

LABOR MARKET NEEDS OF PV INSTALLERS: COMPARISON OF THE SITUATION IN UKRAINE AND BULGARIA

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Abstract. *The implementation of the European Climate Law, the Energy Transition Roadmap until 2050 and the decarbonization scenario are the priority tasks of the European Commission in the field of energy efficiency and a political commitment to significant energy savings. Therefore, the task of training and retraining specialists in the field of "smart buildings", new technical solutions in the application of photovoltaic systems, etc., becomes especially urgent. This issue is the main goal of the project («Vocational Education and Training For Green and Smart Energy in Buildings» (VET4GSEB))*

The aim of the surveys conducted within the framework of the Project in the partner-countries (Albania, Armenia, Bulgaria, Georgia, Turkey and Ukraine) was to examine the opinions, needs and expectations of companies and professionals involved in the renewable energy market on the state of this market and in particular the issues related to the efficiency and quality of installation and maintenance of systems, and the skills needed to achieve efficiency and quality, as well as to identify the needs of theoretical knowledge and practical skills of technicians and installers of geothermal and solar installations, for the purpose of tackling the identified gaps and needs by improving training curricula for the target groups and upskilling trainers.

Key words: *renewable energy sources, photovoltaics technology, installers of PV-station*

Topicality. According to a report recently released by the UN's Intergovernmental Panel on Climate Change (IPCC), the actions we take over the next decade will determine whether or not our planet is liveable for generations to come [1].

The gargantuan challenge of drastically reducing greenhouse gas emissions demands a whole-of economy shift — across industries, roles, and geographical regions. With every challenge comes opportunity: If we take the right approach, we can leverage our efforts on behalf of the environment to catalyse

As we move into 2023, the renewable energy industry continues to snowball. This industry not only offers a solution to the environmental challenges of our time but also presents a unique opportunity for professionals to contribute to the transition to a more sustainable future.

The renewable energy sector has been on the rise for years, and the latest data confirms this trend. According to the International Renewable Energy Agency (IRENA), the renewable energy sector employed 12.7 million people globally in 2021, and is expected to reach 48 million by 2050 [2].

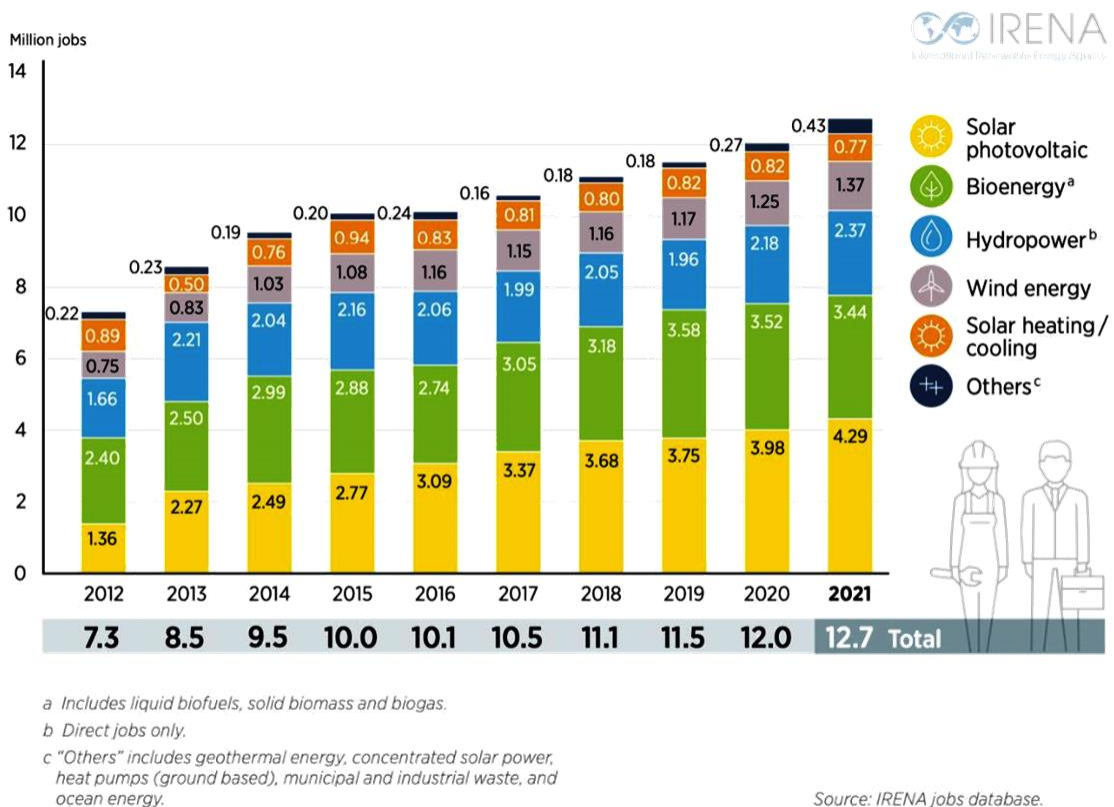


Fig.1. Evolution of global renewable energy employment by technology (Renewable energy and jobs annual review 2021)

