2.3 ANALYSIS OF EXISTING QUALIFICATIONS IN THE GREEN ENERGY MARKET AND PROPOSAL OF NEW COMPETENCES

The current energy crisis, the dependence of the Western Balkan countries on energy imports, irresponsible consumption of existing energy resources, as well as insufficient use of the potential of renewable energy sources in the region, are a sign for the activism of highly educated institutions. One of the missions of higher education is to initiate socio-economic and economic processes. The digitalization of the energy sector is one such process. By developing a set of necessary competencies within the environmental program, the quality and diversity of professional staff who can respond to the challenges of climate change will be strengthened. With the rapid development of technology and the increase in the need for sustainable solutions in energy, digital competencies are becoming key to progress in the field of green energy. Here are nine digital competencies that are particularly important in this area:

The overview of curricula implemented at higher education institutions in the field of green energy, in the Western Balkans, clearly indicates that the existing contents require constant improvements that should follow social, economic and technological trends. Most of these curricula are accredited in the narrow areas of electrical and computer engineering, mechanical engineering and environmental protection. Existing qualifications mainly cover general competences based on objectives and outcomes that are not aligned with a large number of documents such as the European Green Deal, the Green Agenda for the Western Balkans, the 2030 Climate and Energy Goals, as well as numerous other documents. What is common to all these documents is the aspiration towards creating conditions for energy independence through rational use of existing resources, raising the level of energy efficiency of industrial processes in households, as well as turning towards renewable energy sources, i.e. full focus on competitive low carbon industry, investment stability and security of energy supply.

These expectations are set in real terms because they are based on the application and availability of new technologies such as VR, AI, Blockchain technologies, IOT, Cloud, distributed bases, unmanned aerial vehicles, etc. On the other hand, the countries of the Western Balkans and the former Yugoslavia carry major problems related to process energy efficiency in their heritage. The potential for renewable energy sources is also enormous, and their utilization is very small. If we add to this the overall state of energy systems, we get a complete picture of the general state of the global energy sector, which can be found to be unsustainable.

For the development of new so-called green skills and competencies in the wide energy sector, it is necessary to develop conditions for timely access to information in real time through their exchange and practical application. Thanks to the use of new technologies, teaching content will be available to professional students always and everywhere, in various forms, thus enabling them to cooperate unhindered and constant. As practice shows, education and technology are increasingly intertwined. The higher education system in these countries has successfully undergone reform from an administrative point of view, but inertia in following trends, expert discussion based on facts as well as openness to innovation is at a very low level. This is one of the reasons why the existing qualifications in higher education in the field of energy process management, application of renewable energy sources, development of energy systems do not correspond to current market requirements.

In order to achieve the full scope of the defined problem, the frameworks for improving qualifications are defined through the following areas:

- Energy efficiency in the industry
- Application of renewable energy sources
- The impact of energy on the environment
- Diversification of energy sources

Further direction of improving competences relates to the processes of digitization in the above areas

New engineers, with existing knowledge in the field of environmental protection improved with green energy knowledge, will represent an excellent support for the efficient energy transition of society. New digital technologies within teaching content such as IOT, Cloud, Blockchain, AI, VR are one of the main commitments. This will enable easy access to information, efficient and fast exchange of information, decentralized cooperation and mass use of data. Furthermore, conditions will be created for higher education institutions to be more actively involved in the process of digitization of the energy sector in a wide range of its fields and to provide their full contribution to the achievement of the objectives of the aforementioned documents. In principle, the realization of the project will create a condition to improve the situation and support the necessary process of digitization of the energy sector, through the

improvement of existing accredited study programs, by creating better quality experts. The latter, in the end, will result in a more professional and responsible management of energy resources, will contribute to the energy transition of the sector towards the use of renewable energy sources, which should reduce the energy dependence of all three countries, indirectly and other countries in the region on energy imports.

After the analysis, the following competencies are highlighted as key:

- Data analytics to monitor system performance should provide the ability to analyze large amounts of data enabling better monitoring and optimization of the performance of green energy systems, such as solar or wind farms.

