

EXPERT CONCLUSION OF PAB (PROJECT ADVISORY BODY)
ON IMPLEMENTATION OF 'DEVELOPMENT OF AQUACULTURE AND
FISHERIES EDUCATION FOR GREEN DEAL IN ARMENIA AND UKRAINE:
FROM EDUCATION TO ECOLOGY AFISHE" ERASMUS+ CAPACITY
BUILDING PROJECT IN UKRAINE

The expert opinion presented here aims to assess both the strengths and weaknesses of the Erasmus+ capacity building project "Development of Aquaculture and Fisheries Education for Green Deal in Armenia and Ukraine: From Education to Ecology AFISHE" Erasmus+ Capacity Building Project in Ukraine. This conclusion is intended to provide a comprehensive overview of the main achievements of the project, as well as the challenges it faced and recommendations for future efforts in similar projects.

The main goal of the AFISHE project is to ensure sustainable fish production to meet the growing population's needs for high-quality protein products while maintaining ecological balance. Additionally, it aims to enhance the capabilities of higher education institutions in the field of aquaculture and fisheries. To achieve this, several activities were conducted, including a comparative analysis of curricula, development of educational programs, and organization of university-based seminars involving stakeholders and interested parties. The goals of the project include not only training specialists and developing the industry but also reducing the negative environmental impact of aquaculture and fisheries in Armenia and Ukraine. This is achieved through the development and implementation of master's programs in aquaculture and fisheries that are aligned with high-quality European programs, meet national and regional needs, and strengthen collaboration between universities, industry, and science (the "from education to ecology" concept).

The implementation of this project has become an important tool for strengthening and expanding connections between partner universities. Thanks to this project, partner universities can now collaborate on scientific research, exchange experiences and knowledge, and develop innovative approaches to student education, taking into account the national and geographical specifics of each country. The project has positively impacted academic mobility, allowing faculty members to participate in internship programs hosted by partner universities. This not only enhanced the professional level of the instructors but also deepened global collaboration among aquaculture specialists and stimulated the development of scientific ideas and communications.

Although the AFISHE project started in the field of education, we have seen how it quickly expanded beyond its initial scope, positively impacting environmental conservation and the implementation of the Green Deal objectives. Students not only have the opportunity to gain knowledge but have also become active participants in environmental movements, influencing their families and society as

a whole. Thus, the AFISHE project has contributed to fostering ecological awareness and promoting responsible practices in the aquaculture sector.

Environmental degradation is a serious issue that negatively affects many industries, including aquaculture. One of the key reasons is the insufficient training of specialists in this field. The lack of modern knowledge and skills leads to inefficient management of fish farms, overuse of resources, and water pollution. Consequently, productivity decreases, the risk of fish diseases increases, and water quality deteriorates. To address this problem, it is necessary to develop and implement specialized educational programs that will prepare qualified professionals capable of applying a sustainable approach to aquaculture and minimizing the negative impact on the environment.

The decision to introduce educational programs in the field of fisheries and aquaculture, a new one at Sumy National Agrarian University (SNAU) and an updated program at The National University of Water and Environmental Engineering (NUWEE), is an important step toward preparing qualified specialists for this industry. Such programs will not only provide students with the necessary knowledge and skills but also promote the development of sustainable fisheries and aquaculture. Students will be able to study modern technologies, management methods, and ecological aspects, which will help reduce the negative impact on the environment. Additionally, the program will foster scientific research and innovation, enhancing the industry's competitiveness on an international level. This decision will strengthen the role of higher education in ensuring sustainable development, particularly in the rapidly developing aquaculture sector in Ukraine.

The proposed master's programs in aquaculture aim to address issues related to environmental degradation and insufficient specialist training. The program includes modern courses on ecological management, fish farming technologies, and water resource management. Graduates will acquire the knowledge and skills for effective and sustainable management of fish farms, reducing their impact on ecosystems, and implementing innovative practices. Such training will contribute to improved water quality, increased productivity, and the preservation of biodiversity. Implementing this program is a key step towards developing environmentally sustainable aquaculture.

A key factor in the effectiveness of the proposed master's programs in aquaculture is its clearly defined learning outcomes and innovative teaching methods. The programs focus on practical skills and ecological principles, allowing students to apply the knowledge they acquire in real-world situations. Interactive methods, such as simulations, laboratory research, and fieldwork, foster a deep understanding of complex ecological processes. Clearly articulated learning outcomes help students focus on the specific competencies necessary for sustainable aquaculture management. As a result, graduates will be prepared to

address modern environmental challenges and implement innovative solutions in their professional activities.

The aquaculture and fisheries programs are aimed at continuous improvement, ensuring the achievement of necessary competencies. By implementing the latest technologies and methods, the new program from SNAU and updated program from NUWEE enhance the qualifications of specialists in the field of fish farming and other aquatic resources. The programs integrate scientific research with practical activities to ensure the sustainable improvement of aquaculture and fisheries management methods.

Developing partnerships with government institutions and stakeholders in the aquaculture sector is crucial for achieving sustainable success. These collaborative initiatives facilitate the implementation of effective regulatory mechanisms, support innovative projects, and create favorable conditions for sectoral development. Through teamwork and the exchange of expertise with government agencies, research institutions, and the business community, it is possible to ensure balanced and sustainable development of aquaculture technologies and foster economic growth in this important sector.

The introduction of the new master's program in aquaculture and fisheries at SNAU and the updated at NUWEE open opportunities to address environmental sustainability issues in different Ukraine regions. The programs are aimed at educating students in modern farm management methods with maximum environmental protection. Implementing eco-friendly technologies and scientific research contributes to the conservation of natural resources and supports ecosystems in Ukraine's water bodies.

Today, the expected outcomes from implementing the project at SNAU and NUWEE involve not just participation in AFISHE project activities, but specific steps and infrastructure ensuring the proper functioning of the new master's course in aquaculture and fisheries at these Ukrainian universities. Primarily, it is anticipated that not only will developed curricula and learning outcomes for the new and updated master's program in Aquaculture and Fisheries be implemented soon, but also that the content and module structures will be aligned with partner universities in the EU. Thus, the newly developed modules for the new curricula, based on jointly developed learning outcomes, will lay the foundation among participating universities for future implementation of joint/double master's programs in Aquaculture and Fisheries. This will facilitate students' participation in future academic mobility programs between today's partner universities.

Another key expected outcome is the ability to operate the educational process within the master's program in Aquaculture and Fisheries, providing students with deep, specialized, and interdisciplinary training aimed at academic, research, and professional preparation in the field of aquaculture. It will equip students with foundational knowledge, skills, and abilities to conduct research in aquaculture,

design, manage, and monitor both inland and marine facilities, assess their environmental impact, and implement strategies that will contribute to the future development of the aquaculture industry.

Therefore, during the project implementation, the benefit will accrue not only to both universities, SNAU and NUWEE, which will expand their range of educational programs and acquire a modern aquaculture laboratory, train 26 pedagogical staff (13 faculty members from each university), and 4 non-teaching staff (2 from each university) in universities in Portugal, Croatia, and Slovakia, but also to approximately 25 master's students annually, and consequently to the business sector, which will be able to employ these specialists. Additionally, through the implementation of the AFISHE project, a sustainable network will be established among Armenian, Ukrainian, and European universities, and businesses, operating jointly for the benefit of sustainable environment.

In the future, they will only deepen their cooperation.

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