



IF₄TM

Institutional framework for development
of the third mission of universities in Serbia



Benchmarking report





IF4TM

D1.5 Benchmarking report

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Abstract	D1.5 Benchmarking report gives a preview of benchmarking results analysed based on gathered information on EU (D1.1) and Serbian (D1.3, D1.4) legislative in the areas of knowledge transfer and innovations, continuing education and social engagement. The analysis is followed by the set of recommendations provided (D1.2).
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LIST OF ABBREVIATIONS

BMU	Belgrade Metropolitan University
CE	Continuous Education
DUK	Danube University Krems
IST	Instituto Superior Tecnico
SE	Social Engagement
SUNP	State University of Novi Pazar
TCAS	Technical College of Applied Sciences
TTI	Technology transfer and innovations
UBG	University of Belgrade
UKG	University of Kragujevac
UM	University of Maribor
UNI	University of Nis
UNIBA	University of Bari Aldo Moro
UNS	University of Novi Sad
UoB	University of Brighton
CE	Continuous Education
CEO	Continuous Education Office
HEI	Higher Education Institution
IP	Intellectual Property
LLL	Life-long Learning
SE	Social Engagement
TTI	Technology Transfer and Innovation
TTO	Technology Transfer Office



EXECUTIVE SUMMARY

The objectives of this D1.5 Benchmarking report is:

- to provide the benchmarking analysis of the Third Mission in our EU Partner countries and Serbia, at national and institutional levels;
- to identify good EU practices and Third Mission models that could be adopted in Serbia at national and institutional levels;
- to identify and describe problems and challenges in relevant areas;
- to recommend how to reduce the identified gaps between good EU practices and Serbian current practice.

The Benchmark analysis is based on the deliverables D1.1, D1.3 and D1.4 of other WP1 activities. Recommendations are generated from this analysis, but also from the Belgrade Policy Seminar in the area of development of third mission at Serbian higher education institutions and its D1.2 deliverable. Data collection was done by using the Questionnaire developed by IST within the Act.1.1.

Based on the collected data, a set of tables (Section 3) are generated for each of the 3rd mission's dimensions: 1) [Technology transfer and innovation development](#); 2) [Continuous education](#) and 3) [Social engagements](#). Each set of tables for a dimension, consists of the following tables related to the analyzed 3rd mission's dimension:

- *National legislation* – provides the comparison of the relevant legislation in EU partners' countries and Serbia, and specified recommendations for new legislation in Serbia relevant to the analyzed 3rd mission's dimension.
- *Institutional policies* - provides the comparison of relevant policies of HEIs in EU partners' institutions and Serbian partners' institutions relevant to the analyzed the 3rd mission dimension, as well as their plans for relevant actions.
- *Institutional structures* - provides the information on the existing organizational structure related to the analyzed 3rd mission's dimension in EU partners' institutions and in Serbian ones, as well as their plans for relevant actions.

In [Section 4](#), we show tables for *targets and progress indicators* specified at the national level and at the level of Serbian partners, presented for each dimension of the 3rd mission of universities, taken as a specific target. For each of these targets, specific goals and progress indicators are specified.

The final [Section 5](#) summarizes recommendations for

- *Technology transfer and innovation development*, related to [national legislation](#) and [HEIs](#)
- *Continuous Education* – related to [national legislation](#) and [HEIs](#)
- *Social Engagement* - related to [national legislation](#), [HEIs](#), [academic staff](#) and [all stakeholders](#)

We will extract here only main conclusions related to these three dimensions related to the national legislation:



Higher Education Act:

Dimension 1: Technology Transfer and Innovation Development

1. Support of the Third Mission of universities:
 - a. Building stronger commitment to Third Mission by explicitly including these activities into universities' mission statements, regulatory and strategic documents;
 - b. Include Third Mission activities in promotion criteria of professors
2. Strengthening of entrepreneurial component and innovative potential of higher education:
 - a. Support the concept of "entrepreneurial university";
 - b. Encourage market/entrepreneurial activities of HEIs.
 - c. Educate students for the development of innovations and entrepreneurship
 - d. Research and innovation development need to be part of HE system by changing the organizational structures, funding models and incentives systems
3. Improvement of cooperation with employers and industry:
 - a. Allow experts from companies to be adjunct professors (without part-time employment, contract-based engagement);
 - b. Support of innovation centers as organizational units of HEIs for realization of joint innovation projects with industrial partners
 - c. Form Employers Councils to analyze existing and approve new curricula;
 - d. HEIs need to define rules, forms, mechanisms and procedures for development of university-industry cooperation.
 - e. Encourage development of organizational units for dissemination of research results, patent management, and building ties with industrial and business partners such as TT (Technology Transfer) and IPR offices,
4. Improvement of cooperation with research institutes:
 - a. Allow distinguished researchers to teach students as adjunct professors and mentors (without part-time employment, contract-based engagement)
 - b. Develop and offer joint PhD study programs
5. Financing of higher education:
 - a. Implement scholarships (paid by public and/or private sources) that reflect the cost of education of student.
 - b. If graduates educated by the state grant leave Serbia, they should pay back the costs of their education.

Dimension 2: Continuous Education (CE)

1. *CE legislation*: CE should be a regular form of higher education as it is now in the case with higher education of young students (age 18-24).
2. *Short-cycle programs and online & blended learning*: The legislation should allow HEIs to offer the most convenient modes of education (such as online or blended e-learning, or F2F seminars and workshops) to CE students (age 30-60), providing durations of CE programs as short as possible, and providing learning personalization as much as possible. *Short-cycle programs and courses* may be the most convenient form of education to many CE students and may complement normal academic bachelor and master programs.
3. *External lecturers*: HEIs should be allowed to hire experts from companies and from other organizations that are the most competent for transfer of new knowledge and skills, not yet provided by lecturers employed at HEIs. This provides needed



flexibility, access to new knowledge and skills, and minimizes time to job market needs. These “*expert lecturers*” should not need to have PhDs, but should have relevant implementation references and should be experts in disciplines and application areas that they teach¹. University professors may be engaged to supervise their teaching, according to specified program curricula and their course syllabi.

4. *No accreditation for HEIs*: CE short-cycle programs and courses should be developed and offered in minimum time, in order to answer to new job market needs. This is the main reason why they need not to be accredited if HE is already accredited for relevant academic programs. But, HEI must have institutional rules for development of and internal approval of new short-cycle programs and courses. Institutional rules must be compliant with recommendations specified by the National Council of Higher Education. Service providers of short-cycle programs and courses that are not HEIs need to get the accreditation for their programs and courses.
5. *Quality assurance (QA)*: QA system should be introduced for formal and non-formal adult education at all levels
6. *Funding*: Different funding sources (private sector, individuals, fiscal policy, international projects) are necessary to provide support to CE students in order to minimize their financial contributions. Scholarships for CE education should be partially supported from public funds, especially for highly demanded job skills. Companies paying scholarships for their employees or students should have appropriate tax deductions. Special loans for the subsidized scholarship should be provided for CE students. Cooperation with international organizations is needed for better access to LLL funding programmes. A national campaign is necessary in order to change the mindset regarding the adult educations and need for appropriate public, private and individual funding for CE education

Dimension 3: Social Engagement

- 1) The legal framework should
 - a) support the development of competitiveness and innovativeness of SMEs through better collaboration with universities (TM activity) and
 - b) provide tax incentives systems for R&D education and training expenditures.
- 2) It is recommended that the national legislation
 - a) introduces performance indicators (limited number) to assess the progress of universities regarding the third mission activities and to monitor long-term impact and they should be included in statistics regularly required by the Ministries;
 - b) reduce the gap between education and employment through well-defined enrolment policy and monitoring of labour market needs;
 - c) establishes several levels of quality control and monitoring of third mission activities (local, regional, national).

Science and Technology Development Activity Low

1. Support of the priority-driven applied research, as the basis for innovation development, by changing funding ratio Basic/Applied research to 1:2.
2. Support of commercialization of research results of technical HEIs and applied research institutes (ARI) through their collaboration with partner companies.

¹ This is the practice of the Danube University Krems (DUK), our project partner from Austria, is hiring large number of external lecturers.



3. Provide tax incentives to organizations that are successful in international projects, invest in to R&D and innovations development, invest in education of their existing and future staff (student scholarships).
4. Reorganization of public research institutes - most of them should be applied research institutes with market-driven and need-driven research. Basic research institutes will work on contracted long-term research programs in line with national priorities providing the basis for future applied research.
5. Support increase of the number of researchers and innovation developers in HEIs, applied research institutes and companies.
6. Provide regular public investments into R&D infrastructure
7. Support applied research at colleges of applied sciences, if they satisfy specified conditions.
8. Instead of using the existing long-term and unique Technology Development Program, it is recommended to offer smaller and shorter specific programs designed for specific type of companies (micro/small/medium/large) in several priority application areas (Fig.4). Calls for proposals should be open every year

Innovation Activity Act:

Dimension 1: Technology Transfer and Innovation

1. Public-private funding of market-driven R&D and innovation development projects, coordinated and managed by companies, but with participation of universities and R&D organizations financially supported by public funds, by implementing the recommended “many to few” program paradigm.
2. Support the establishment of organizations and units at universities dealing with the innovation activities, with a simple registration.
3. Besides grants for R&D and innovation development projects, new public and public-private funding mechanisms for innovation development should be introduced:
 - a) Matching public and private funding of **innovation development projects**
 - b) Public-private **venture capital funds** for investmentment to high-technology start-ups for innovation development (joint start-ups)
 - c) Public-private **business accelerators** for commercialization of new ideas
 - d) Public **angel funding** of the initial prototyping of initial ideaa for innovation.
 - e) Public funding of **due diligence** of ideas for new innovations
 - f) Implementation of **crowd investment model** to support of start-ups with ideas for new innovations – creating the legal framework and support
4. Public funding to support of ST parks, incubators, innovation centers, TTPs, IPR offices
5. Encouragement of innovation activities in academic, research and all other sectors and also support all other forms of transfer and diffusion of innovative solutions.
 - a) Offer a permanent open call for proposals of innovation projects (duration-one year, grant – up to 10.000 EUR) for elaboration, analysis and testing of new ideas for innovations.
 - b) Annual calls for proposals of innovation projects (duration – one/two years, grant – 30.000 EUR)
6. Matching public-private funding to support of **joint university-industry centers** for research, education (MS & PhD levels) and innovation development, aiming to attract foreign and local companies to invest and cooperate with universities.



1 Introduction

The IF4TM project aims to enable Serbian universities and HEIs to develop their Third Mission by providing

- proposals of policy papers and the necessary legislation at national level;
- recommendations and template documents to be used by Serbian HEIs to develop their Third Mission;
- support Serbian Partner HEIs do define, plan, design and develop the most suitable approaches to Third Mission and their sustainable models to manage their Third Mission programs, activities and initiatives.

The objectives of this D1.5 Benchmarking report is:

- to provide the benchmarking analysis of the Third Mission in EU countries, or more specifically in our EU Partner countries and Serbia, at national and institutional levels;
- to identify good EU practices and Third Mission models that could be adopted in Serbia at national and institutional levels;
- to identify and describe problems and challenges in relevant areas;
- to recommend how to reduce the identified gaps between good EU practices and Serbian current practice.