- The Internet of Things (IoT) for monitoring and controlling energy devices should enable the connection and management of various energy devices, which can improve energy efficiency and reduce consumption.

- Artificial intelligence to optimize energy systems, adapt production to demand and predict potential problems.

- Blockchain for transaction management and distributed energy networks: Blockchain technology can facilitate secure and transparent transactions in distributed energy networks.

- Virtual reality (VR) and augmented reality (AR) for training and maintenance of: power plants.

- The big data system for identifying patterns and trends can make it possible to discover the hidden potential for increasing efficiency and reducing costs in energy systems.

- Simulations and modeling for the design of new solutions and their application in the development of new green energy projects before they are physically implemented.

- Sensor technology for monitoring and fault detection and detection and quick problem solving.

- Cloud data storage and sharing technologies to provide easier access to data and enable team-sharing of information and collaborate on projects.

These digital competencies enable a better understanding, management and optimization of green energy systems, and contribute to reducing negative environmental impacts and encouraging sustainable development.

By acquiring these digital competencies, future students will be prepared for the labor market as green energy and technologies become increasingly important in the global labor market. The acquisition of these competencies enables students to be competitive in the market and to prepare for careers in sustainable industries. Furthermore, digital technologies are a key factor in the development of green energy. Learning about them enables a better understanding of modern trends and innovations in the field of energy.

Innovative thinking: Acquiring digital competencies encourages students to develop innovative thinking and creativity in finding sustainable solutions to energy challenges.

Understanding digital technologies in the context of green energy enables the development of more efficient and sustainable energy systems, which contributes to environmental protection. These competencies combine technical and technological aspects with environmental and economic. This encourages an interdisciplinary approach to learning and problem solving. Learning about digital technologies can be interesting and dynamic because it involves the application of new teaching methods, such as simulations, virtual reality and other interactive techniques. Also, the acquisition of these competencies opens the possibility for global cooperation between students and students on green energy projects, which encourages the international dimension of education. Learning about digital technologies in the context of green energy enables students to work on real projects and problems, which increases their motivation and engagement. Digital technologies are rapidly evolving and becoming ubiquitous. Acquiring these competencies enables students to keep up to date with technological advances and ready for future changes.

Learning about digital competencies in the field of green energy should be integrated current curricula, to ensure that new generations are trained to meet the challenges of sustainability and the use of modern technologies contribute to a better future for the planet.

The contribution of digital competences in the field of green energy to the modernization of the curriculum brings a number of advantages and improvements in the education system. Here's how digital competencies contribute to the modernization of the green energy curriculum:

Updating teaching content through the introduction of digital competencies enables updating teaching content to include the latest technologies and trends in the field of green energy. This ensures that students acquire knowledge that is relevant to contemporary challenges. Digital

technologies enable interactive learning through simulations, virtual reality and interactive content. This makes teaching more interesting and engaging for students, increasing their motivation and interest in the field of green energy. Digital technologies enable students to apply the acquired knowledge in real-world scenarios through simulations and projects. This encourages practical thinking and develops skills that are key to solving problems in green energy. Digital technologies allow students to connect with experts from other countries, which broadens students' horizons and gives them the opportunity to exchange ideas and experiences about green energy globally. The use of digital tools encourages collaboration and teamwork among students. They can work together on projects, analyze data and exchange ideas, which develops communication and collegiality skills. Digital technologies enable more efficient monitoring of students' progress, personalization of teaching content according to their needs, and adjustment of the pace of learning. This helps to increase the efficiency of the educational process. Learning about digital competencies in green energy encourages creativity in solving energy challenges. Acquiring digital competencies in green energy prepares students for future careers in sustainable industries that increasingly require professionals with knowledge of digital technologies.

The introduction of digital competences in the field of green energy in the curriculum contributes to comprehensive and relevant education that enables students to become aware, trained and engaged citizens who contribute to sustainable development and environmental protection. This empowers the education system to follow modern trends and innovations in green energy, thereby encouraging a better future for the planet and its inhabitants.