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International Cooperation in Personnel Training, Formation and Development of "Bioeconomics" in Uzbekistan

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ABSTRACT

The current stage of development of the world community is characterized by the increasing role of education, which is gradually becoming one of the most important mechanisms for maintaining the competitiveness of various countries and gaining leading positions in world markets. The article is devoted to the peculiarities of international cooperation in personnel training, formation and development of "Bioeconomics" in Uzbekistan in the context of existing global integration processes at the present stage.

KEYWORDS: *international cooperation, personnel training, international integration, education*

The formation of an effective education system is today one of the most important problems of the development of the world community. According to a number of authors, countries that have competitive economies, whose performance parameters directly depend on the competitiveness of the labor force, are succeeding today and will continue to succeed in the future. The latter, in turn, is formed in a competitive education system. The competitiveness of the education system can be achieved through the development of international cooperation. Internationalization of education is becoming a decisive factor in the training of highly qualified specialists, which is explained by the growing openness of the world labor market. A new type of workforce is being formed, for which new requirements for competencies and qualifications are being established. In this regard, the identification of so-called key competencies that can ensure successful interaction of a specialist with other labor market participants is becoming increasingly relevant.

Now the concept of bioeconomics is becoming increasingly popular in the world. On the one hand, bioeconomics is considered as a systematic use of biotechnologies. Biotechnologies, in turn, are one of the key directions of innovative development and modernization of many industries: medicine, pharmaceuticals, agriculture, food industry, fuel and energy complex, environmental protection and others.

The concept of bioeconomics combines two global sciences – ecology and economics. In other words, bioeconomics is an economy based on the use of biotechnologies in order to increase the efficiency of the use of natural resources and reduce the harmful impact on the environment. Biotechnology as a field of knowledge and a dynamically developing industrial industry is designed to solve many key problems of our time, while ensuring the preservation of balance in the system of relations "man – nature – society", since the principles of biological technologies, which are based on the use of the potential of the living, by definition are aimed at the friendliness and harmony of man with the surrounding world.

Priority directions of bioeconomics development are:

- global food security;
- sustainable agricultural production;
- production of safe food products;
- Industrial use of renewable resources.

Meeting the needs of a growing population requires the involvement of more and more resources in the production process. In particular, the population of Uzbekistan for the period 01.01-2001-01.10.2021 increased by 136.5%. The relatively high level of population growth in the country (102.4% for 2020-2021) requires the expansion of the market of goods and services in a corresponding way, which will lead to an increase in demand for extracted and recoverable raw materials on the market. Now, along with the release of industrially extracted resources, the production of raw materials and finished goods in the world on the basis of renewable resources is also falling off. As a result of the growth in the production of goods based on the use of natural forces, renewable biological resources (vegetation, animals and other biological materials), the secondary processing of used items, various waste or by-products, a new relatively young sphere of the economy has been revived -«Bioeconomics".

So, clothes made of wood, plastic from trees, automobile fuel isolated by microbes. This may sound like science fiction, but this technology is already available to us today – and a lot of it has been developed in Finland, this is the basis of Bioeconomics. Bioeconomics: "This is a whole socio-economic system with a broad scope: industrial processes, jobs and well-being," says Professor Anna-Kristine Richkoff, head of Strategic Research at the VTT State Center for Technical Research. According to Richkoff, a world-renowned expert on bioeconomics, it is not only about the sustainability of the environment, but about the sustainability of the entire economy. "In fact, it is an alternative to dependence on oil."

...In the future, we could have a car that is 100 percent created from biomaterials, the specialist emphasizes. [1]

In the future, the development of Bioeconomics contributes to the satisfaction of a large number of the population's demand for goods at the expense of produced products from biomass and will become one of the priority directions of the development of the national economy. Since, large-scale work is currently underway in the world to develop new technologies and innovative bio-goods. This sector of the economy is growing rapidly and the share of biological products in the structure of the total volume of industrial goods is increasing. Thus, in the member states of the European Union in 2017, the share of bioenergy received

from renewable sources in the structure of all energy consumed was 58.6%. [2]

Among the countries of the European Union, Finland plays a leading role in the development of Bioeconomics, where forests are the main source of biomass.