2 Methodology

2.1 Methodology framework

Figure 1 shows the methodology framework used for development of D1.5 Report. The Benchmark analysis is based on the deliverables D1.1, D1.3 and D1.4 of other WP1 activities .

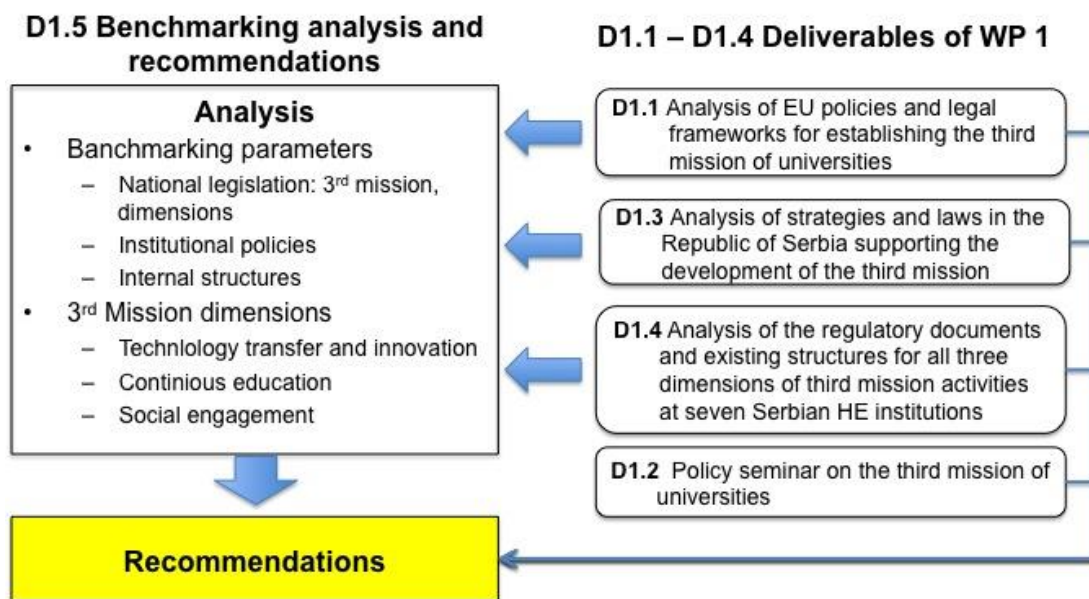


Figure 1 Methodology framework of D1.5 benchmarking analysis and recommendation

The 3rd mission will be analyzed along three dimensions:

1. Technology transfer and innovation
2. Continuous education, and
3. Social engagement

The analysis is based on deliverables D1.1, D1.3 and D1.4 as results of other activities of the WP1 of IF4TM project. Benchmarking parameters include national legislations of project partners countries, institutional policies and internal structures of project partners related to their third mission and its three dimensions.

Recommendations are generated from this analysis, but also from the Belgrade Policy Seminar in the area of development of third mission at Serbian higher education institutions and its D1.2 deliverable.

2.2 Data collection

Data collection was done by using the Questionnaire developed by IST within the Act.1.1 that we used by both EU and Serbian higher education institutions. Figure 2 shows the structure of the Questionnaire provided by the D1.1

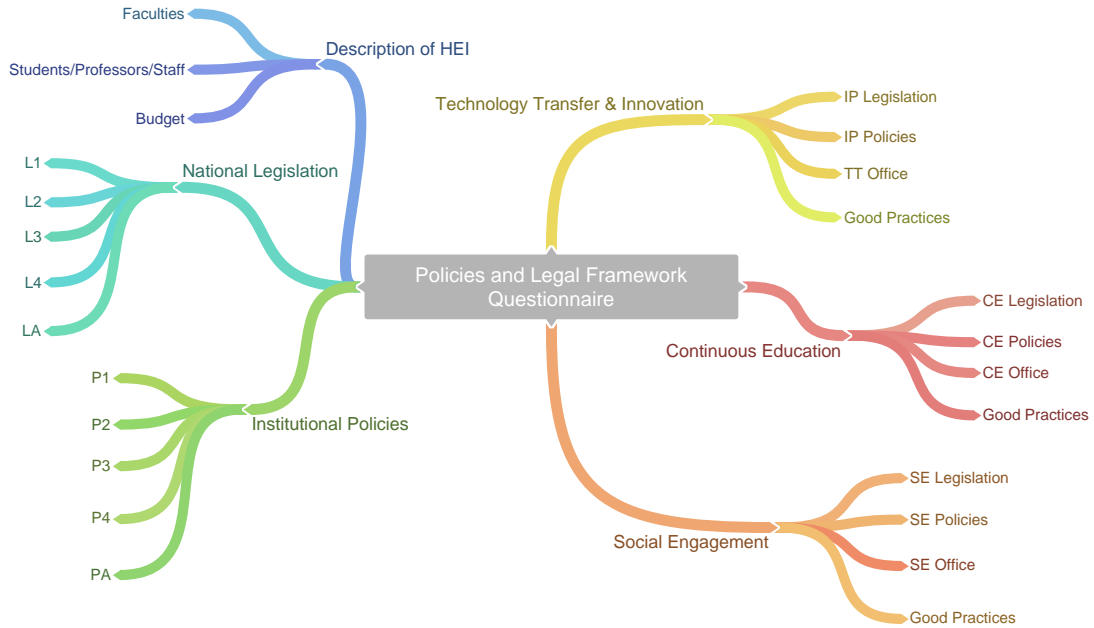


Figure 2 Graphical presentation of questionnaire structure (Presentation of D1.1 EU Policies and Legal Frameworks by Prof. Dr.Luis Caldas de Oliveira from Instituto Superior Technico)

Figure 3 shows the structure of the Questionair together with selected criteria for gathering of collected data from HEIs.

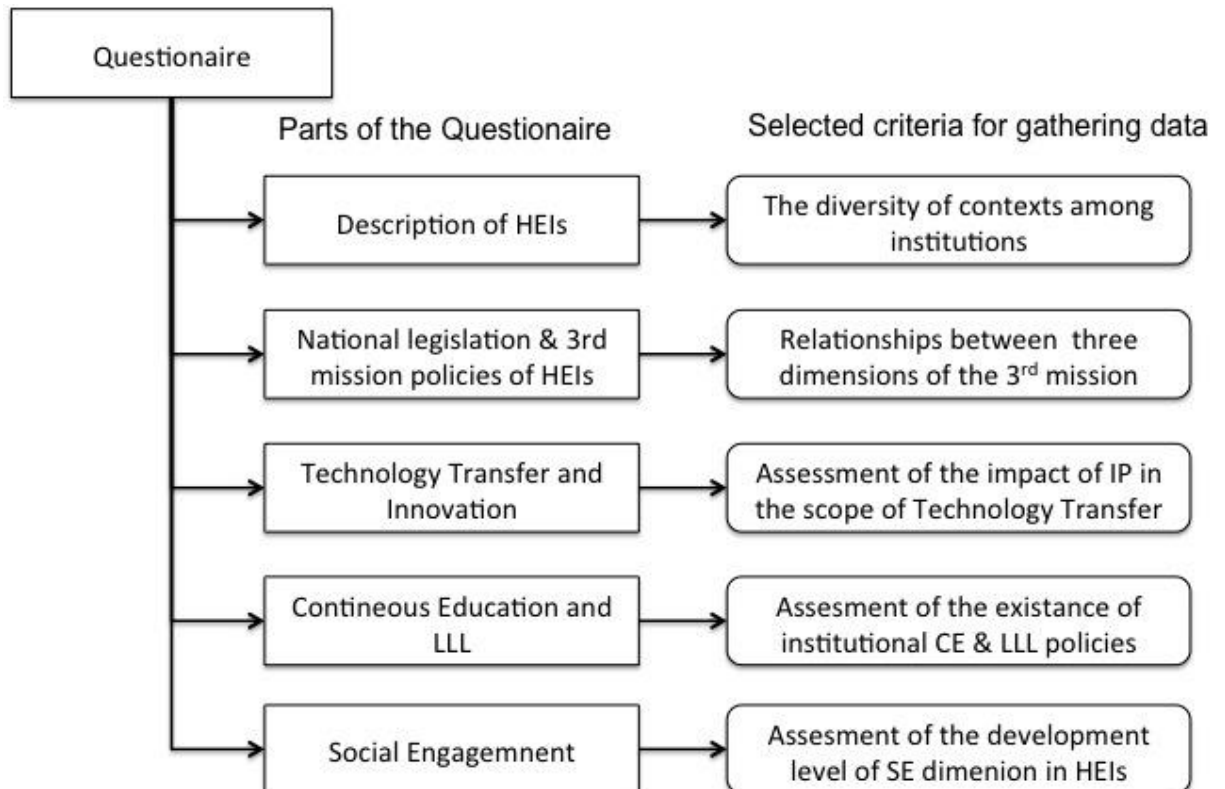


Figure 3 The structure of the Questionnaire with selected criteria for data gathering



2.3 Data analysis

The detailed data analysis from the Questionnaire is given in the following reports:

D1.1 Analysis of the policies and legal frameworks for establishing the 3rd mission of universities in ten EU HEIs.

D1.3 Analysis of strategies and laws in the Republic of Serbia supporting the development of the third mission

D1.4 Analysis of the regulatory documents and existing structures for all three dimensions of third mission activities at seven Serbian HE institutions

A short summary of conclusions of these reports is given here:

Ten EU HEIs:

Comprehensive HEIs tend to be more focused on Continuous Education. It appears that the existence of national legislation regarding a dimension promotes the existence of institutional policies to create a framework for application of such national rules. In addition, apparently lower student/faculty ratio increases the relevance of Technology Transfer.

Although all HEIs develop activities within the three dimensions of the Third Mission, it is important to note that, regarding

- **Technology Transfer**, Instituto Superior Técnico's and University of Maribor's good practices should be highlighted;
- **Continuous Education**, Danube University Krems' good practices should be highlighted; and,
- **Social Engagement**, University of Bari's and University of Brighton's good practices should also be highlighted.

Analysis of strategies and laws in the Republic of Serbia:

There is no separate national or institutional regulatory act that addresses the Third mission as an individual issue or its three pillars: technology transfer and innovation, continuous education and social engagement in the context of the Third mission. However, there are several national regulations relevant to the third mission of HEIs: Law on Higher Education, Law on Innovation Activity, Law on Scientific Research Activity, Law on Education of Adults, Patent Law, Law on Trademarks, Law on Legal Protection of Industrial Design, Law on Indications of Geographical Origin, Law on Copyrights and Related Rights, Law on Protection of Trade Secrets, Law on Legal Protection of Topography of Semiconductor Products, and the Strategy for scientific and technological development of the Republic of Serbia for the period 2016-2020 – Research for Innovation.