Background information. The global economy, however, is only as strong as the human beings who power it, and the whole of economy-green transformation that the

moment demands will only take place if green skills proliferate throughout the global workforce. Technology is critical, of course — but human workers are the ones who will develop new technologies, invest in them, and implement them on a daily basis to make every job a green job.

The goals set in the energy strategies and policies of the EU and those of the participating countries have led to changes in the labour market for installers of electrical and RES systems in buildings.

The whole European installation sector is confronted with a complex and multi-faceted shortage of both workers and skills. The situation is getting increasingly worrying because our sector is indispensable to address the (relatively) new challenges of the green and digital transition.

The implementation of RES in electrical systems in buildings needs specialists with green skills and knowledge. The new technologies require additional digital skills for the design, installation, maintenance and operation of the electrical installations [3,4].

At present, specialists who want to work in the field of geothermal and solar installations and equipment should have the following professional qualification: —Technician of power equipment and installations or —Installer of power equipment and installations, and be specialized in —Renewable sources of energy.

This profession can be acquired at some Vocational High Schools (where the mode of attendance is mostly full-time), and at Vocational Training Centres. There are state requirements as to the different qualification levels but these requirements are too general, and the current curricula adopted by the said vocational high schools and vocational training centres are not harmonized, and certainly inadequate.

The aim of the study was to identify issues related to the efficiency and quality of installation and maintenance of PV-systems, as well as to identify the needs of theoretical knowledge and practical skills of technicians and solar stations installers for the purpose of tackling the identified gaps and needs by improving training curricula for the target groups and up-skilling trainers.

Research materials and methods. The surveys were conducted online, on the basis of questionnaires especially developed for the survey. Two questionnaires were developed

– one for stakeholders and one for VET providers, and sent to 133 companies working in the field of RES installations, and PV installations in buildings, in particular, and 39 VET providers (a university, vocational high schools, and VET Centres).

The surveys were organized so as to obtain information in several areas:

- Personal data, characteristics, education level, position, etc., of the respondent;
- Level of knowledge of the respondent about the PV sector in the respective country;
- Opinion of the surveyed of the quality and efficiency of PV facilities and the use of ‘smart’ applications in the respective partner-country;
- Assessment of the skills and certification levels of PV specialists;
- Opinion of the skills and certification levels of trainers of PV specialists.

First, the questionnaires were sent to the respective organizations (companies, institutions). The managers of the companies/contact persons in educational institutions were afterwards contacted by phone to offer further details of the survey, its aim, and the objectives of the Project as a whole. After the completed questionnaires were returned, meetings (online and offline) were organized with representatives of the respondent parties at which the results were presented and the identified gaps further discussed.

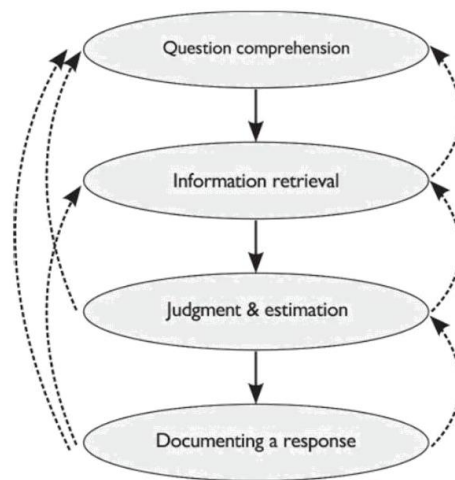
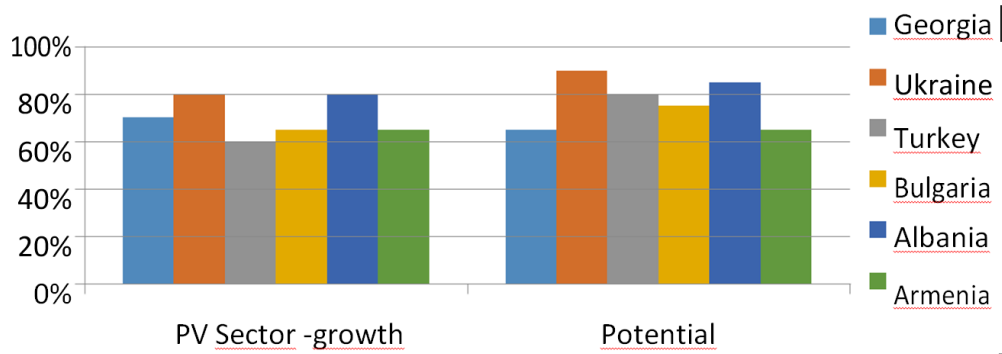


