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# REINFORCING RESPONSIBLE KNOWLEDGE TRIANGLE AT BOSNIA AND HERZEGOVINA HIGHER EDUCATION INSTITUTIONN

# (RTI-HUB)

**Funding: Erasmus+ KA2;** Call for Proposals: Capacity Building in the Field of Higher Education; 6th Call 2020 (EAC-A02-2019-CBHE)

**Type of project: National - JOINT PROJECTS**

**The deadline for Applications:** 5 February 2020.

Project budget 850.000 EUR

3-year project

**BiH Priority:** Knowledge triangle, innovation (Such as reinforcing links between education, research and business)

**Project objective:**

The main objective of the project is contributing to enhanced research capacities and potential at PCU in line with national and EU strategies for researchers through the establishment of the Network of **Research,** **Technology and Innovation Start-up hubs.**

The project will strengthen capacities by:

* **Building human capacities** in **Research, Technology, and Innovation (RTI)**
* Strengthening **institutional capacity** and enhancing **national networking** with the creation of a **Network of Research and Innovation Start-up hubs** at PCU that will be a national level reference for R&I in service of the academic/research community, as well as for continuous dialogue with HE and Business.

Main activities:

1. To support PCUs in the modernisation and quality enhancement process by the development of clear RTI policies and strategies based on analytical assessment and benchmark analysis harmonising them with EU standards and strategies for researchers, and with national priorities for sustainable development
2. To enhance career development and cooperation opportunities of researchers through professional and transferable skills improvement
3. To support PCUs to approach EHEA and ERA by the implementation of models for strengthening international and regional cooperation networks among partner countries higher education institutions, EU, industry, and society through networking activities and trainee internship placements in order to harmonise the management of university research potentials, and raise awareness about RTI principles.
4. Establishment of RTI Start-up hubs, places that provide ideal conditions for young researchers and entrepreneurs to flourish and accelerate the growth of their research and businesses as well. To embracing the start-up hub culture as a method of increasing wealth and developing new products, services, innovations and technologies.

The foremost aim of the present proposal is to improve the scientific quality of research and publications at PCU by improving the writing skills/amount of applications and publications of scientific papers in those faculties with low or very low publication rate. Open access philosophy and how to register a patent will be part of the present proposal as well.

**WP1. Conduct an analytical assessment of the current RTI situation**

1.1. Research potential at PCU universities mapped

1.2. Review of RTI strategies at EU partners universities

1.3. Comparative analysis

1.4. Conference on results of the analysis (with conclusions and action plan as deliverables)

**WP2. Network of R&I Offices**

2.1. University RTI Start-up hubs established and equipped

2.2 Action plans

2.3 Definition of RTI strategies, Structures, and procedures.

2.4. Training trainers

2.5. Promotion procedures improved

2.6. Cooperation with scientific diaspora established

**WP3. Development RTI services**

3.1. Training of Network of RTI Offices Manager

3.2. Establishment of IT-based information system

3.3. Young researchers trained in research methodology

3.4. Young researchers trained in various skills

3.5. Training on teaching methodology

3.6. Pilot Mentoring system introduced

3.7. Implemented RTI pilot projects at each PCU

3.8 Guidebook published

**WP4. Dissemination**

4.1. Project website created and regularly updated.

4.2. Promotional material distributed

4.3. Project results disseminated

4.4. The label "Excellence in Research" obtained by partner universities.

4.5. Establishment of awards for young researchers.

4.6. Benchmarking among EU and PC Partners

**WP5. Quality**

5.1. Quality Assurance Committee (QAC) established

5.2. Project quality procedures developed

5.3. WP reports

5.4. Annual QA reports

5.5. Reports analyse

5.6. External monitoring

**WP6. Management**

6.1. Kick-off and coordinating meetings realised.

6.2. Procedures for project management

6.3. Project management bodies set up and PA signed

6.4. Software platform for project

management

6.5. Day-to-day coordination

6.6. Financial management

**RTI-HUB invited partner list**

Program countries

HEI EU1: University of Leon (SP)

HEI EU2: University of Catania (IT)

HEI EU3: University of Maribor (SLO)

HEI EU4: FH Joanneum University of Applied Sciences (AT)

HEI EU5: University of Ljubljana (SLO)

Partner countries

HEI 1: University of Tuzla (BiH)

HEI 2: University of Mostar (BiH)

HEI 3: University of Sarajevo (BiH) /

HEI 4: University of E. Sarajevo

HEI 5: University of Banja Luka

HEI 6: University of Bihac

HEI 7: University of Zenica

HEI 8: University of Dzemal Bijedic, Mostar

Centre for advantage technologies BiH

BIT Centar

Ministry of Education, Science and Youth of Canton Sarajevo

Chamber of Economy of Bosnia and Herzegovina

Associated partners:

Business representatives

**Why does the consortium undertake this project?**

According Commission Opinion on Bosnia and Herzegovina’s application for membership of the European Union/ Analytical Report is at an early stage of preparations in the area of information society and media.

