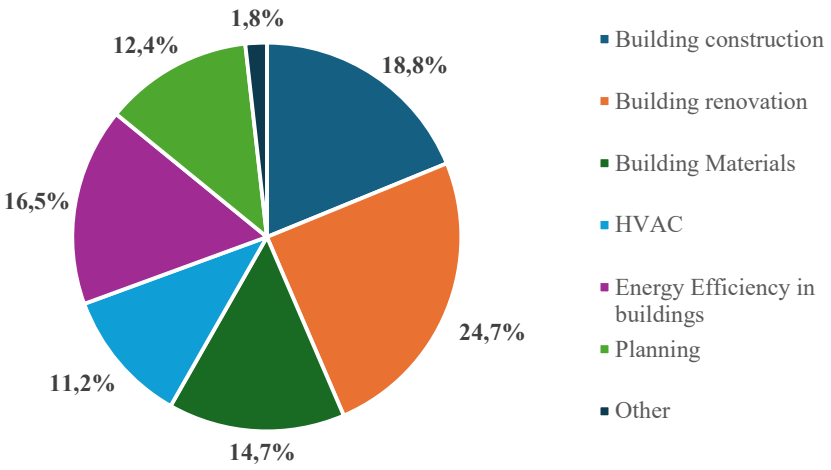

Figure 4. Knowledge of present employees in buildings

The interest and the level of future recruited employees have been also checked in the participating organizations. More than 65% of the organisations have in their plan to recruit new employees in the next three years and almost 55% to hire professionals and engineers with enhanced knowledge in RETs and EE in buildings. With respect to the level of education, the obtained results show that a consistent number of them require engineers with master's degree (38) followed by professionals (35) and those with bachelor's degree (30). Only a limited number of organisations, namely six, are instead interested in recruiting new employees with PhD level of education resulting in a certain gap between the results reported in [1]. In terms of total numbers, those of professionals are similar than master and bachelor engineers. This result confirms the goodness of the reZEB project which is not limited to reach students in universities but also targets professionals in VET Institutions, such as KPT (Albania).

With respect to the specific knowledge demanded for the future employees, the organisations confirm their interest towards solar energy and energy efficiency as reported in Figure 5:

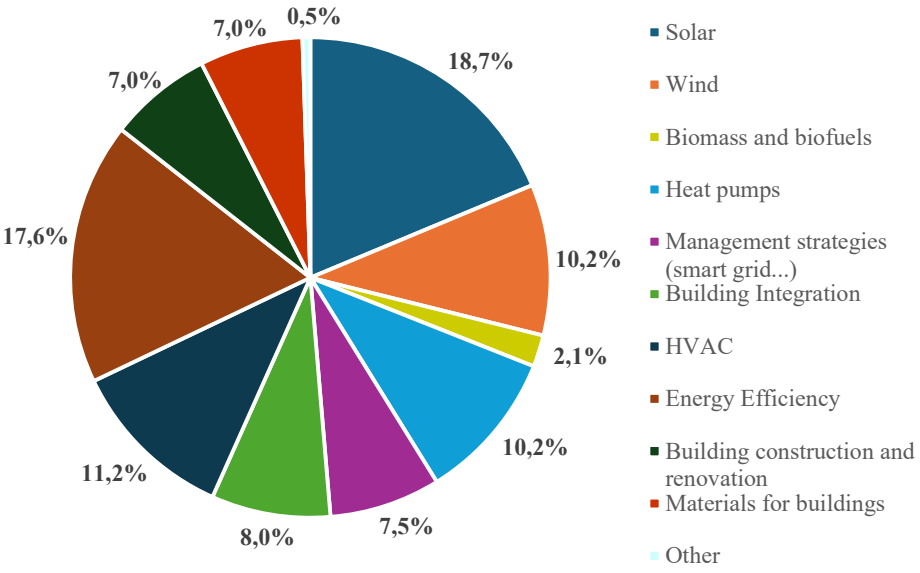

Figure 5. Topic of knowledge of future employees

Then, to those organisations which believed that enhanced modules in RETs and EE in building are of strategic importance additional feedback have been asked. Among the questions, it was asked about the kind of technology and expertise more demanded. PV resulted that of more interested followed by energy storage, heat pumps and HVAC systems as reported in Figure 6:

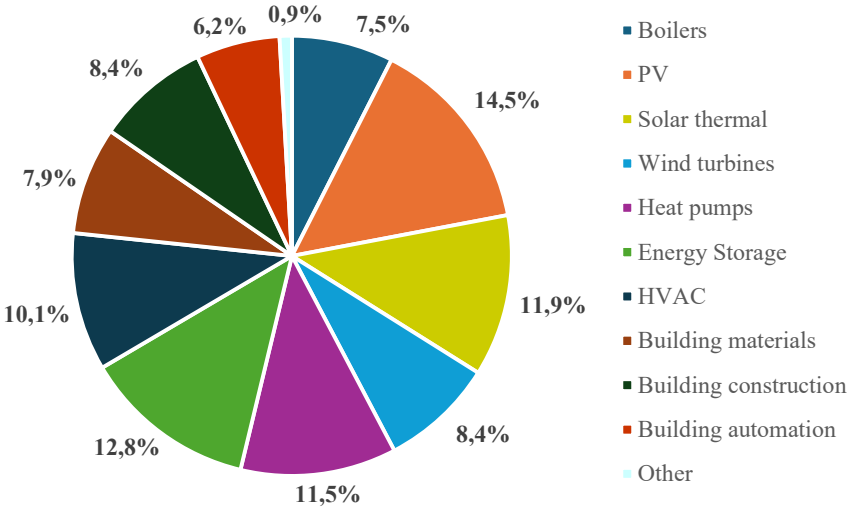

Figure 6. Kind of technology of knowledge of future employees

Energy management is by far the kind of expertise of major interest as reported in Figure 7 confirming the results reported also in a recent study [2] but differing from that required in some Asian Countries [1], which showed more interest in technical aspects.

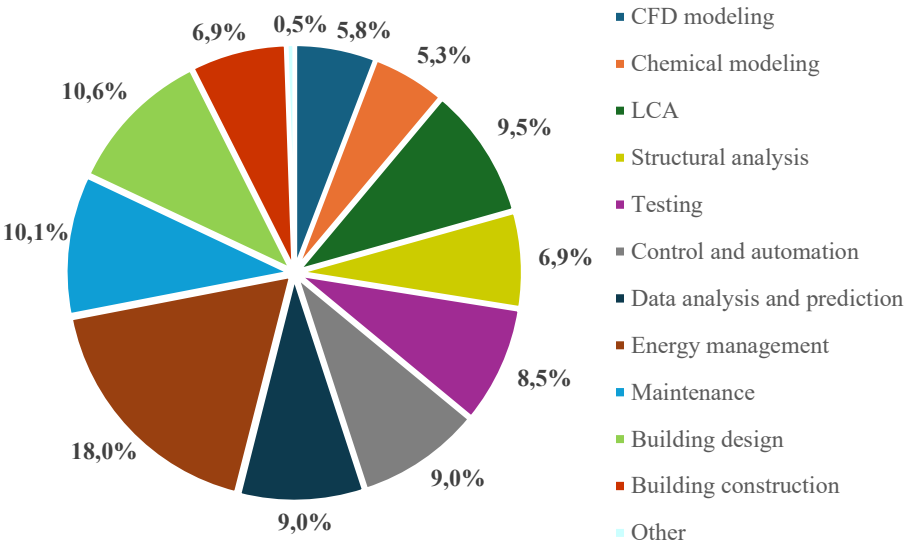

Figure 7. Type of expertise of knowledge of future employees

Eventually, the main challenges that the energy market and the building sector are going to face in the next years are asked. Results are reported in Figures 8 and 9, which show that RETs and efficiency improvement are the one highlighted by the energy market and the renovation of existing buildings together with integration of RETs when referring to the building sector.