Analysis of the regulatory documents and existing structures at 7 Serbian HEIs:

Regarding institutional policies relevant for the third mission of HEIs our analysis shows that

- it is usually covered by the Statute of the institution. Some other institutional regulations may also be relevant for the third mission, such as documents on quality control, code of practice for teaching staff or institutional strategies. HEIs themselves define institutional rules regulating TTI through their statutes or additional documents.
- except from SUNP, TCAS and BMU, all other HEI involved in the study reported that they have TTO organized as a separate entity at their university. However, although



the university TTOs do exist, their capacities are quite modest: they employ just a few employees which limits their ability to cover all activities in the field of TTI.

- The largest number of institutions reported that they have no information on the number of spin - offs with patented technology as well as the number of spin - offs without patented technology, but due to decentralization of most of Serbian HEIs, they do not have reliable information about the actual level of the TTI activities on faculties.
- UNS, SUNP and TCAS reported that there is no Continuous Education Office on their universities. Other HEIs in this research report that they do have LLL office or CEO as a separate entity at their universities. Due to decentralization of that kind HEIs do not have reliable information about the actual level of the LLL and CE activities on faculties.
- SE dimension is underdeveloped in particular within all of the surveyed institutions and further efforts should be made in order to consistently develop activities within this dimension;

3 Benchmarking Context

3.1 Dimension 1: Technology transfer and innovations

Table 1: National legislation related to the technology transfer and innovations

Dimension 1: Technology transfer and innovations			
Criteria	Benchmark country	Serbia	Recommendations
IP legislation	<p>Portugal</p> <ul style="list-style-type: none"> There are two legislative documents that govern Intellectual Property which include compensation to inventors and authors: <ul style="list-style-type: none"> the <i>Portuguese Industrial Property Code</i> (L 2) (article 59) and the <i>Portuguese Code of Copyright and Related Rights</i> (L3) (article 14). Regarding ownership of intellectual property specifically for academic inventions and ownership of intellectual property specifically for inventions conceived with public funds, <u>neither of these specific subject matters is governed by national legislation.</u> <p>Slovenia</p> <ul style="list-style-type: none"> The four subject matters 	<ul style="list-style-type: none"> Higher Education Act Scientific Research Activity Act Innovation Activity Act The Patent Law Law on Legal Protection of Industrial Design Copyright and related rights The Law on the Protection of Trade Secrets Strategy for Scientific and Technological Development National Education Development Strategy 	<p>Regarding IT legislation, there are no recommendations related to laws dealing with intellectual property rights, as these laws satisfy all aspects of legal IPR protection relevant to the 3rd mission.</p> <p>Three sets of recommendations are specified for three relevant laws for Technology Transfer and Innovation Development, and, in general, for the 3rd mission of universities.</p> <p>Higher Education Act:</p> <ol style="list-style-type: none"> Support of the Third Mission of universities: <ol style="list-style-type: none"> Building stronger commitment to Third Mission by explicitly including these activities into universities' mission statements, regulatory and strategic documents; Include Third Mission activities in promotion criteria of professors Strengthening of entrepreneurial component and innovative potential of higher education: <ol style="list-style-type: none"> Support the concept of "entrepreneurial university"; Encourage market/entrepreneurial activities of HEIs. Educate students for the development of innovations and entrepreneurship Research and innovation development need to be part of HE system by changing the organizational structures, funding models and incentives systems Improvement of cooperation with employers and industry: <ol style="list-style-type: none"> Allow experts from companies to be adjunct professors (without part-time employment, contract-based engagement); Support of innovation centers as organizational units of HEIs for realization of joint innovation projects with industrial partners Form Employers Councils to analyze existing and approve new curricula;



	<ul style="list-style-type: none"> • Intellectual Property, compensation to inventors and authors; • ownership of intellectual property specifically for <u>academic inventions</u>; and • ownership of intellectual property specifically for <u>inventions</u> conceived with public funds <p>They are addressed and governed by the <i>Employment Related Industrial Property Rights Act (L1)</i>.</p>		<ul style="list-style-type: none"> d) HEIs need to define rules, forms, mechanisms and procedures for development of university-industry cooperation. e) Encourage development of organizational units for dissemination of research results, patent management, and building ties with industrial and business partners such as TT (Technology Transfer) centers, IPR offices, <p>4) Improvement of cooperation with research institutes:</p> <ul style="list-style-type: none"> a) Allow distinguished researchers to teach students as adjunct professors and mentors (without part-time employment, contract-based engagement) b) Develop and offer joint PhD study programs <p>5) Financing of higher education:</p> <ul style="list-style-type: none"> a) Implement scholarships (paid by public and/or private sources) that reflect the cost of education of student. b) If graduates educated by the state grant leave Serbia, they should pay back the costs of their education. <p>Science and Research Activity Act::</p> <ol style="list-style-type: none"> 1. Support of the priority-driven applied research, as the basis for innovation development, by changing funding ratio Basic/Applied research to 1:2. 2. Support of commercialization of research results of technical HEIs and applied research institutes (ARI) through their collaboration with partner companies. 3. Provide tax incentives to organizations that are successful in international projects, invest in to R&D and innovations development, invest in education of their existing and future staff (student scholarships). 4. Reorganization of public research institutes - most of them should be <u>applied research institutes</u> with market-driven and need-driven research. <u>Basic research institutes</u> will work on contracted long-term research programs in line with national priorities providing the basis for future applied research. 5. Support increase of the number of researchers and innovation developers in HEIs, applied research institutes and companies. 6. Provide regular public investments into R&D infrastructure 7. Support applied research at colleges of applied sciences, if they satisfy specified conditions.
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8. Instead of using the existing long-term and unique Technology Development Program, it is recommended to offer smaller and shorter specific programs designed for specific type of companies (micro/small/medium/large) in several priority application areas (Fig.4). Calls for proposals should be open every year

Innovation Activity Act:

1. Public-private funding of market-driven R&D and innovation development projects, coordinated and managed by companies, but with participation of universities and R&D organizations financially supported by public funds, by implementing the recommended “many to few” program paradigm.
2. Support the establishment of organizations and units at universities dealing with the innovation activities, with a simple registration.
3. Besides grants for R&D and innovation development projects, new public and public-private funding mechanisms for innovation development should be introduced:
 - Matching public and private funding of **innovation development projects**
 - Public-private **venture capital funds** for investment to high-technology start-ups for innovation development (joint start-ups)
 - Public-private **business accelerators** for commercialization of new ideas
 - Public **angel funding** of the initial prototyping of initial ideaa for innovation.
 - Public funding of **due diligence** of ideas for new innovations
 - Implementation of **crowd investment model** to support of start-ups with ideas for new innovations – creating the legal framework and support
4. Public funding to support of ST parks, incubators, innovation centers, TTPs, IPR offices
5. Encouragement of innovation activities in academic, research and all other sectors and also support all other forms of transfer and diffusion of innovative solutions.
 - a) Offer a permanent open call for proposals of innovation projects (duration-one year, grant – up to 10.000 EUR) for elaboration, analysis and testing of



			<p>new ideas for innovations.</p> <p>b) <u>Annual calls for proposals of innovation projects</u> (duration – one/two years, grant – 30.000 EUR)</p> <p>6. Matching public-private funding to support of joint university-industry centers for research, education (MS & PhD levels) and innovation development, aiming to attract foreign and local companies to invest and cooperate with universities.</p> <p>Recommendation to HEIs</p> <ol style="list-style-type: none">1. All three dimension of the 3rd mission: Continuous Education (CE), Technology Transfer (TT) and Social Engagement (SE) should be included in the mission and in the development strategies of universities.2. Support of TT, entrepreneurship, and development of innovations3. Develop third mission indicators and ranking methodology of HEIs4. Institutions should develop separate action plans for CE, TT and SE and include quality assurance (QA) procedure for these three pillars into institutional documents on quality control and assurance5. Inform all stakeholders of third mission activities of HEI6. Rise and disseminate awareness of the third mission of HEIs7. Encourage the entrepreneurial spirit in academic environments8. Increase of investments in capacity building of the third mission.
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Table 2: Institutional policies related to the technology transfer and innovations

Dimension 1: Technology transfer and innovations			
Criteria	Benchmark partner	Serbian HEIs	Plan for action
IP policy	INSTITUTO SUPERIOR TECNICO (IST) 1. IP Policy (July 2010): changes included more benefits for inventors and creators and new decision process (legal, technological and commercial due diligence) with amendment in 2015 2. NPI's main responsibilities <ul style="list-style-type: none"> • Due diligence (trademarks, patents, software) • Contract analysis • IP dissemination • Patent drafting • Management of patent portfolio 3. Procedure for registration of IP rights: <ul style="list-style-type: none"> • Due diligence • President of IST's decision (30 days from complete disclosure) • Communication with joint owner(s) • Submission of application (depending on type of right) 4. Contract analysis: <ul style="list-style-type: none"> • NPI analyzes all types of contracts celebrated by IST 	University of Kragujevac (UKG) <ul style="list-style-type: none"> • There are no internal policies related to the Intellectual Property 	<ul style="list-style-type: none"> • To develop IP policy at the university level in accordance with National recommendations for IP management at universities and institutes in knowledge transfer activities • To define roles and responsibilities of different actors in IP management and decision processes • To establish IP committee responsible for decision process • To develop set of documents related to the IP management at the University, stated and recommended in National recommendations (see link above), for all three principles: <ul style="list-style-type: none"> ○ Internal IP management ○ IP management in knowledge transfer activities ○ IP management in contract and collaborative research
		University of Belgrade (UBG) <ul style="list-style-type: none"> • IP policy (Rules on Legal protection, Economic exploitation of intellectual property and on the work of the centre for technology transfer University of Belgrade) 	<ul style="list-style-type: none"> • Even though UBG has a quite comprehensive and well developed, there is room for improvement, such as: <ul style="list-style-type: none"> ○ to develop accompanying forms and documents ○ to define individual models of contracts that regulate the roles and responsibilities of parties involved in the IP registration, protection and exploitation ○ To establish IP committee responsible for