BiH is one of the least competitive European countries. Together with other SEE countries it

makes the least competitive European region. To improve competitiveness in the globalization era, all results and indicators related to this policy should be globally relevant, which will be accomplished by

internationalization and Europesation of science and education. Science and research systems are in evident "transition" towards a new model of "knowledge generation" which requires heterogeneity, interdisciplinarity and networking, where an emphasis is on collaborative research between science and business.

Technologies, especially Digital technologies are an inseparable part of today's learning process. The EC works on several policy initiatives in order to modernize education, training and research approach, provides funding for research and innovation in order to promote digital technologies used for learning and measures the progress on modernization of universities. Bosnia and Herzegovina, as potential member of EU has to follow this trends.

The Bosnia and Herzegovina (B&H) Universities and their scientific staff were well integrated in the European and international research community since 1989. For the time being there is a wish and need for integration into the ERA and EHEA. The integration process is of utmost political and economic importance for B&H as well as for the EU as the economies and universities are facing the challenge of catching up with the enlarged EU and the constitution of the ERA.

Currently, one of the main barriers to a coherent Research, Technology, and Innovation (RTI) system relates to the linkages between research institutes, universities and the private sector. However, these interactions do not exist in most universities; and, when they exist, they are mainly occurring at the individual level, with no institutional links being established. Furthermore, most of the universities do not have either a strategy for RTI nor support to create or maintain offices for RTI. Most of the research infrastructure is obsolete; most laboratories, if not all, are lacking operating funds; libraries lack funds to pay subscription costs to international science journals, and the internet connection suffers from low bandwidth; the younger generation attending universities has no means to be trained in research activities; and the majority of industrial research has been dismantled. B&H have in common a low level of knowledge and technology transfer. Universities from B&H show only a small number of partnerships and cooperation with EU universities, RTI institutes and private companies as well as poor participation in EU and international support programs.

The continuous professional development of teachers is not harmonized within the country and is not based on results from an external assessment of learning outcomes and students achievements but is the result of consultations between pedagogical institutes, school principals and teachers in each entity/canton separately.

In terms of quality of scientific publications B&H have the lowest production of research publications and the lowest citation index in Eastern Europe. Furthermore, universities from B&H lack of modern equipment and laboratory space, lack access to online databases (e.g. Science Direct, Web of Science, ISI databases, etc.); lack access to prominent scientific journals, electronic journals and literature in libraries. Since RTI infrastructure is seen as a basic element in any RTI system, improvements in research infrastructure is a major issue for the country.

The RTI system in Bosnia- Herzegovina is highly decentralized and compartmentalized across different ministries. B&H’s separate (state/entity/canton) policies create perpetual marginalization of research; a countrywide policy approach to RTI has yet to be developed. There are seven ministries influencing the design and implementation of RTI policy. A number of related official documents has also been prepared and adopted by governments, such as is the Strategy for the Development of Science in BiH (2010-15); Strategy for Technological and Scientific Development 2012-2016 (RS), and the Science Development Strategy 2011-2021 (FBiH).

Yet research institutes currently do not meet the criteria for scientific research activity, particularly in Federation of B&H. During the country’s transition to independence, specifically RTI infrastructure and qualified human capital for RTI were largely ignored. Brain drain has been a critical handicap. The number of employees in this sector has been reduced by half in the last 10 to 15 years.

The country’s research capacities are very limited with a total of 1 942 researchers in 2016, while a trend of brain drain has been observed, most notably in the health and medical sector, with no systematic measures to address the issue. The country’s estimated total allocations for research amounts to 0.3% of GDP. The RSSD sets the goal to reach 0.8% of GDP investment in research and development by 2022, which is far from the 3% EU target for 2020.

In B&H 82.7% researchers are employed in higher education, while the rest are spread between the business and non-profit sectors.

The SAA provides that Bosnia and Herzegovina and EU Member States shall cooperate with a view to further developing the information society, including preparing society as a whole for digitalization, attracting investments and ensuring the interoperability of networks and services.

B&H should increase investment in research and innovation and introduce concrete measures which would effectively prevent brain drain. Strong efforts are needed to ensure a harmonized and systematic approach from all levels of authority in addressing priorities in this sector, ensure effective implementation of strategic objectives, as well as the adoption of the smart specialization strategy.

The project will contributing to enhanced research capacities, teacher skills and potential at PCU in line with national and EU strategies for researchers through the establishment of the Network of Research, Technology and Innovation Start-up hubs.

The project will strengthen capacities by:

Building human capacities in Research, Technology, and Innovation (RTI)

Strengthening institutional capacity and enhancing national networking with the creation of a Network of RTI at PCU that will be a national level reference for RTI in service of the academic/research community, as well as for continuous dialogue with HE and Business.

Establishment of RTI Start-up hubs (RTIHUB), places that provide ideal conditions for young researchers, students, young entrepreneurs to flourish and accelerate the growth of their research and businesses, as well. Assist to develop research methodologies and project be made more sustainable. To embracing the start-up hub culture as a method of increasing wealth and developing new products, services, innovations and technologies.

**Aims and specific objectives:**

RTI readiness in education requires knowhow and involves adaptation and change. Universities and training institutions in B&H are diverse, with equipment, teacher skills and approaches to technology use varying considerably.