Thus, Finland's economic strategy is aimed at increasing bioeconomical production from the current 60 billion euros to 100 billion euros by 2025. During this process, many new jobs will be created and a second wind will be given to the national economy. The potential is huge: in Europe, the bioeconomy already brings in more than two trillion euros annually, and continues to grow rapidly. But to ensure success in the long term, much more needs to be done, in particular, to train new scientists and encourage new companies. [1]

It should be noted that Uzbekistan has a huge potential for accelerated growth of Bioeconomics. In particular, the country has a diverse rich flora and fauna, a huge potential of solar and wind energy, and Uzbekistan has developed agriculture and training in agriculture, biochemistry and biotechnology. And the country currently has great opportunities for the use of secondary resources. In this aspect, the first steps forward are being taken in the country. Thus, in Uzbekistan, 7.1 million tons of household waste accumulate per year. In 2018, as a result of processing 1.3 million tons of such waste, about 1.1 million tons of goods were produced.

From the data presented, it can be seen that the annual volume of non-recycled household waste is 5.8 million tons. Further organization of their deep processing, along with an increase in the production of goods, serve as a prerequisite for creating new jobs and improving the environment of territories. The Government of Uzbekistan pays special attention to the solution of this task. In particular, the Decree of the President of the Republic of Uzbekistan dated April 17, 2019, No. PP-4291 provides for solutions to the following main specific tasks until 2028:

- development of sanitary cleaning infrastructure aimed at ensuring full coverage of the population with services for the collection and removal of solid household waste;
- creation of an efficient and modern solid waste recycling system;
- reducing the volume of solid household waste sent for disposal to landfills, creating modern landfills of solid household waste that meet the requirements of sanitary and environmental standards, as well as taking measures to close and recultivate existing landfills;
- improvement of pricing and optimization of tariffs in the field of sanitary cleaning;
- the use of solid household waste objects in the form of alternative energy sources. [4]

To implement these tasks, innovative projects for the processing of household waste are being developed locally. However, for the integrated, rational and efficient use of household waste and the bio-economic potential of the country in general, in the future, along with the use of modern innovative technologies, the study of the best practices of foreign countries in the field of production, research and training in bioeconomics industries plays an important role. In this aspect, international cooperation of research and educational institutions of our country is also of great importance.

Thus, the implementation of the project of the Erasmus+ program of the European Union "New Master's Program for sustainable development of bioeconomics in Uzbekistan" (BioEcUz- with the participation of: LLU – Latvian University of Natural Sciences and Technologies, VMU - Vytautas the Great University, JAMK – University of Applied Sciences of Jyväskylä, TSAU - Tashkent State Agrarian University (and Samarkand branch of this university), TIIAME - Tashkent Institute of Irrigation and Agricultural Mechanization Engineers, BukhSU - Bukhara State University, MARU - Ministry of Agriculture of the Republic of Uzbekistan) the general purpose of which is: "To promote the development of sustainable and inclusive socio-economic growth in Uzbekistan" will be the first steps towards achieving specific goals in the field of bioeconomics through cooperation between European and Uzbek higher education institutions and relevant partner institutions.

Bioeconomic potential of Uzbekistan:

- The presence of developed agriculture and the production of various types of agricultural products;
- In the process of agricultural production, the accumulation of a huge amount of biomass in the form of by-products and waste, for example:
- 4 million tons - grain straw;
- 11 million tons of potato tops and other vegetable crops; more than 4 million tons of cotton remains;
- 100 million meter cube livestock waste and others. more than 30 million tons of solid waste are also pricked in the country annually, etc.
- The main perspective opportunities for the production of bioproducts in Uzbekistan are:
- According to preliminary calculations of specialists, when processing by-products of the agricultural sector and waste, it is possible to produce:
- 8.9 billion cubic meters of biogas (equivalent to 6.5 billion cubic meters of natural gas);
- Due to the growth of cultivation and processing of aquatic[1] plants (like eichornia), 28,000 cubic meters of biogas and biofertilizer can be obtained from 1 hectare;
- Processing of domestic waste of the country allows to produce more than 6.5 million tons of bioproducts

For the development of bioeconomics in Uzbekistan, it is necessary: a clear understanding of the need to support and develop biotechnology at the level of government, business and society, the formation of a legislative, institutional and social framework that will support bioeconomics; demonstration of the advantages of bioeconomics for man and nature, the use of advantages of bioeconomics for increasing competitiveness, improving ecology and for the development of agriculture; close interaction of participants of all links of the bioeconomical chain – agricultural workers, industry, legislators, end-users.

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