<p>that include IP or confidentiality clauses: Memorandums of Understanding; Services Agreements; Consortium / Collaboration / Joint Research Agreements / License Agreements / Non-disclosure Agreements / Joint Ownership Agreements/ Material Transfer Agreements</p> <p>5. IP dissemination</p> <ul style="list-style-type: none"> • IP seminars for students in the scope of disciplines • IP seminars given by INPI (National Industrial Property Office) <p>6. Patent drafting</p> <ul style="list-style-type: none"> • Patent drafting involves understanding the invention and writing the patent document as a result of iterative meetings with the inventors • Formal (legal expressions, font, parts of the document) and substantive (is it new, is it inventive?) requirements must be met <p>7. Management of Patent Portfolio</p> <ul style="list-style-type: none"> • Payment of annual maintenance fees • Responding to notifications • Interaction with patent examiners <p>8. NPI in numbers:</p>		<p>decision process</p> <ul style="list-style-type: none"> ○ Specify conditions for commercialization • Improve management of patent portfolio
	University of Novi Sad (UNS)	
	<ul style="list-style-type: none"> • Center for Intellectual Property has been established at the University of Novi Sad • This Center helps and supports researchers in the whole procedure of patent drafting, writing, etc. • At the Province of Vojvodina level, almost every year there are around 50 patents granted, and approximately 15 per year are from UNS 	<ul style="list-style-type: none"> • To transfer approach/experience which already works at UNS into institutional policies (documents)
	University of Nis (UNI)	
	<ul style="list-style-type: none"> • Intellectual property, legal protection and reward system is only lightly regulated by founding act and regulations of procedure of Center for Technology Transfer. 	<ul style="list-style-type: none"> • To develop comprehensive intellectual property policy at the university level in accordance with National recommendations for IP management at universities and institutes in knowledge transfer activities.
	State University of Novi Pazar (SUNP)	
	<ul style="list-style-type: none"> • There are no internal policies or institutional departments related to the Intellectual Property 	<ul style="list-style-type: none"> • To develop IP policy at the university level in accordance with National recommendations for IP management at universities and institutes in knowledge transfer activities.
	Technical College of Applied Sciences Zrenjanin (TCAS)	
<ul style="list-style-type: none"> • There are no internal policies related to the Intellectual Property 	<ul style="list-style-type: none"> • To develop IP policy in accordance with the National recommendations for IP management at higher education institutions and the Statute of TCAS which offers the possibility of establishing centres for research, development and technology transfer considering the market demands 	
Belgrade Metropolitan University (BMU)		



	<ul style="list-style-type: none"> • 24 invention disclosures • 265 active patent applications, patents and utility models • 11 patent applications • 4 trademark applications • 5 patents, 1 utility model and 6 trademarks granted • 246 contracts analyzed (368 entries) • 5 patent applications internationalized • 2 license agreements <p>UNIVERSITY OF MARIBOR (UM)</p> <ul style="list-style-type: none"> • The University of Maribor has an IP Policy, Rules on Industrial Property Rights Management at the University of Maribor (P1), and it foresees financial compensation to inventors. 	<ul style="list-style-type: none"> • There are no internal policies related to the Intellectual Property 	<ul style="list-style-type: none"> • To develop IP policy at the university level in accordance with the national legislation and global best practices
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Table 3: Institutional structures related to the technology transfer and innovations

Dimension 1: Technology transfer and innovations			
Criteria	Benchmark partner	Serbian HEIs	Plan for action
Techno-logy transfer office	<p>INSTITUTO SUPERIOR TECNICO (IST)</p> <ul style="list-style-type: none"> • Instituto Superior Técnico has a TTO with 8 employees. 	<p align="center">University of Kragujevac (UKG)</p> <ul style="list-style-type: none"> • Knowledge Transfer Centre with no employees • Business Support Office of the University of Kragujevac with no employees • Collaborative Training Centre as some kind of Corporate partnership unit, with no employee 	<ul style="list-style-type: none"> • To promote university centres and offices dealing with and supporting knowledge transfer processes among faculties of UKG • To employ at least one experienced person in each KT unit listed here



<ul style="list-style-type: none"> The average number of patent applications per year is 15. TTO divided into two units: <ul style="list-style-type: none"> Intellectual Property Unit Corporate Partnerships Unit <p>UNIVERSITY OF MARIBOR (UM)</p> <ul style="list-style-type: none"> TechnoCenter (TTO) 4 employees. The average number of patent applications per year is 8. It has an incubator and 3 spin-offs without patented technology. The main activities of the TTO are: <ol style="list-style-type: none"> Technology transfer and commercialization of inventions; Professional and administrative support for different forms of research collaboration (contracts, grants, and other initiatives) between sides mentioned above; and Development of business and 	<ul style="list-style-type: none"> There are no patent applications with University as patent holder There is no unit dealing with IP management support for researchers at the University 	<ul style="list-style-type: none"> To reinforce human resources engaged in those units within set of specialized trainings, networking and exchanging practices with national and international KTOs To increase number of employees during years in different professions for legal, commercial and technical due diligence To introduce the efficiency indicators/metrics for monitoring of progress in TTI dimension of TM as well as the procedure for collecting and assessing the information at UNI level and Faculties level
	University of Belgrade (UBG)	
	<ul style="list-style-type: none"> Center for Technology Transfer was founded by the decision of the University Council on October 26th 2010, with the purpose of identifying, protecting and commercializing the results of scientific, research and expert work and the protection of intellectual property of the University of Belgrade. Tasks and activities described at http://bg.ac.rs/en/members/centers/technology-transfer.php Centre for Technology Transfer currently has three employees 	<ul style="list-style-type: none"> Better promotion of university / faculties centres and offices dealing with the technology and knowledge transfer Disseminate in more effective manner IP trainings for students Centralize process of IP at the university level Efficiency indicators to monitor the progress of TT activities at individual faculties Establish a central information system to collect information on TT activities in UBG member institutions (faculties, institutes and centres) Track and record patents of UB
	University of Novi Sad (UNS)	
	<ul style="list-style-type: none"> There is Technology Transfer Office with two part-time employees Business Support Office of the University of Novi Sad with no full-time employees Danube Center for technology transfer founded in the framework of WP7 Danube INCO.NET in order to promote research innovation, technology transfer, bio-economy and cohesion of countries in the Danube region 	<ul style="list-style-type: none"> To employ some experienced persons to work full-time at the units presented here
University of Nis (UNI)		



<p>research partnerships between University and organizations from private or public sector (spin-off companies, licensing, etc.).</p>	<ul style="list-style-type: none"> Center for technology transfer at University of Nis was founded in December 2012 with purpose to: improve the possibilities for efficient implementation of scientific and research results achieved at the University, to encourage the transfer of knowledge between the University and the economy, to provide the support for the placement of new technologies and innovations, and to strengthen the awareness about intellectual property and the capacity for technology transfer at the University. Center for technology transfer has one part time employee, there are no patent applications and there is no unit dealing with IP management support for researchers. 	<ul style="list-style-type: none"> Employing at least one experienced person to work full-time at the Center for technology transfer if and when government allows. Promoting knowledge transfer among faculties of UNI. Introducing the efficiency indicators/metrics for monitoring of progress in Technology transfer and innovations.
	State University of Novi Pazar (SUNP)	
	<ul style="list-style-type: none"> There is no unit dealing with Technology transfer support for researchers at the University At this time SUNP, in line with economic and social environment, do not have capacity to involve in TTI dimension of third mission of university it will concentrate efforts in other aspects of third mission 	<ul style="list-style-type: none">
	Technical College of Applied Sciences Zrenjanin (TCAS)	
	<ul style="list-style-type: none"> There is no Technology Transfer Office. However, there is a Centre for technology transfer, with occasional activities and with no formal organization 	<ul style="list-style-type: none"> The previously mentioned centre should be used for research activities in cooperation with the companies in the region and the Regional Chamber of Commerce
Belgrade Metropolitan University (BMU)		
<ul style="list-style-type: none"> There is no TTO established There are no patent applications with University as patent holder There is no unit dealing with IP management support for researchers at the University 	<ul style="list-style-type: none"> As BMU is a small university, a minimum number of organizational units related to TM will be established. Usual functions of TTO will be given to the future IT Business Incubator planned to be established at BMU 	



<p>Support of entrepreneurship:</p> <ul style="list-style-type: none"> incubators start-ups, spin-offs, science & technology parks future lab / creativity centers teaching entrepreneurship 	<p>INSTITUTO SUPERIOR TECNICO (IST)</p> <ul style="list-style-type: none"> It does not have an incubator. It has 2 spin-offs with patented technology and 48 spin-offs without patented technology. teaching entrepreneurship 	<p>University of Kragujevac (UKG)</p>		
	<p>UNIVERSITY OF MARIBOR (UM)</p> <ul style="list-style-type: none"> 3 spin-offs Incubator Entrepreneurship is taught in the Faculty of Economics and Business. 	<ul style="list-style-type: none"> There is no incubator established by the University, however the cooperation was established with the Business Innovation Centre Kragujevac founded by the Municipality of Kragujevac, Regional Development Agency and Business Start-up Center Business Support Office of UKG organizes Competition of best student idea, in cooperation with BICKG No spin-offs founded Entrepreneurship is taught as part of the studyprogrammes at several faculties, as formal education: <ul style="list-style-type: none"> Faculty of Engineering Faculty of Technical Sciences Faculty of Mechanical and Civil Engineering Faculty of Economics Faculty of Hotel Management and Tourism Entrepreneurship is additionally taught in the form of start-up courses consisting of 4 modules(in cooperation with the BICKG) and offered to students within the Competition for best student ideas 	<ul style="list-style-type: none"> To establish Creativity center To provide legislative and administrative support to encourage the establishment of spin-offs To develop and deliver workshops on entrepreneurship and creative thinking for pupils and students To support researchers to asses technology readiness level (TRL) and its improvement within Proof of Concept program as pre-commercialization phase To support selected research teams in development commercialization strategy and establishing spin-offs To involve students and researchers in entrepreneurial and innovative activities within open-innovation campaigns in collaboration with enterprises To organize National competition for (BSc, MSc, PhD) best ideas of students To establish Creativity center To increase number of courses on entrepreneurship at UKG faculties To establish sustainable collaboration with partner organizations (schools, incubators, STPs, City of Kragujevac, Chamber of Commerce, Development agencies, Start-up centres etc. 	
	<p>University of Belgrade (UBG)</p>		<ul style="list-style-type: none"> Business Technology Incubator of Technical Faculties (UBG is one of the founders) Science and Technological Park "SCIENCE TO BUSINESS" data base within the Centre for competitiveness Curricula includes courses in entrepreneurship Offers short courses in entrepreneurship Technology Transfer, as support to companies in 	<ul style="list-style-type: none"> To establish an Entrepreneurship Creativity Centre Provide legal and administrative support for foundation of "spin-off" companies Involve researches and students of different profiles in entrepreneurial and innovative activities Network with existing business incubators, hubs and technological centers/parks



		<p>developing and enhancing their performance an</p>	<ul style="list-style-type: none"> • Improve relations with business associations both national and international
University of Novi Sad (UNS)			
<ul style="list-style-type: none"> • There is the Business Incubator Novi Sad (~ 400 m2) • There is Science and Technology Park (the I phase works – 11.000 m2 and the II phase – 29.000 m2 is under construction) • There is the UNESCO Chair for Entrepreneurial Studies • There is the Center for competitiveness and cluster • There is EEN – Enterprise Europe Network – University of Novi Sad • The Best Technology Innovation Competition – started from Faculty of Technical Sciences of the University of Novi Sad, with support from Ministry of Education, Science and Technological Development of the Republic of Serbia 		<ul style="list-style-type: none"> • To establish Engineering creativity center • To finish construction works and to make operational II phase of Science and Technology Park • To include one course developed to Entrepreneurship at the first study year for all Faculties within UNS 	
University of Nis (UNI)			
<ul style="list-style-type: none"> • There is no business incubator established by the University of Nis. • There are no spin-offs founded. • Entrepreneurship is taught in the scope of bachelor, master and doctoral studies at individual faculties within the University (economics, electronic engineering, mechanical engineering) 		<ul style="list-style-type: none"> • To establish creativity center. • Encouraging developing new courses directly related to entrepreneurship. • Encouraging the establishment of spin-offs. • Linking relevant subjects (schools, city structures, chamber of commerce), establishing a network and collaboration with the aim of intensifying technology transfer in Nis region . 	
State University of Novi Pazar (SUNP)			
<ul style="list-style-type: none"> • There is no incubator established by the University, neither in the neighboring area. • No spin-offs founded • Entrepreneurship is taught on the department of economy. 		<ul style="list-style-type: none"> • To develop and deliver workshops on entrepreneurship and creative thinking for pupils and students • To involve students and researchers in entrepreneurial and innovative activities within 	