The main challenges in RTI policy implementation, include the low quality of research centers, low number of scientists, suboptimal funding structure, limited mobility of scientists and high concentration of scientists in the entity centers, and the low level and uncompetitive quality of scientific publications, along with very limited commercialization of RTI. Based on the findings, the top priorities for BiH are to build a statistical infrastructure to monitor RTI activities; improve coordination among different government levels; provide sufficient resources for policy implementation and impact evaluation; and strengthen the science base of the country, fostering RTI commercialization and business innovation.

In accordance with the national priorities for the establishment and strengthening of RTI capacities in BiH the proposed project aims to enhance research capacities and potential in line with national and EU strategies for researchers through establishment of the Network and platform of responsible research and innovation and enhancing scientific publishing. The project consortium will work intensively on strengthening the internationalisation of PCU and the capacity to network effectively in research, scientific and technological innovation.

The project consortium will intensively support the partner universities to take over a central role in the national RTI system, in order to strengthen the role of higher education institutions at large and thus, to become the main driving force in the local and regional economic development. The project will intensively support:

1. Development of human capacity for scientific/artistic research activities;

2. Infrastructure improvement and enhancement for scientific/artistic research work and for providing services;

3. Internationalization of scientific/artistic research activities by supporting excellence in research;

4. Cooperation between the public and private sectors for implementation of research projects serving social and economic development.

This project aims above all at establishing a tailored RTI system that includes intensive evaluation before building up an RTI polices and strategies for each PPU. The defined strategy will then be implemented at the universities by pilot projects that are initiated and supported by simultaneously established offices for knowledge and technology transfer. This process will then strongly address the 'knowledge triangle' of education, responsible innovative research and business at university level.

The main objective of the proposed project is contributing to enhanced research capacities and potential at PCU in line with national and EU strategies for researchers through establishment of the Network and platform of responsible research and innovation and enhancing scientific publishing.

Project will strengthen capacities by:

• Building human capacities in RTI Management and Implementation (targeted training programme with relevant topics selected on the basis of the in-depth SWOT analysis of the national RTI system)

• Strengthening institutional capacity and enhancing national networking with the creation of the Network and platform of responsible research and innovation at PCU that will be a national level reference for RTI in service of the academic/research community & HEI management, as well as for continuous dialogue with HE, authorities and business.

Core activities:

1.To support PCUs in the modernisation and quality enhancement process by development of clear RTI polices and strategies based on analytical assessment and benchmark analysis harmonising them with EU standards and strategies for researchers, and with national priorities for sustainable development

2. To enhance career development and cooperation opportunities of researchers through professional and transferable skills improvement

3. To support PCUs to approach EHEA and ERA by implementation of models for strengthening international and regional cooperation networks among partner countries HE institutions, EUU, industry and society through networking activities and trainee internship placements in order to harmonise the management of university research potentials, and raise awareness about RTI principles.

4. Establishment of Bosnia and Herzegovina RTI-HUB network

The foremost aim of the present proposal is to improve the scientific quality of research and publications at PCU by improving the writing skills/amount of project applications and publications of scientific papers in those faculties with low or very low publication rate. Open access philosophy and how to register a patent will be part of the present proposal as well.

Partner Country [B&H]:

The country's RTI system is still at a very low level. In order to support long-term growth and “Strategy for Science Development in Bosnia and Herzegovina 2017-2022” BIH should pay particular attention to improve the quality of research, education and training. B&H has made some progress and remained at an early stage in achieving the capacity to cope with competitive pressure and market forces within the Union. The overall level of education and spending on research and development has remained low. The quality of the physical capital suffers from underinvestment (EC B&H 2018 Report). Universities lack resources, connection between academia and private sector is almost non-existent, as well as the connection between science and technology. Moreover, there is no financing structure for RTI, and business sophistication is low and limited by high expenditures related to running a business. There have been certain improvements in recent years, in particular with the adoption of the Strategy for the Development of Science in B&H.

The specific objectives of the project will address the needs and problems specified in the previous sections through the creation and incorporation of RTI Strategy into the existing structure of HE services will utilize the existing capacities of each PI and significantly enhance existing status, which will extend to other target groups. A comparative analysis in different scientific disciplines and at diverse HE levels will strength quality of RTI system. Project will contribute to the reform of RTI system making PCU HEIs more diversified, responsive, international, self-sustainable and competitive. Its innovative approach of running Network and platform of responsible research and innovation according to the goals of Lisbon convention and Bologna Process into existing system will mediate obstacles for all target groups. Strengthened partner countries’ universities capacity to initiate and conduct RTI projects in accordance with the needs will be ensured with development of proper guidelines for HE researcher’s and other support staff, students, stakeholders. Training of university top management, teachers, research staff and student to enhance and develop their research abilities and entrepreneurial thinking solving the problems and publishing common methodology and documentation will be delivered during project life time. This work will allow the project to Increase cooperation with EU higher education institutions, scientific diaspora and main RTI principles will be adopted and implemented by partner universities. This will ensure sustainability of the project results.

With this project, Specific Support Measures at the institutional level will be developed, cleared and recommended.