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Sustainable development of Blue economies through higher education and innovation in Western Balkan Countries – BLUEWBC

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BLUEWBC

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Lead partner:	P6
Participating partners:	all
Contact:	Vilma Puriene, vilma.puriene@vilniustech.lt
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Abbreviations:

Norwegian university of Science and Technology (**NTNU, P1**)
University of Montenegro (**UoM, P2**)
University of Vlore 'Ismael Qemali' (**UoV, P3**)
University of Tirana, Faculty of Economy (**UoT, P4**)
University of Split (**UNITS, P5**)
Vilnius Gediminas Technical university (**Vilnius Tech, P6**)

1.1. Introduction

Education is considered as a significant mechanism in shaping attitudes, skills and culture that could boost Innovation & Entrepreneurship (I&E) orientation of young generation. What more, the earlier the exposure to I&E, the more likely it is that students will consider becoming entrepreneurs and develop their creativity. Moreover, university provides an excellent frame for defining the concept of I&E in Blue economy, promoting entrepreneurial mind sets, knowledge exchanges, entrepreneurship and innovative technologies. In this vein, underpinning university with I&E education is of significant importance for economic development in Montenegro and Albania. Noteworthy, I&E education as well as activities associated to it is also recognized in various national policy documents in Montenegro and Albania that are presented in previous reports (WP1 activities).

Blue economy could offer an opportunity for strategic shift in terms of I&E in Montenegro and Albania. Also, additional positive trends are creating more appropriate ecosystem for success. First, availability of international funds for research and innovation as well as entrepreneurship are continuously fostering initiatives and actions of researchers and entrepreneurs in the last decade. Second, investments into research and innovation infrastructure at the national level are also significant. Both of them have potential to provide new opportunities for innovation and entrepreneurial activities and development of a knowledge-based economy.

Blue economy concept is highly compatible with defined opportunities. It is important that potential effect of Blue economy could further lead to positive changes in industrial areas and policies like human resources development, entrepreneurship and innovation promotion, digitalization, agricultural, energy, tourism, environmental protection, etc. Key and critical moment for empowering opportunities and change could be created when innovation and entrepreneurship aspects start to be implemented more vigorously as it is defined in national Strategies and policies of Montenegro and Albania.

1.2. Context

The main aim of the BLUEWBC is to improve I&E of Blue economy in higher education in Montenegro and Albania where both countries have little or no experience. In addition, the whole initiative of the project is based on the similar problems in the transition to market economy and the possibility for young people to start their jobs in one of the Blue economy components. There is little of this competence in the society, despite the fact that general level of education is high. Also starting a business in the Blue economy is very favourable to achieving profitability due to the low cost in Montenegro and Albania compared to Western Europe countries.

The best way to establish and distribute Blue economy I&E competence in higher education since topics are very well positioned to succeed in Montenegro and Albania, are in accordance with the

actual trends in Europe. Other benefits are that it is realistic and feasible in national and institutional context and that it addresses the targets:

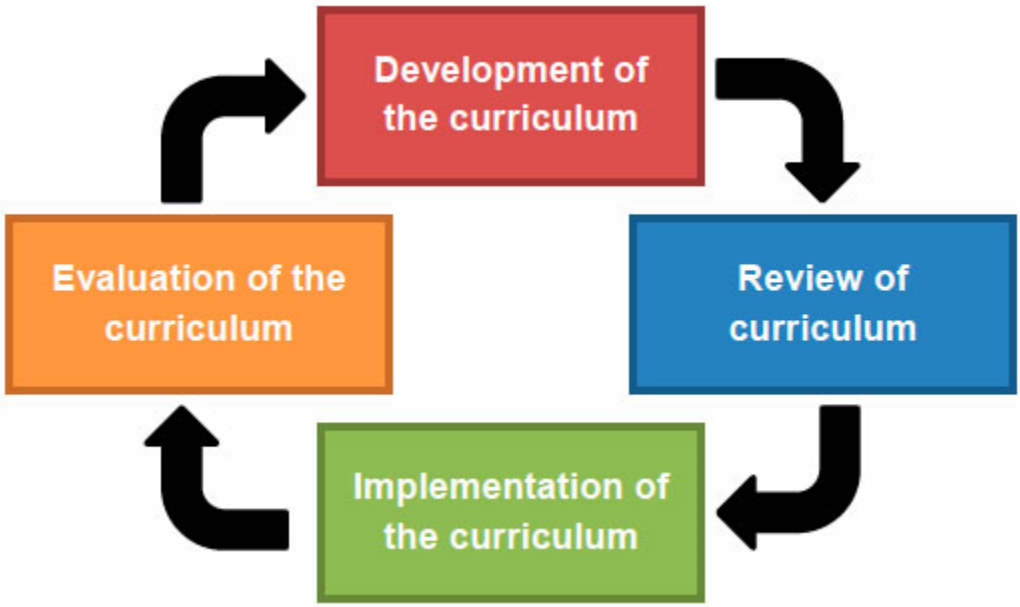
1. To increase competence and capability of HEIs education in I&E targeting the Blue economy concept in Montenegro and Albania;
2. To provide competent human resources in I&E in Blue economy and related areas;
3. To establish a supportive environment for I&E through collaboration between HEIs, industrial partners and public authorities; and
4. To strengthen the reputation and recognition of HEIs related to I&E regionally and internationally.