		<ul style="list-style-type: none"> • Establishment of creativity center • 	<p>open-innovation campaigns in collaboration with enterprises</p> <ul style="list-style-type: none"> • To promote involvement in National competitions for (BSc, MSc, PhD) best ideas of students • To establish sustainable collaboration with partner organizations (schools, City of Novi Pazar, Chamber of Commerce, Regional Development Agencies, etc.)
Technical College of Applied Sciences Zrenjanin (TCAS)			
		<ul style="list-style-type: none"> • There is no incubator established at TCAS • Entrepreneurship is taught as a compulsory subject of each program of study (lectures-2 classes weekly + practicals-2 classes weekly) 	<ul style="list-style-type: none"> • To offer students and the wider public additional trainings and workshops in entrepreneurship • to foster students' innovative activities
Belgrade Metropolitan University (BMU)			
		<ul style="list-style-type: none"> • IT business incubator is in the process of development, but is not still operational • A spin-off was founded (Innovative Software Technologies d.o.o) • Entrepreneurship is taught as a core or optional course in several bachelor study programs. 	<ul style="list-style-type: none"> • Establishment of a <i>creativity center</i> • Establishment of a <i>IT business incubator</i>, to support students start-ups • Establishment of a <i>IT innovation center</i>. to support the collaboration with IT companies in innovative product development.

3.2 Dimension 2: Continuous education

Table 4: National legislation related to the continuous education

Dimension 2: Continuous education			
Criteria	Benchmark country	Serbia	Recommendations
National legislation	<p>Austria</p> <ul style="list-style-type: none"> Continuous Education is governed by the Universities Act of 2002 (L1). 	<ul style="list-style-type: none"> Regulated by Adult Education Act UBG, UNI, UKG and SUNP have LLL or CEO centres, but with modest capacity 	<p>The <i>Adult Education Act</i> and <i>Higher Education Act</i> should be modified according the following recommendations:</p> <ol style="list-style-type: none"> <i>CE legislation:</i> CE should be a regular form of higher education as it is now in the case with higher education of young students (age 18-24). <i>Short-cycle programs and online & blended learning:</i> The legislation should allow HEIs to offer the most convenient modes of education (such as online or blended e-learning, or F2F seminars and workshops) to CE students (age 30-60), providing durations of CE programs as short as possible, and providing learning personalization as much as possible. <i>Short-cycle programs and courses</i> may be the most convenient form of education to many CE students and may complement normal academic bachelor and master programs. <i>External lecturers:</i> HEIs should be allowed to hire experts from companies and from other organizations that are the most competent for transfer of new knowledge and skills, not yet provided by lecturers employed at HEIs. This provides needed flexibility, access to new knowledge and skills, and minimizes time to job market needs. These “<i>expert lecturers</i>” should not need to have PhDs, but should have relevant implementation references and should be experts in disciplines and application areas that they teach². University professors may be engaged to supervise their teaching, according to specified program curricula and their course syllabi. <i>No accreditation for HEIs:</i> CE short-cycle programs and courses should be developed and offered in minimum time, in order to answer to new job market

² This is the practice of the Danube University Krems (DUK), our project partner from Austria, is hiring large number of external lecturers.



			<p>needs. This is the main reason why they need not to be accredited if HE is already accredited for relevant academic programs. But, HEI must have institutional rules for development of and internal approval of new short-cycle programs and courses. Institutional rules must be compliant with recommendations specified by the National Council of Higher Education. Service providers of short-cycle programs and courses that are not HEIs need to get the accreditation for their programs and courses.</p> <ol style="list-style-type: none"> 5. <i>Quality assurance (QA)</i>: QA system should be introduced for formal and non-formal adult education at all levels 6. <i>Funding</i>: Different funding sources (private sector, individuals, fiscal policy, international projects) are necessary to provide support to CE students in order to minimize their financial contributions. Scholarships for CE education should be partially supported from public funds, especially for highly demanded job skills. Companies paying scholarships for their employees or students should have appropriate tax deductions. Special loans for the subsidized scholarship should be provided for CE students. Cooperation with international organizations is needed for better access to LLL funding programmes. A national campaign is necessary in order to change the mindset regarding the adult educations and need for appropriate public, private and individual funding for CE education 7. <i>Educational demands</i>: Support of partnerships at local, regional and international levels between the service providers and service users in order to define the educational demands. The National Council and local councils should be established to identify current and future needs of employers and of new jobs, as well as for consulting in the area of development of human resources. A development of a model of participation of social partners in curriculum development needs to be introduced. 8. Adopt the National Qualification Framework 9. Define the concept of part-time studies and its legal support 10. Increase investment in human recourses (capacity, knowledge,...)
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Table 5: Institutional policies related to the continuous education

Dimension 2: Continuous education			
Criteria	Benchmark partner	Serbian HEIs	Gaps (recommendations)
Continuous Education Policies	Austrian universities (e.g. Univ. of Vienna, WU) <ul style="list-style-type: none"> • Is LLL a part of the overall university strategy? Is it part of other strategic documents? Do rectorate and deans have a clear picture of LLL – do they support it? • Are there clear responsibilities for LLL within the university management, e.g. a vice-rector or vice-deans for continuing education • Is there a separate LLL strategy that defines mission, vision, goals and subordinate goals, and a time-plan for the continuing education activities of the university? • Are there a policy and regulations regarding the establishment of new LLL programs? • Is there a policy on income gained through LLL? • Is there a policy for the use of university staff for LLL programs (E.g. teaching or administration as part of the regular job, or an additional assignment outside normal working hours with extra remuneration?) • Is there quality assurance in place for LLL programs? E.g. in Austria, new LLL programs follow international benchmarks and need approval by the University Senate. 	University of Kragujevac (UKG)	
		<ul style="list-style-type: none"> • Strategy for Lifelong Learning at the University of Kragujevac was developed and adopted in June 2011 • 	<ul style="list-style-type: none"> • To develop the action plan for implementation of the Strategy for Lifelong Learning • To develop university act defining integrative approaches and rules in decentralized LLL programs/courses delivered by faculties • To define roles and responsibilities in LLL activities at Rectorate level and faculties levels • To develop regulations defining approval of new LLL programs, their quality control and final recognition of incomes gained • To initiate incentive system for university staff engaged in LLL
		University of Belgrade (UBG)	
		<ul style="list-style-type: none"> • CE/LLL mission defined by the Statute • CE/LLL strategy document (defines the mission, goals and action plan on CE/LLL at UBG) • Policy on Development of CE/LLL and professional education at UBG • Establishment of CE/LLL programmes regulated by separate decisions and acts of the Senate 	<ul style="list-style-type: none"> • Develop the Action Plan for implementation of the LLL strategy • To develop regulation on approval of new LLL programs and their quality control • Introduce certain benefits for staff involved in the LLL programmes • Analyze the strengths and weaknesses of the elementary and secondary school programmes and on that basis emerge set of the non-compulsory LLL trainings • Simplify the procedures of the starting up and implementing LLL on the faculty level



		University of Novi Sad (UNS)	
		<ul style="list-style-type: none"> The University of Novi Sad (UNS) comprises of 14 faculties with the status of legal entities. Almost all faculties has already developed a set of workshops, lectures, courses and other kinds of organized training, offered in a framework of lifelong learning (LLL) at that specific faculty. Consequently, parties interested in LLL, as a way of continuous knowledge acquisition and/or skills development have to visit different information sources (faculties' web sites, career counseling center or LLL offices at faculties, etc.) in order to inform themselves about current LLL offer, conditions and possibilities of attendance, and other relevant information There is INTERFACE center pilot for lifelong learning at UNS 	<ul style="list-style-type: none"> To develop regulations defining approval of new LLL programs and their quality control
		University of Nis (UNI)	
		<ul style="list-style-type: none"> There is no Strategy for Lifelong Learning at the University of Nis. Few guidelines can be found in founding act of Center for Lifelong Learning and Interface Center. 	<ul style="list-style-type: none"> To define separate LLL strategy. To develop regulation on approval of new LLL programs and their quality control. To develop incentive system for university staff engaged in LLL.
		State University of Novi Pazar (SUNP)	
		<ul style="list-style-type: none"> There is not separate LLL strategy or policy that defined this aspect of activities on SUNP 	<ul style="list-style-type: none"> To define LLL an CE in the strategic documents of SUNP To develop regulations defining of new LLL programs and their quality control Development of comprehensive CE plans, programs and training modules



		Technical College of Applied Sciences Zrenjanin (TCAS)	
		<ul style="list-style-type: none"> The concept of lifelong learning mentioned in the Statute foresees the implementation of lifelong learning programmes 	<ul style="list-style-type: none"> To develop LLL strategy or policy To develop LLL programmes, curricula and modules having in mind the needs of the regional and national companies
		Belgrade Metropolitan University (BMU)	
		<ul style="list-style-type: none"> There is no special LLL strategy, but LLL is specified as one of priorities in the BMU development strategy LLL is specified in the Statute of BMU 	<ul style="list-style-type: none"> A special LLL strategy shall be prepared and implemented by the end of 2016 A procedure for creation of new LLL short cycle programs and courses will be adopted by end of 2016
<p>Continuous Education Office or organizational units managing CE (LLL)</p>	<p>Austrian universities, historic perspective (e.g. WU)</p> <p>The following settings can be seen as steps towards a centrally-managed continuing education (evolution):</p> <ul style="list-style-type: none"> Single professors (pioneers) run their LLL programs as a hobby or for extra income. University management stays passive (neither support nor restrictions). Central regulations and policy for decentralized programs. Central support unit for decentralized programs (e.g. special legal support, administrative support, marketing) Continuing education office that runs all newly-established LLL programs (old programs can join voluntarily, rectorate provides pressure and incentives); CE office develops the program portfolio; CE office gets a professional manager (full-time) CE office has separate brand and market appearance (e.g. WU Executive Academy, Uni Graz Uni for Life, Postgraduate Center of the University of Vienna) 	University of Kragujevac (UKG)	
		<ul style="list-style-type: none"> Lifelong learning center of the University of Kragujevac (no employees) Collaborative Training Centre of the University of Kragujevac (no employees) Centre for Career Development and Student Counselling (three employees) 	<ul style="list-style-type: none"> To increase the number of staff engaged in units dealing with LLL To map LLL programs within faculties To promote LLL programs and units/staff dealing with continuous education To develop capacity building programme for education of University staff To introduce key performance indicators of progress, i.e. metrics in LLL area To introduce the centralized monitoring system to collect, analyze and present progress data/metrics in order to provide the ground for further improvement and development
		University of Belgrade (UBG)	
<ul style="list-style-type: none"> Centre for Lifelong Learning, established in 2011 Career Development Centre, established in 2006 Center for E-learning and Distance Education 	<ul style="list-style-type: none"> Promoting LLL programs offered by faculties. Introducing quality control and performance indicators in LLL area. 		