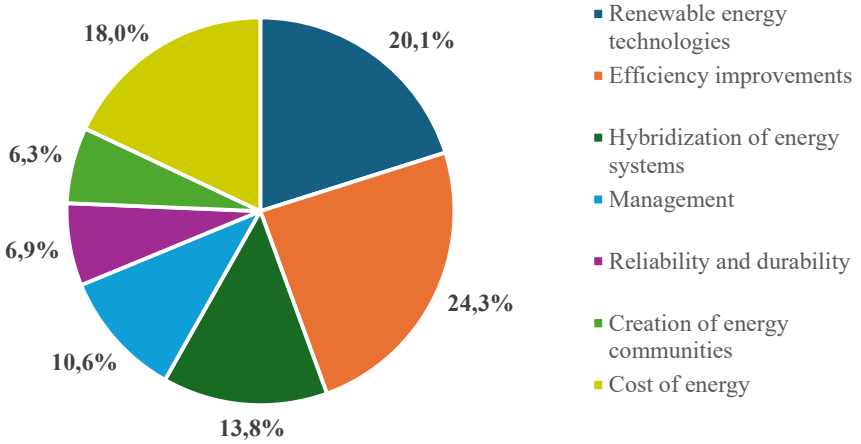

Figure 8. Main challenges the energy market is going to face in the next years

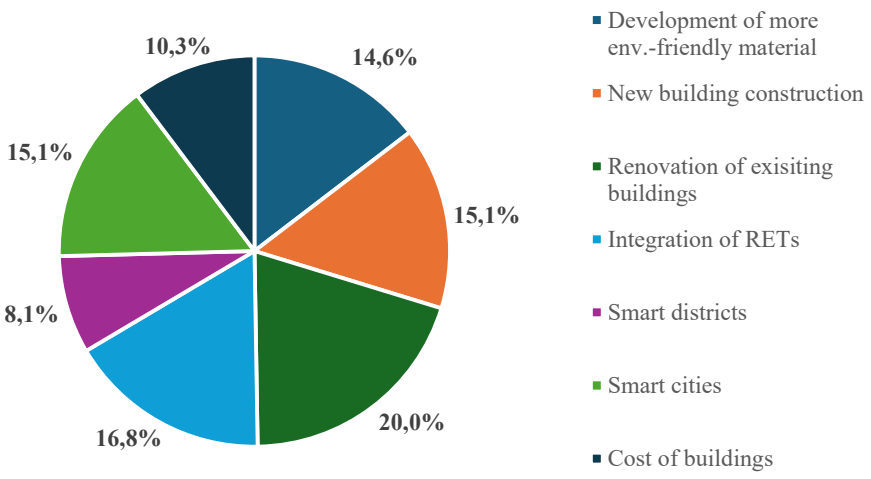

Figure 9. Main challenges the building sector is going to face in the next years

The questionnaire ends with some questions related to the willingness of the organisations of being part of the project network and cooperating in the activities of the reZEB project. This information will be relevant to guide the activities of lifelong learning of people from industries foreseen in reZEB to support the transition of the workforce on fossil fuels towards renewables.

In brief, with respect to the interviewed organization the survey has shown that solar energy is considered the renewable source of major interest and photovoltaics the target technology. As regards the kind of expertise, energy management is considered the mostly needed for the future employees.

As commented above, the obtained results have been used in the selection of the modules to be modernised and their related content with the aim of satisfying the current and future labour market needs in Albania and Kosovo.

It is worth noting that a conference paper titled '*Analysis of labour market needs for engineers and professionals with enhanced knowledge in renewable energy solutions and energy efficiency in the built environment in some Balkan Countries*' has been submitted and accepted to be presented at the 8th International Conference on Contemporary Problems of Thermal Engineering- CPOTE 2024 on 23rd-26th of September 2024 in Poland.

Abbreviations

Abbreviation	
CFD	Computational fluid dynamics
CSTs	Concentrated Solar Technologies
EE	Energy efficiency
HVAC	Heating, ventilation, and air conditioning
LCA	Life cycle assessment
NGO	Non-governmental organisation
PEC	Project Executive Committee
PV	Photovoltaic
RETs	Renewable energy technologies
Rev.	Revision
reZEB	Fostering Renewable energy technologies and energy Efficiency knowledge towards near Zero Energy Buildings of engineers and professionals in Western Balkan Countries
UCLM	University of Castilla-La Mancha
UEC	University eCampus
UET	European University of Tirana
VET	Vocational education and training
WP	Work package
WPL	Work package leader

References

[1] L. Cioccolanti et al., "Analysis of labour market needs for engineers with enhanced knowledge in sustainable renewable energy solutions in the built environment in some Asian countries," E3S Web of Conferences, vol. 238, p. 07004, Feb. 2021, doi: 10.1051/e3sconf/202123807004.

[2] M. De Rosa, O. Glumac, V. Bianco, and F. Pallonetto, "A micro-credential approach for life-long learning in the urban renewable energy sector," Renew Energy, vol. 228, p. 120660, Jul. 2024, doi: 10.1016/j.renene.2024.120660.