The aim of WP2 is to develop HEIs curricula in Montenegro and Albania and establish capacity for I&E education through university-university and university-industry cooperation, joint initiatives of academia and internationalization activities (regional priorities). It is based on transferring good practice and experience to P2, P3 and P4 in the field of I&E in Blue economy. Moreover, it is believed that it will increase the readiness and capacity of partner countries HEIs to run I&E courses by involving the I&E centres established in WP3.

The methodology for curriculum update by I&E concept in Blue economy (DEV 2.1) will include such activities as revision of existing study courses in Montenegrin and Albanian HEIs (which was done during the WP1 activities and online meetings) in order to help the institutions to develop and integrate the identified subjects missing in existing study programs (bachelor and master). This will be followed by DEV 2.2 preparing guidelines for learning development.

This methodology also will serve for the development of course catalogues as a teaching material is emphasized in DEV 2.3. The WP2 output comprehends preparation of course scripts and teaching materials for identified subject gaps (WP1) through the exchange and application of existing material at programme countries universities.

Using long-term experience and good practices from other international projects, Vilnius Tech (P6) in close cooperation with NTNU (P1) and UNITS (P5) will develop a methodology in order to help P2, P3, P4 partners to develop the new curricula and give the guidelines for the integration in study process. The methodology for developing new curricula is given in the figure:



Partners from Montenegro and Albania analysed their study programs and made reports, basing on the results of collected information and as per a suggested template. To ensure the adequate application of the methodology, P6 together with P1 and P5 organized several online meetings with P2, P3, P4 administration during which representatives from Montenegro and Albania made presentations of their gap and needs analysis, the surveys they made and the stakeholder meetings they had. It helped to identify the challenges to practical implementation of I&E in Montenegro and Albania HEIs.

The methodology on curricula establishing and update will serve as guidelines (in English, Montenegrin and Albanian languages) in developing and integrating of courses and teaching/training materials locally (DEV 2.2). The results of innovation and knowledge integration in curricula will promote the future collaboration between the partner universities, in order to cover the knowledge and resources from all the three partners.

1.3. Rationale for development of methodology

Previously done “Needs and GAP analysis” on connecting educational and entrepreneurial sectors (maritime, business, coastal tourism and environment protection) in Montenegro and Albania represent a reference point for the project implementation. The activities for setting up I&E in Blue economy in higher education are distributed to:

- Reporting on actions and models for I&E,
- Curricula development that includes course catalogues, teaching material and e-learning services,

- Installation of equipment and establishment of environments for I&E centres at partner countries HEIs,
- Teaching staff and students training and certification,
- Start-up of pilot master courses in English as an introduction to double degree certification.

Based on these assumptions, specific objectives of BLUEWBC were defined as well as a corresponding set of activities. In this way, the consortium ensured that the activities are aligned with the needs of each HEI in partner countries and their perspective to make a hub/portal and master courses (in English language) sustainable.

BLUEWBC consortium have chosen an approach that consists of qualitative and quantitative methods to achieve the following goals:

- Capacity building in Blue economy in higher education through I&E: the process will start with the review of the applied models of I&E in EU.