<ul style="list-style-type: none"> CE office becomes a separate legal entity (company) owned by the university 	University of Novi Sad (UNS)	
	<ul style="list-style-type: none"> There is the Center for education development with the aim to promote education on all levels There is the Center for Career Development and Student Counseling in order to connect academic and business community as well as to improve the level of employability of its students 	<ul style="list-style-type: none"> To establish unit in the framework of the Center for education development which will be committed to Continuous Education issues/activities or to establish Continuous Education Office
	University of Nis (UNI)	
	<ul style="list-style-type: none"> Center for Lifelong Learning at University of Nis was founded in December 2012 with purpose to: develop, define and implement training courses and modules in the field of lifelong learning and, also, to issue certificates of completion of the training to the participants. Center for Lifelong Learning has one part time employee. University also has the following centers which partly cover area of LLL: Interface center, Center for career development, Student support center Alumni center. 	<ul style="list-style-type: none"> Increasing the number of staff engaged in units dealing with LLL. Mapping and promoting LLL programs within faculties. Introducing quality control and performance indicators in LLL area.
State University of Novi Pazar (SUNP)		
<ul style="list-style-type: none"> Lifelong Learning Center of State University of Novi Pazar Career center provide support for graduates necessary for employment and further education, cooperation established with local business community and local administration. (two employees) 	<ul style="list-style-type: none"> To increase the number of staff engaged in units dealing with LLL To develop university capacities to deliver LLL programs and kicking off university LLL to provide CE services. To introduce key performance indicators of progress, i.e. metrics in LLL area 	



		Technical College of Applied Sciences Zrenjanin (TCAS)	
		<ul style="list-style-type: none"> • There is no LLL centre 	<ul style="list-style-type: none"> • To establish a unit, centre of office for lifelong learning which should be run by a manager chosen among the teaching staff who would organize the work and be responsible for the cooperation with the companies and the National Employment Agency
		Belgrade Metropolitan University (BMU)	
		<ul style="list-style-type: none"> • An organizational unit called ProAcademia is offering training courses for non-student community 	<ul style="list-style-type: none"> • A new LLL center for continuous education will be established by end of 2016.

Table 6: Institutional structures related to the continuous education

Dimension 2: Continuous education			
Criteria	Benchmark partner	Serbian HEIs	Gaps (recommendations)
Education tools and instruments	<p>Danube University Krems (DUK)</p> <ul style="list-style-type: none"> The number of participants in Continuous Education courses in 2015 was 9,000 and the average ECTS of a Continuous Education course (in hours) is 90. The students of Continuous Education Courses are former students of the same institution and students from other institutions. University runs joint programs – with other scientific institutions or with other players DUK has also a branch campus to include Germany as potential market, and English-taught programs to attract international students. Central e-Learning Center supports blended learning and online courses. Classrooms are adopted for paying adults. Institution has a pedagogical concept for continuing education. 	University of Kragujevac (UKG)	
		<ul style="list-style-type: none"> Lifelong learning center of the University of Kragujevac <ul style="list-style-type: none"> Training courses Workshops Round tables Conferences Collaborative Training Centre of the University of Kragujevac <ul style="list-style-type: none"> Customized trainings Student Practical Placement Programme Industrial Fellowship Programme Fully equipped training space Centre for Career Development and Student Counselling <ul style="list-style-type: none"> Counselling services Lectures Workshops Trainings (home and abroad) Mobility opportunities 	<ul style="list-style-type: none"> To map all education tools and mechanism (offered trainings, services, facilities) and present them within on-line Catalogue of research and innovation potential To develop e-learning unit To improve existing e-learning practice and develop/implement it at all faculties within the University of Kragujevac To develop centralized IT system for collecting data about LLL progress from faculties and university units dealing with LLL
		University of Belgrade (UBG)	
		<ul style="list-style-type: none"> Centre for Lifelong Learning <ul style="list-style-type: none"> development of the system of lifelong learning at the University of Belgrade coordination of the work of centers for lifelong learning at the faculties that belong to the 	<ul style="list-style-type: none"> Develop centralized IT system for collecting data about LLL progress from faculties and university units dealing with LLL Based on the practice of other renown universities, to develop massive open online courses (MOOC) in numerous



		<p>University of Belgrade</p> <ul style="list-style-type: none"> ○ providing information about programs and courses in the field of lifelong learning ○ counseling for individuals interested in lifelong learning programs ○ promotion of the idea of lifelong learning and the promotion of lifelong learning courses in the public ○ research in the field of lifelong learning services (the needs of potential clients, etc.) ○ participation in the international system of lifelong learning and cooperation with international projects in this field ○ establishment of academic, scientific and expert cooperation with other institutions in the country and abroad engaged in lifelong learning. <ul style="list-style-type: none"> ● Centre for Career Development <ul style="list-style-type: none"> - working on development of student's capabilities, knowledge and practical skills relevant for employment; - Providing information for students on various opportunities: additional education, scholarships in the country and abroad, vacancies; - Connecting students and employers through internship programmes and trainings in the leading companies and organizations in the country; - Organizing presentations of the 	<p>fields on Serbian</p> <ul style="list-style-type: none"> ● Increase level and scope of e-learning ● Develop more English-taught programs to attract international students ● Work on joint programmes with regional HEIs in order to unlock regional market of students in local languages
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		<p>companies, and of their business ethics and policy;</p> <ul style="list-style-type: none">- Providing counseling services for students with dilemmas about their career choice or positioning on the labour market upon graduation;- Other activities of student counseling regarding career development such as organizing seminars and workshops on job search techniques, writing good CVs and cover letters, preparation for job interview, etc ;- Coordinating work of the existing Career Centres at faculty level;- Following-up strategic goals in the area of employment in cooperation with the Centre for Strategic Management and Planning;- Cooperating with other University Centres. <ul style="list-style-type: none">• Centre for E-learning and Distance Education<ul style="list-style-type: none">- Development of higher education in the field of e-learning and distance education, as well as the development of e-learning and distance education at the University of Belgrade;- Contribution to the development of quality assurance systems of higher education in the field of distance learning study programs, training programs and distance learning;- Contribution to the development of standards of competence	
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		<p>required for the teaching profession and their professional development in the field of educational technology;</p> <ul style="list-style-type: none"> - Participation in the creation of national and international development programs of distance education and projects, development of distance learning and working methods for people with special needs; - Development of electronic textbooks. - Services of the Centre are available to educational institutions and other business entities. - E-learning platforms (such as Moodle) installed at many Faculties 	
University of Novi Sad (UNS)			
		<ul style="list-style-type: none"> • Multi/Inter disciplinary study programs of II and III levels have a long tradition at UNS and they are realized within the Association of centers for interdisciplinary and multidisciplinary study and research (ACIMSI) which provides opportunities for continuous education, as well. • Apart from this, continues education at UNS can be realized through: UNESCO Chair for Entrepreneurial Studies, Center for applied statistics and Center for education development • E-learning platforms (such as Moodle) installed at many Faculties 	<ul style="list-style-type: none"> • To map all education tools and instruments for support of continuous education and present them within the on-line Catalogue of research and innovation potential of UNS – link: Catalogue of research and innovation potential



		<table border="1"> <tr> <th colspan="2" data-bbox="963 188 2047 240">University of Nis (UNI)</th> </tr> <tr> <td data-bbox="963 240 1491 711"> <ul style="list-style-type: none"> • Lifelong learning center <ul style="list-style-type: none"> ○ Training courses ○ Workshops ○ Round tables • Centre for Career Development <ul style="list-style-type: none"> ○ Student Practical Placement Programme ○ Trainings (home and abroad) ○ Industrial Fellowship Programme • Student support center <ul style="list-style-type: none"> ○ Counseling services ○ Workshops </td> <td data-bbox="1491 240 2047 711"> <ul style="list-style-type: none"> • To map all education tools and mechanism (offered trainings, services, facilities) and present them on-line. • To improve existing e-learning practice and at all faculties within the university • To introduce evaluation and performance indicators in LLL courses. • To develop centralized IT system for collecting data about LLL progress from faculties and university units dealing with LLL. </td> </tr> <tr> <th colspan="2" data-bbox="963 711 2047 764">State University of Novi Pazar (SUNP)</th> </tr> <tr> <td data-bbox="963 764 1491 1214"> <ul style="list-style-type: none"> • Lifelong learning center of the State University of Novi Pazar <ul style="list-style-type: none"> ○ Training courses ○ Workshops ○ Round tables ○ Conferences • Career centre <ul style="list-style-type: none"> ○ Gradutae data base ○ Workshops ○ Trainings and round tables ○ Cooperation with employers • E-learning platform (based on moodle) installed on University level. </td> <td data-bbox="1491 764 2047 1214"> <ul style="list-style-type: none"> • To map all education tools and instruments for support of continuous education • Enhancement of the institutional capacities to provide CE services • To increase the number of staff engaged in units dealing with LLL • To introduce key performance indicators of progress, i.e. metrics in LLL area </td> </tr> <tr> <th colspan="2" data-bbox="963 1214 2047 1267">Technical College of Applied Sciences Zrenjanin (TCAS)</th> </tr> <tr> <td data-bbox="963 1267 1491 1390"> <ul style="list-style-type: none"> • There is neither LLL centre nor centre for career development • Occasional trainings or lectures for </td> <td data-bbox="1491 1267 2047 1390"> <ul style="list-style-type: none"> • To establish a centre which would provide a database of former students • To develop courses and trainings based on the needs of companies </td> </tr> </table>	University of Nis (UNI)		<ul style="list-style-type: none"> • Lifelong learning center <ul style="list-style-type: none"> ○ Training courses ○ Workshops ○ Round tables • Centre for Career Development <ul style="list-style-type: none"> ○ Student Practical Placement Programme ○ Trainings (home and abroad) ○ Industrial Fellowship Programme • Student support center <ul style="list-style-type: none"> ○ Counseling services ○ Workshops 	<ul style="list-style-type: none"> • To map all education tools and mechanism (offered trainings, services, facilities) and present them on-line. • To improve existing e-learning practice and at all faculties within the university • To introduce evaluation and performance indicators in LLL courses. • To develop centralized IT system for collecting data about LLL progress from faculties and university units dealing with LLL. 	State University of Novi Pazar (SUNP)		<ul style="list-style-type: none"> • Lifelong learning center of the State University of Novi Pazar <ul style="list-style-type: none"> ○ Training courses ○ Workshops ○ Round tables ○ Conferences • Career centre <ul style="list-style-type: none"> ○ Gradutae data base ○ Workshops ○ Trainings and round tables ○ Cooperation with employers • E-learning platform (based on moodle) installed on University level. 	<ul style="list-style-type: none"> • To map all education tools and instruments for support of continuous education • Enhancement of the institutional capacities to provide CE services • To increase the number of staff engaged in units dealing with LLL • To introduce key performance indicators of progress, i.e. metrics in LLL area 	Technical College of Applied Sciences Zrenjanin (TCAS)		<ul style="list-style-type: none"> • There is neither LLL centre nor centre for career development • Occasional trainings or lectures for 	<ul style="list-style-type: none"> • To establish a centre which would provide a database of former students • To develop courses and trainings based on the needs of companies
University of Nis (UNI)														
<ul style="list-style-type: none"> • Lifelong learning center <ul style="list-style-type: none"> ○ Training courses ○ Workshops ○ Round tables • Centre for Career Development <ul style="list-style-type: none"> ○ Student Practical Placement Programme ○ Trainings (home and abroad) ○ Industrial Fellowship Programme • Student support center <ul style="list-style-type: none"> ○ Counseling services ○ Workshops 	<ul style="list-style-type: none"> • To map all education tools and mechanism (offered trainings, services, facilities) and present them on-line. • To improve existing e-learning practice and at all faculties within the university • To introduce evaluation and performance indicators in LLL courses. • To develop centralized IT system for collecting data about LLL progress from faculties and university units dealing with LLL. 													
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Technical College of Applied Sciences Zrenjanin (TCAS)														
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		<p>former students or former students from other institutions or employees from companies</p>	<ul style="list-style-type: none"> To develop e-learning courses and trainings
Belgrade Metropolitan University (BMU)			
<i>Best practices</i>	<p>Danube University Krems (DUK)</p> <ul style="list-style-type: none"> strong management approach, profit centre organisations, strong central support units (marketing, finance, e-learning, etc.), programme directors with strong ownership and responsibility for the programmes as product managers, large number of external lecturers (flexibility, access to knowledge, time to market), high number of inter-institutional cooperations, strong market orientation, market analysis and monitoring tools, no accreditation processes (market defines) besides the institutional rules. 	<ul style="list-style-type: none"> Special courses offered for non-student community is offered mostly as online courses (e-learning) Center for e-learning of BMU provides technological support for production of special online courses for LLL learners 	<ul style="list-style-type: none"> New LLL Center for Continuous Education will offer: <ul style="list-style-type: none"> Short-cycle programs with their courses Individual courses to LLL learners Courses will be offered in on or more modes of education: <ul style="list-style-type: none"> Online courses Blended learning courses F2F courses
		University of Kragujevac (UKG)	
		<ul style="list-style-type: none"> Described in D1.4 as good practices of university units in offering and delivery of LLL (LLL, CTC, CRK), 	<ul style="list-style-type: none"> To promote best practices and achievements of university units dealing with LLL To increase the number of staff engaged in the centre's activities To continuously monitor the demands and needs of enterprises, employees, unemployed related to the modalities, topics and frequency of continuous education activities To maintain communication with previous, present and possible trainees
University of Belgrade (UBG)			
<ul style="list-style-type: none"> Large number of LLL courses and trainings / workshops in different faculties Tailor-made courses for specific professional profiles and employers/companies Central register of LLL courses 	<ul style="list-style-type: none"> To continuously monitor the demands and needs of the employers employees, and unemployed related to the continuous education activities To maintain communication with previous, present and possible trainees 		