Fig.2. Survey method applied



Fsg 3. PV Sector in the Partner Countries

Views on the current status of the PV & RES sector in the partner countries: Between 60 and 80-% of the respondents acknowledge the growth of the RES sector in the last 3 years, and 65 - 85 % are optimistic on the PV market development in the near future. Considering current state of PV market in the partner countries, 60 to 80 % of respondents are fine with the number of the installed PV systems in buildings and between 62 and 85% are convinced in its potential for increase./ Moreover, respondents in Ukraine are more optimistic than in Bulgaria.

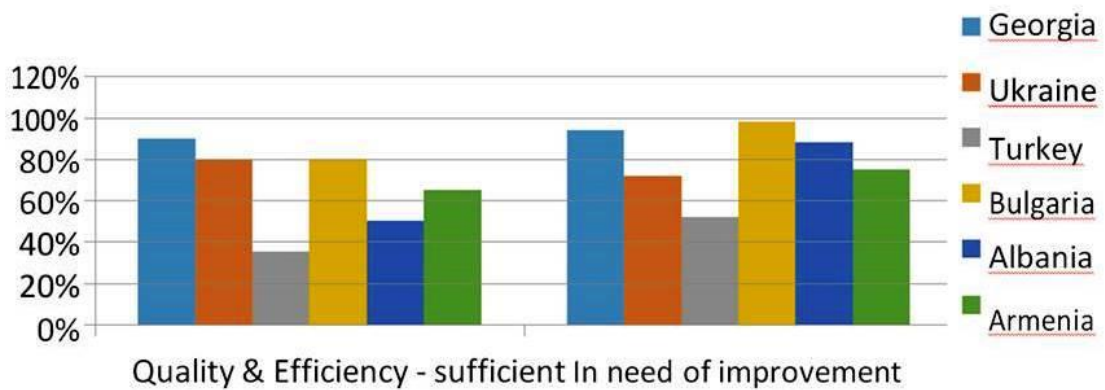


Fig.4. Quality & Efficiency of PV Systems in the Partner Countries

In terms of quality and efficiency of PV installations 38 – 82 % of the respondents think that it is necessary to improve the quality of PV installations and and the assessments of respondents in Ukraine and Bulgaria completely coincide

More than 90% of respondents mentioned such measures for the qualitative development as: a good project, selection of location, selection of equipment, training of technical staff, implementation of quality/certification standards

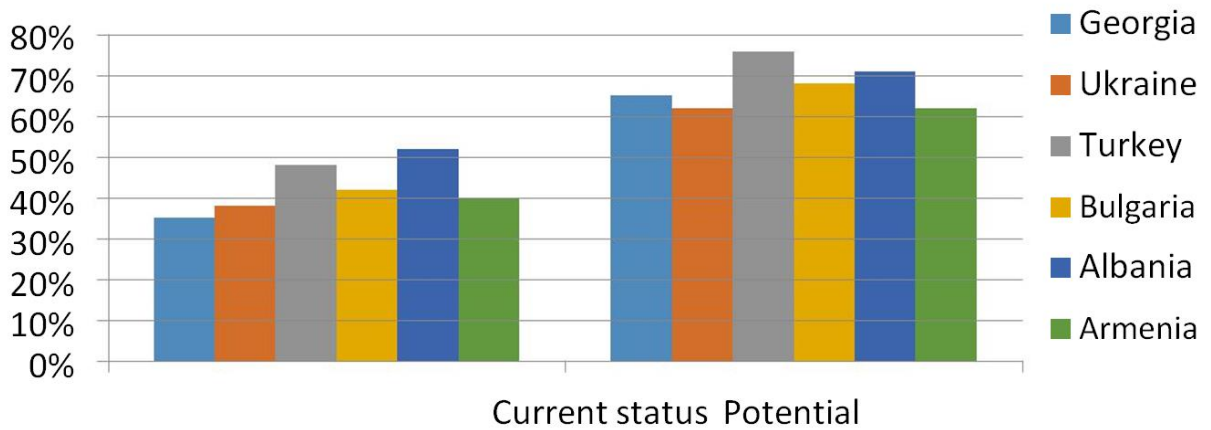


Fig 5. Use of Smart Electricity Systems in Buildings

As for the use of smart systems in buildings, between 32 and 56% are satisfied with the situation, whereas between 65 and 75% believe such smart electricity systems should become more widely used. In both cases, respondents' assessments in Bulgaria are somewhat more optimistic than in Ukraine