After that, an appropriate model will be chosen for Montenegrin and Albanian HEIs. Development of curricula and integration of it into the study process will follow the precise activities with regards to course catalogues, teaching material and e-learning services, which will be provided in details in the guidelines for learning development. The procedures for obtaining appropriate equipment will be realized. So, the basis for establishing I&E centres in Montenegro and Albania will be reintegrated. This first goal will be delivered.

- Setting up the new and revised courses at BSc and MSc level (in English) in partner countries HEIs with the aim in Blue economy by applying I&E approach will be defined. First, the teaching staff and students' trainings organized by programme countries HEIs will be reported. The trainings will be organized at I&E centres and at the premises of HEIs in Montenegro and Albania. The pilot master courses in English will be launched.

1.4. Scope of methodology

Conducted activities in WP1 indicated that in the development of the I&E oriented curriculum for Montenegro and Albania HEIs there is a place for improvement. Based on the SWOT analysis for both countries (separately for Montenegro University and two Albania universities) the following insights will be made for further developments of upgraded courses and new courses related to the promotion of I&E and Blue Economy issues. To clarify, three separate recommendations will be developed for each university (1 – for Montenegro, 2 – for Albania, all together are called universities).

The methodology will be the base for development of guidelines on how to improving I&E capacities and skilful handling of data (for improving digitization capacities which can contribute to the I&E competencies). Based on the methodology, the guidelines will provide recommendations for the universities on upgrading and/or development of new curriculum, promotion I&E in Blue economy, improve the ability of HE providers to understand and teach I&E related modules with

the smart data and IT tools employment, practical implementation real business' problems, thus providing students, early-stage entrepreneurs, and businesses with more relevant, effective interdisciplinary training. Moreover, some insight will be provided for the promotion of university and business collaboration, international cooperation, mobility.

The strategic aim for HEIs will be to achieve the highest standards in research-led I&E-related actions to be implemented by the learning community that empowers all to learn and develop to their full potential. To support it in achieving this aim, we will suggest to universities to develop and modernize curricula in accordance with the principles, like: **Research-led I&E-related projects; Inter- and cross-disciplinarity; Employability (self-employability) and skills; Internationalization.** They will be more developed and described in the guidelines.

What is worth to be mentioned that not only the implementation of courses that are fully dedicated to I&E education need to be improved, but also it is needed to revise and modify the other curriculum that could integrate I&E concept. Moreover, it is needed to be mainstreamed and incorporated in all levels, highlighting I&E curriculum accessibility in all HEIs faculties (horizontal employment – strategic HEIs decision), where it tends to focus on general competences such as creativity, design thinking, project-based learning, interdisciplinarity, commercialization, initiative, critical-thinking, self-reliance, problem solving, industry and market need orientation, etc. The knowledge and working methods of one discipline are not fully applied to the other disciplines to provide a broader perspective and a deeper learning experience – more hands-on activities including commercialization and prototyping.

Creative teaching/pedagogical methods should be significantly motivating and inspire students to boost their entrepreneurial mind-set and creativity as well as to supplement students' classroom experience related to I&E. Therefore, it is a needed to create learning environment where students learn how to apply knowledge in a real-life situation. Accordingly, the I&E infrastructure will serve as a basis to reinforce the courses oriented to I&E by equipment and tools for development, prototyping, commercializing technologies and innovation. In addition, host seminars on good practice in application of innovation and entrepreneurship should be organized as a part of the curriculum. It could include alumni, entrepreneurs and other relevant business experts as visiting lecturers and guest speakers, etc. More precisely, new and revised courses mentioned above would be also based on pedagogy in I&E education. More options and possible suggestion on Innovation spaces for promotion of I&E practical activities followed by several examples will be inside of the guidelines.