		offered in all faculties/ institutes/ centres of UBG	
		University of Novi Sad (UNS)	
		<ul style="list-style-type: none"> • Association of centers for interdisciplinary and multidisciplinary study and research (ACIMSI) • UNESCO Chair for Entrepreneurial Studies 	<ul style="list-style-type: none"> • To continuously monitor the current status of job offers at the National office for employment and demands and needs of enterprises • To include representatives of enterprises in creation of courses/curriculum
		University of Nis (UNI)	
		<ul style="list-style-type: none"> • Several promotional workshops on permanent education courses, with discussions on the challenges, the recommended strategies and expected results.. • Large number of CE training courses in numerous areas. 	<ul style="list-style-type: none"> • Further familiarization of students, professors, associates and employees of the University with the idea of lifelong learning; • Establishing more effective cooperation with local partner institutions (the city of Nis, municipalities of Nis, Regional Chamber of Commerce, Union of Employers, National Employment Agency, Association of Entrepreneurs, Craftsmen Association, Clusters);
		State University of Novi Pazar (SUNP)	
		<ul style="list-style-type: none"> • Units of the SUNP provided CE training courses for different local stakeholders • Establishing comprehensive and unified approach to CE on SUNP • To promote best practice and achievements on other HEI and apply these practice in SUNP. 	<ul style="list-style-type: none"> • To include representatives of enterprises, in creation of CE courses. • To continuously monitor the current status of job offers at the National office for employment and demands and needs of enterprises
		Technical College of Applied Sciences Zrenjanin (TCAS)	
		The College occasionally organises courses in different fields for students and	<ul style="list-style-type: none"> • To establish a continuous cooperation



		<p>external participants: Implementation of HASSP System, Risk Assessment, Welding Technology (Project “Towards Employment via Education” 2014-2015 financed by the Ministry of Youth and Sport and the City of Zrenjanin)</p>	<p>with companies and other stakeholders</p> <ul style="list-style-type: none"> • To continuously monitor the situation regarding new jobs in cooperation with the National Employment Agency
Belgrade Metropolitan University (BMU)			
		<ul style="list-style-type: none"> • No staff allocated only for CE • Weak marketing and management • Ad-hoc creation of courses 	<ul style="list-style-type: none"> • New business procedures of new LLL Center will be established to provide: <ul style="list-style-type: none"> ○ strong management approach, ○ profit orientation ○ strong central support units (marketing, finance, e-learning, etc.), ○ programme directors with strong ownership and responsibility for the programmes as product managers, ○ large number of external lecturers (flexibility, access to knowledge, time to market), ○ strong market orientation, market analysis and monitoring tools, ○ no accreditation processes (market defines) besides the institutional rules. • Collaboration with the National Employment Agency, Serbian Chamber of Commerce, business clusters

3.3 Dimension 3: Social engagement

Table 7: National legislation related to the social engagement

Dimension 3: Social engagement			
Criteria	Benchmark country	Serbia	Recommendations
<i>National legislation</i>	<p>United Kingdom</p> <ul style="list-style-type: none"> There is no formal Social Engagement legislation, Some parts of the Access to Higher Education Policy (L2) and the BIS committee response (L3) could be viewed as informing Social Engagement Policy. The stakeholders involved are Local government, Industry and civil society. <p>Italy</p> <ul style="list-style-type: none"> Social Engagement is governed by 4 legislative documents: <ol style="list-style-type: none"> Law no. 240/2010 concerning the reorganisation of universities (L1); Legislative Decree No. 104/2013 (L2) and Legislative Decree no. 13/2013 (L3), as 	<ul style="list-style-type: none"> There is no formal Social Engagement legislation, 	<p>National legislation related to the social engagement</p> <ol style="list-style-type: none"> The legal framework should <ol style="list-style-type: none"> support the development of competitiveness and innovativeness of SMEs through better collaboration with universities (TM activity) and provide tax incentives systems for R&D education and training expenditures. It is recommended that the national legislation <ol style="list-style-type: none"> introduces performance indicators (limited number) to assess the progress of universities regarding the third mission activities and to monitor long-term impact and they should be included in statistics regularly required by the Ministries; reduce the gap between education and employment through well-defined enrolment policy and monitoring of labour market needs; establishes several levels of quality control and monitoring of third mission activities (local, regional, national). <p>Recommendations to HEIs</p> <ol style="list-style-type: none"> Universities must leave their comfort zones (pure teaching and fundamental research) and establish better communication based on thrust with enterprises and other external institutions Universities should <ol style="list-style-type: none"> develop and introduce in practice the third mission policies and implement related legal framework; focus more on partnerships, young people and creativity as the drivers for change; enable the development of academic entrepreneurship;



	<p>in the case of Intellectual Property and Continuous Education, but also by</p> <p>4. DM 17/2013 - Decree of Self-assessment (LA). The stakeholders involved are primary and secondary education institutions, industry and civil society.</p>		<p>d. develop the strategy for development of third mission within TM dimensions;</p> <p>e. strengthen first two missions (education and research) in terms of quality, efficiency and relevance for society before the development of third mission.</p> <p>3. Universities need to</p> <p>a. motivate academic staff and students to direct their activities towards society needs;</p> <p>b. build the creativity culture and entrepreneurial spirit among students, faculties and its staff;</p> <p>c. enable the development of academic entrepreneurship;</p> <p>d. consider the graduates (alumni) while implementing third mission activities;</p> <p>e. evaluate of third mission activities performed by academic staff and to introduce these criteria in the criteria for professional advancement;</p> <p>f. engage student organizations and students in third mission activities especially within the social engagement dimension through volunteering and in some case paid activities within universities scholarships;</p> <p>g. identify examples of good practice in implementing of TM activities and promote them on different media;</p> <p>h. Encourage the establishment of spin-offs at universities</p> <p>4. TM activities of universities are crucial for development and implementation of the Smart Strategy in Serbia, aiming to identify regional or sectorial strengths, specificities and potential in both industrial and research sector.</p> <p>Recommendations to academic staff</p> <p>1. Academic staff need to</p> <p>a. be more engaged in fund raising activities through preparation of project proposals within EU funding schemes (e.g. Horizon2020), which will improve their research capacities (human resources, scientific equipment);</p> <p>a. identify the research results that could be commercially exploited and to find the appropriate partners and ways for their transformation into innovations;</p> <p>b. file for patent application before the submission of scientific papers and</p>
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			<p>doctoral dissertations to repository (in case that this kind of IPR protection is needed);</p> <ul style="list-style-type: none">c. boost the creativity of students with multidisciplinary group student projects;d. encourage students and young researchers to develop their ideas and to change the mind-set. <ul style="list-style-type: none">2. If commercialization of results is possible at international level, IPR protection should be extended from national to international level.3. In case of multiple innovators/applicants for IPR protection - to use the open concept with predefined ownerships, rights and obligations, terms of exploitation in Partnership Agreement before the collaboration starts. <p>Recommendations to all stakeholders</p> <ul style="list-style-type: none">1. Establishment of innovation ecosystem, through involvement of relevant actors2. To form the Ministry for Higher Education, Science and Innovation Development3. The First and Second Missions of HEIs need to provide the quality, as preconditions for success of the Third Mission.4. Better communication within and among academic, scientific, research community, business sector, etc.5. To emphasize the role of university-industry cooperation and foster it through specific programmes and government incentives6. To raise awareness on the specificities of Serbia in the area of third mission development7. To introduce and implement Crowd Funding concept in order to support idea development and launching the innovations on the market8. The chambers of commerce need to be more present and visible as key actor in third mission development9. Business incubators and ST parks should cooperate closely with universities and initiate jointly with them the establishment of start-ups and spin-offs
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Table 8: Institutional policies related to the social engagement