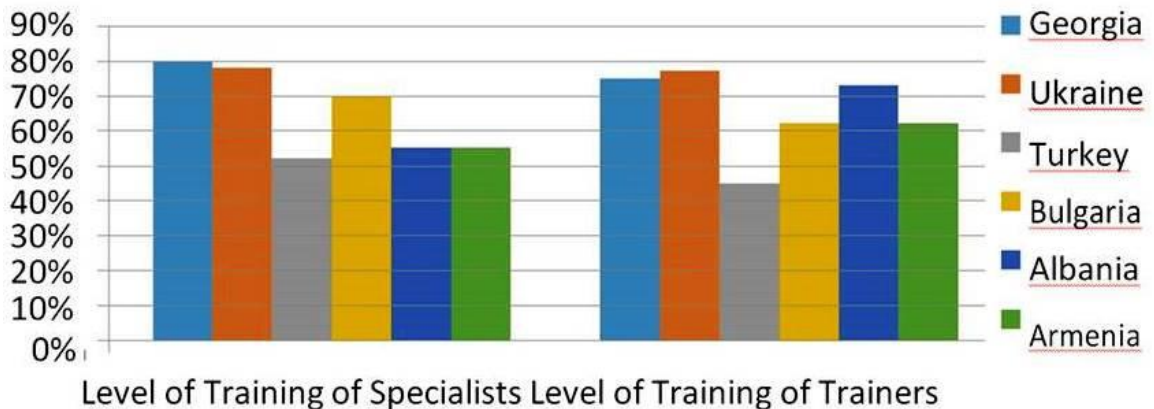


Fig.6. Level of Competences of Specialists & Trainers

With regards to the level of training of technical staff for PV between 60 and 82% consider that continuous training and reassessment of the technical competence of PV system installers are prerequisites for ensuring good quality systems.

Conclusions The survey study developed for labour market analysis and identification of needs in the partner countries provided important insights.

- The need for trained manpower,
- Layout problems in assembly and applications,

- Lack of technical procedures and implementation standard,
- Certification and legislation problems and field adequacy were seen as the main deficiencies.

Stakeholders and VET providers are both aware of how vital it is for the future qualitative growth of the RES industry that trainers and trainees obtain proper, ongoing training [5].

The results are consistent with the results of a more comprehensive survey conducted by GCP Europe and EuropeOn [6], which suggest that the shortage of qualified specialists is mainly due to the following reasons:

- • Unclear ways of learning and bad image of technical education, lack of information
- • Lack of companies willing to take apprentices
- • Workers leaving the sector
- • Integration of foreign workers is difficult

Lack of needed skills due mainly to:

- •Lack of up-to-date trainings
- •Reluctance of companies & workers to up-skill (mainly due to lack of free time)
- •Lack of tools to certify/check workers' skills

The training to be organized as part of the Project «VET Partnership for Green and Smart Electricity in Buildings» can significantly improve the situation with the training of personnel for the renewable energy sector

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ПОТРЕБИ РИНКУ ПРАЦІ В МОНТАЖНИКАХ ФОТОЕЛЕКТРИЧНИХ УСТАНОВОК: ПОРІВНЯННЯ СИТУАЦІЇ В УКРАЇНІ ТА БОЛГАРІЇ

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Анотація. *Пріоритетними завданнями Європейської Комісії у сфері енергоефективності та політичного зобов'язання значного енергозбереження є імплементація Європейського кліматичного закону, Дорожньої карти енергетичного переходу до 2050 року та сценарію декарбонізації. Тому особливо актуальним стає завдання підготовки та перепідготовки фахівців у сфері «розумних будівель», нових технічних рішень у застосуванні фотоелектричних систем тощо. Це питання є головною метою проекту («Професійна освіта та підготовка для зеленої та розумної енергетики в будівлях» (VET4GSEB).*

Метою опитувань, проведених в рамках Проєкту у країнах-партнерах (Албанія, Вірменія, Болгарія, Грузія, Туреччина та Україна), було вивчення думок, потреб та очікувань компаній і спеціалістів, які працюють на ринку відновлюваної енергетики, щодо стану цього ринку і, зокрема, питання, пов'язані з ефективністю та якістю монтажу та обслуговування систем, а також навички, необхідні для досягнення ефективності та якості, а також для визначення потреб у теоретичних знаннях і практичних навичках техніків та монтажників

геотермальних систем, сонячних установок з метою усунення виявлених прогалин і потреб шляхом вдосконалення навчальних програм для цільових груп і підвищення кваліфікації тренерів.

Ключові слова: *відновлювані джерела енергії, фотоелектричні технології, інсталятори фотоелектричних станцій*