It is important to mention that the revised courses would include practical components and methodology related to I&E. Learning I&E in an education setting is often divided into three categories; learning *about* I&E, learning *for* I&E and learning *through* I&E. Learning *about* I&E takes place in the classroom when focusing on the theory about I&E. Learning *for* I&E could for example take place through business plan courses where students develop skills for I&E in future careers. These skills could be business basics, marketing, presentation skills etc. Learning *through* I&E occurs when students learn through actually performing I&E activities, such as developing a prototype, solving a real-life problem from the industry or starting a student company. In the

revised courses, ideally one should strive to have all three learning methods of I&E present, with an emphasis on the latter. There should be a theoretical component where students *learn about I&E*, a skill-developing component where students *learn for I&E* and a practical component where students *learn through doing I&E* themselves. There are several teaching methodologies that could be applied for achieving this, for example start-up development, design thinking and student projects on innovation challenges from industry. The aim of the new course components must be focused on working with I&E opportunities within the Blue Economy in universities.

The upgraded study courses will also include practical workshops in I&E centres. This could be as an introduction for students to the technology available at the I&E centres. The emphasis in the workshop could focus on the application of the available technology to create new business opportunities within the Blue Economy. The workshops could for example be facilitated in collaboration with industry, municipality etc., who could suggest real-life practical challenges for students to work on during the workshop

The focus is on theoretical aspects, case studies, group work and joint course work. Students work in group and prepare business plan or develop business ideas which they present in class. Sometimes joint activities are held as student conferences or competitions for best idea or best business plan or marketing plan. Working with real work projects is somehow a limitation and often it remains in seminars as discussions of case studies rather than in depth analysis.

Interdisciplinary curricula or subjects are useful and support students with broader skills and help them to meet labour market needs. There are some good initiatives as offering the subjects by faculties. With respect to learning activities, HEIs have a good experience in inviting guest speakers from business, however this is a practice mainly initiated by the Lectors, based on personal network and needs to be formalized.

Cooperation among industry and universities remains low. This level of collaboration is presented in the lack of trust that industry shows toward universities, industry barely is referring to the academia for knowledge and technology transfer. Industry is not active in offering students' attractive internships, students are hired by industry but required expertise and specialization is very high. Business participation in development of study programmes and curriculum remains fragmented or very low. Therefore, more proactive business and industry involvement into the university activities would provide:

- more positive affect for HEIs,
- development (constant upgrade) of database,
- invitation of business to take part and collaborate in I&E related initiatives,
- contribute to the HEIs curriculum content in order to focus on issue how to identify and encourage good entrepreneurs and their ideas during the studies,
- provide insight access and possibilities for students to study and do business parallel,
- role of practical training and it's linking with student's potential entrepreneurial intentions etc.

Support from business sector will be requested in order to build up creative and simulative environment for future entrepreneurs which will lead to the development and valorisation of new ideas on the market.

Business stimulation through competitions and Business idea pitching are regularly implemented during lecturing courses of innovation, entrepreneurship and marketing/tourism. However, students are supported up to idea generation phase and pitching their business plan at faculty level.
Communication and collaboration with business needs a boost. Business Simulation through games, study visits at local I&E Industry/ecosystem or support for I&E is fragmented and not formalized. While with regard to student start-up development and support: mentorship from industry experts or co-creation with partners is occasional, lacking sustainability and is not strategically supported, active involvement of business is missing. The whole HEIs I&E related ecosystem is weak, having very good and active spots but not a strategic approach including all parts (HEIs, business, policy and society) and integrating all the faculties.
It is a real lack of I&E related infrastructure for student hands-on actions, for real employment of business ideas, prototyping and commercialization activities. The I&E related infrastructure would support students seeking to trying their entrepreneurial skills in practice, involving business for application of new technologies, innovation as well as encouraging industry to support it through financial or expertise means.

The summary of GAP with focus on Blue Economy:

1. The programmes are still reflecting mainly traditional education and specialization and the integration of awareness of I&E and blue economy is not present or fragmented.
2. The awareness on promising perspectives of Blue Economy with focus on specializations of young generation remains low.
3. Even though there is an increased number of universities and programmes with focus on business and market orientation, I&E, “Blue growth” are poorly included in curricula or very narrowed at organizational level.
1. Lack of innovation employment into the market opportunities, initiatives, especially lack of I&E related infrastructure, low or fragmented deployment of entrepreneurial skills into real business cases.
4. There are few opportunities to match the business operating in Blue economy with skilled and trained young people – training programmes are not offered by academia.
5. There are very few partnerships established among business and universities for internship.
6. Weak exploitation of international cooperation potential for learning, exchanging of experience, practice and know how in the field of I&E integration and application in study programmes, as well as with the focus area of Blue Economy.

1.5. Good practice provided by P1, P5, P6 partners

Good practices, which could be provided as the examples to follow are first of all the Governmental support of entrepreneurship development and integration into the study process and education in generally. For example, in Norway – the government established an official policy to strengthen entrepreneurship in educational programs at all levels from basic education to higher University levels. The Ministry of economy of the republic of Lithuania has approved the entrepreneurship action plan of Lithuania (2014-2020), with the main goal to define actions the implementation of which would ensure consistent growth of the level of entrepreneurship in Lithuania. And the Strategy for Innovation Encouragement of Croatia 2014-2020 and Croatian Smart Specialization Strategy (S3) 2016 – 2020,
Next and very important is a number of educational programs, which can be available to different educational levels and include the main topics of Entrepreneurship. Like suggested in Overview of educational programs for I&E in EU, P1 partner – they provide programs even from secondary level, where students learn collaboration, creativity and initiative through establishing a students' business. P6 show good examples on different initiatives that include triple collaboration between university, business and youth, in order to create new businesses in different areas (from smart city to nano-crystals' start-ups).

The spaces, which gives an opportunity to develop interdisciplinary teamwork and allows students to adapt university or school knowledge in the implementation of real businesses are very welcome examples, which have been provided by P6 and P5.
All these initiatives could be strong support for Albanian and Montenegrin HEIs to develop and integrate the new curricula into the courses and teaching/training materials locally. Good practical examples of courses provided by partners are: Design Thinking and//or commercialization for Start-ups (P6); Innovation & Entrepreneurship, Business Creation and Entrepreneurship Technology, innovation and knowledge (P1); Entrepreneurial infrastructure, Family entrepreneurship, Entrepreneurship in trade, Entrepreneurial projects, new product design and development (P5).

1.6. Conclusions

Generally speaking, HEIs in Montenegro and Albania need to develop educational framework associated to I&E competences and skills. Moreover, the strategy for integration of these new skills needs to be discussed and suggested. This includes working on the students' innovativeness, creativity, entrepreneurial thinking, supporting the process of regional cooperation in public, private and research sectors, developing the technological and innovation capacities and infrastructure, stimulating the growth of Blue economy, improving the environmental aspects and cultural heritage in tourism, etc.

Therefore, it is important to fully implement mentioned four categories of actions in order to provide systemic approach and adequate environment for new idea generation and its further market commercialization. Blue economy represents an exciting "playground" for future entrepreneurs and innovators mostly due to its diversified structure of businesses, products and services. Also, it offers opportunity to promote innovation and entrepreneurship competences in collaborative way, providing conditions for successful market penetration and further creation of new jobs and income. Apart from these key outputs for students and HEIs, business partners could largely benefit from students' ideas and initiatives, especially in terms of innovation opportunity. Furthermore, important positive effects are related to further recognition of women, seniors, migrants, the unemployed and young people as important source of entrepreneurship. Also, wider society will benefit from new culture that celebrates proactive approach and new job creation. Moreover, Blue economy could become a successful story with strong positive and long-term implications on other important contemporary concepts (e.g. circular economy, experience economy etc.). The outcome of these innovations will cover the knowledge and resources from Albanian and Montenegrin HEIs and will promote their future collaboration. More concrete actions based on the methodology to be taken for each country (Montenegro and Albania) will be developed in the DEV 2.2 Guidelines for learning development.

Practical information

P6 partner in close collaboration with P1 and P5 will develop separate guidelines for each university – 3 guidelines (UoM, UoT, UoV). P6 will organize a separate meeting with each university and make a presentation of guidelines. Each university will have a possibility to revise, make comments, suggest amendments. After the partners will confirm the guidelines, each university (UoM, UoT, UoV) will prepare the presentation on status quo of existing courses and their suggestions on possible upgrades and new developments; also, they will send to EU partners the examples of syllabus (course cards), so that EU partners could start working on the upgrades and new developments. All the upgraded courses or new developed once will be confirmed by universities and then the content and course material will be developed.

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