Dimension 3: Social engagement			
Criteria	Benchmark partner	Serbian HEIs	Recommendations
Institutional policies	<p>University of Brighton (UoB)</p> <ul style="list-style-type: none"> the Strategic Plan (P1) and Five year review of EASE (P2). <p>University of Bari Aldo Moro (Uniba)</p> <ul style="list-style-type: none"> in the scope of Strategic Plan 2014-2016 (P1) and Strategic Plan 2016-2018 (P2). 	University of Kragujevac (UKG)	
		<ul style="list-style-type: none"> There is no institutional policy related to the social engagement of the University of Kragujevac 	<ul style="list-style-type: none"> To develop social engagement plan To develop action plan and appropriate mechanisms for implementation SE plan To define clear roles and responsibilities in UKG management for SE dimensions (Vice Rector or similar) To develop monitoring tools for analysis of progress in SE activities
		University of Belgrade (UBG)	
		<ul style="list-style-type: none"> There is no institutional policy related to the social engagement of the University of Belgrade 	<ul style="list-style-type: none"> To develop social engagement policy, strategy and action plan at UBG To develop action plan and appropriate mechanisms for implementation SE plan Define a position within the University management structure responsible for SE activities (eg. a Vice Rector for SE) To further encourage students' voluntary work To develop monitoring tools for analysis of progress in SE activities
		University of Novi Sad (UNS)	
<ul style="list-style-type: none"> There is no institutional policy related to the social engagement of the University of Novi Sad 	<ul style="list-style-type: none"> To develop social engagement policies of the University of Novi Sad 		
University of Nis (UNI)			



		<ul style="list-style-type: none"> • There is no institutional policy related to the social engagement of the University of Nis. 	<ul style="list-style-type: none"> • To develop social engagement plan at UNI.
State University of Novi Pazar (SUNP)			
		<ul style="list-style-type: none"> • There is no institutional policy related to the social engagement of the State University of Novi Pazar • 	<ul style="list-style-type: none"> • Clear inclusion of SE as integrative part of the strategic documents • Development of a policy plan for SE.
Technical College of Applied Sciences Zrenjanin (TCAS)			
		<ul style="list-style-type: none"> • There is no institutional policy related to the social engagement 	<ul style="list-style-type: none"> • To include SE in the college documents • To develop SE policy
Belgrade Metropolitan University (BMU)			
		<ul style="list-style-type: none"> • There is no institutional policy related to the social engagement of the Belgrade Metropolitan University • Some professors were active in policy and strategy development of the Ministry of Education, Science and Technology Development 	<ul style="list-style-type: none"> • New CE strategy and policy will be adopted by end of 2016.
<p>The forms of relationship with stakeholders</p>	<p>University of Brighton (UoB)</p> <ul style="list-style-type: none"> • The forms of relationship with stakeholders include <ol style="list-style-type: none"> a. local government representatives involved in HEI governing bodies, b. industry and/or c. civil society involved in HEI governing bodies. <p>University of Bari Aldo Moro (Uniba)</p>	University of Kragujevac (UKG)	
		<ul style="list-style-type: none"> • Activities with secondary education institutions but mainly in the form of open door days as promotion of studyprogrammes for enrolment of new students • Collaboration with companies for development of new study programs (e.g. FIAT) • Collaboration with SMEs but only for short term services 	<ul style="list-style-type: none"> • To increase the participation of relevant stakeholders in the management structures (some kind Committees), development and implementation of curriculum, development and implementation of social engagement strategy/policy • To develop the procedure for engagement of industry representatives in the development and approval of study programmes



	<ul style="list-style-type: none"> The forms of relationship with stakeholders include <ol style="list-style-type: none"> activities with primary and secondary education institutions, industry and/or civil society involved in HEI governing bodies. 	<ul style="list-style-type: none"> Internships and practical placement program in collaboration with City of Kragujevac and local companies Organization of joint events with local stakeholders in City of Kragujevac Other forms of relationship with stakeholders 	<ul style="list-style-type: none"> To define annual plans for collaboration with national and local stakeholders
	University of Belgrade (UBG)		
	<ul style="list-style-type: none"> Five members of the University Council delegated by the State Government 	<ul style="list-style-type: none"> To develop a procedure for engagement of industry representatives in the development of study programmes To involve local stakeholders in creation and implementation of SE policy To ensure the inclusion of the students' representatives in the SE activities To form closer relations with youth cooperatives and continuously work on the improvement of the working status of the youth 	
	University of Novi Sad (UNS)		
<ul style="list-style-type: none"> 3 representatives delegated by the Provincial Assembly or Provincial Government are included in HEI governing bodies Establishment of many spin-off (around 130) at the UNS and close collaboration with them at all levels UNS's program of practical placement for students in Provincial Assembly, Provincial Government and other Provincial bodies Internships and practical placement program in collaboration with City of Novi Sad 	<ul style="list-style-type: none"> To increase the participation of relevant stakeholders in creation and implementation of curriculum, development and implementation of social engagement strategy/policy To define annual plans for collaboration with national, provincial and local stakeholders 		



		University of Nis (UNI)	
		<ul style="list-style-type: none"> • Collaboration with companies in the form of short term services. • Internships and practical placement programs. • Providing expert support in defining strategic guidelines for development of local economy and enterprises. • Organization (providing space and logistics) for joint events (workshops, round tables, symposiums) with local stakeholders. 	<ul style="list-style-type: none"> • To increase the participation of relevant stakeholders in creation and implementation of curriculum and social engagement policy. • To define plans for collaboration with national and local stakeholders.
		State University of Novi Pazar (SUNP)	
		<ul style="list-style-type: none"> • Activities with secondary education institutions in the form of open door days as promotion of study programmes for enrolment of new students • Internships and practical placement program in collaboration with local authorities and local companies • Cooperation with local health institution in education, Neuromuscular diseases Hospital Novopazarska Banja • Cooperation with local NGOs in form of providing space and support for round tables, conferences on the topics of youth social inclusion. • Joint project application for European funded projects with Local authorities, regional developmental Agencies, SME clusters etc. 	<ul style="list-style-type: none"> • To increase the participation of relevant stakeholders in creation and implementation of curriculum, development and implementation of social engagement strategy/policy



		Technical College of Applied Sciences Zrenjanin (TCAS)	
		<ul style="list-style-type: none"> • Organization of “open days” for secondary schoolers, • Involvement in organization of school competitions on the local level, • Organization of lectures and public discussions on different topics, • Organization of Welders Competition, projects with the Regional Centre for Development Banat from Zrenjanin, • Participation in the Researchers’ Night, • Charity events, fundraising • Technical and business cooperation contracts signed with several local companies • Participation of representatives of the provincial government in the work of College bodies 	<ul style="list-style-type: none"> • To develop SE cooperation with the local government • To involve local, regional and provincial stakeholders in creation and implementation of SE policy • To develop cooperation with the civil society and organise different events and activities with them
		Belgrade Metropolitan University (BMU)	
		<ul style="list-style-type: none"> • Organization of “open days” for secondary school students, • Involvement in organization of school competitions on national and regional levels • Organization of lectures and public discussions on different topics, 	<ul style="list-style-type: none"> • Establishment of advisory boards with members for the business sector for each bachelor study program • Collaboration agreements with business clusters and companies related to CE • Collaboration agreements with secondary schools • Participation in working groups of government bodies for new legislation and policy creation.

Table 9: Institutional structures related to the social engagement

Dimension 3: Social engagement			
Criteria	Benchmark partner	Serbian HEIs	Recommendations
Institutional infrastructure to support the social engagement	University of Brighton (UoB) <ul style="list-style-type: none"> the Economic and Social Engagement (EASE) department oversees partnerships with business and communities, at both local and regional levels and it also administers research and IP contracts. The Careers Office is a part of the Student Services team. The office provides current students and alumni with information, advice and support in securing employment. 	University of Kragujevac (UKG)	
	University of Bari Aldo Moro (Uniba) <ul style="list-style-type: none"> Offices or Units responsible for Social Engagement 	<ul style="list-style-type: none"> Collaborative Training Centre(CTC) whose mission is to develop efficient and effective mechanisms for cooperation between the University and enterprises through implementation of contract and collaborative projects and services, professional trainings for companies and the unemployed, Industrial Fellowship Programme. Within this centre, New WBC regional model of cooperation between universities and enterprises with seven structural measures (science and technology parks, WBC regional industrial clusters, consortia of University and enterprises for joint EU projects, cooperative training centres, open innovation networks, practical placement and industrial fellowship programme) is implemented. CTC center also offers support to local businesses through development and application of innovative approach to rapid and virtual product development and 	<ul style="list-style-type: none"> To develop centralized system for monitoring these activities, keep records, measure the impact and effects of SE actions and level of implementation of University SE strategy To increase the number of employees and organize capacity building programs for them To improve and increase joint actions with involvement three SE units



		<p>optimization of technologies</p> <ul style="list-style-type: none"> • Business Support Office aims to make research and innovation potential of University knowledge available for the business and to support the development of researchers' and students' ideas. This is carried out through mapping of the University's research and innovation potential, maintenance of collaborative platforms for innovation management, gathering ideas of students and researchers, etc. • Center for Career Development and Student Counseling is focused on developing student services through various programs that provide support students and graduates in their careers development and helps them to present themselves in the business world 	
University of Belgrade (UBG)			
		<ul style="list-style-type: none"> • Institute for Philosophy and Social Theory, established in 1992. <ul style="list-style-type: none"> - The Institute for Philosophy and Social Theory (IFDT) is engaged in the systematic and long-term research within the fields of philosophy and social theory. IFDT is conceived as a unique place open for multidisciplinary research and cooperation between academic organizations, public institutions, activist groups and the media, in order to enable productive reflection of the phenomenon of social (as well as 	<ul style="list-style-type: none"> • To develop centralized system for monitoring SE activities, keep records, measure the impact and effects of SE actions • To support the establishment of the different professional clinics (e.g. law, economic, veterinary asylum, etc.) where students can help the local community and obtain the practice



		<p>political and civic) engagement.</p> <ul style="list-style-type: none">- The Group for Social Engagement Studies operates within the Institute.• Centre for Students with Disabilities, established in 2008. The main goal of the Centre is to provide support to the disabled students so that they can have equal opportunities for a quality higher education, which refers to:<ul style="list-style-type: none">- Development and improvement of the conditions for studying for the students with disabilities;- Providing support for reading, scanning and transforming the textbooks into audio and electronic format for students with disabilities;- Providing support for the translation into the gesture language;- Providing information for students with disabilities on the conditions for studying and ways of support at the faculties, helping them when choosing a future faculty, providing them information on the possibility of prospective employment upon the graduation;- Organising seminars, public panels and media coverage in order to motivate students with disabilities to enroll in faculties, as well as to raise the public awareness in Serbia of issues regarding the students with disabilities;	
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		<ul style="list-style-type: none"> - Cooperating with the relevant institutions so as to make the position of the disabled students better. • Foundations and Endowments dedicated to providing funds for scholarships for students and young scholars and improving the young university scholars' housing conditions, for the sake of better living and working conditions and adequate engagement in scientific and teaching activities 	
University of Novi Sad (UNS)			
<ul style="list-style-type: none"> • Foundation for solving housing problems of young researchers and staff • Fund for providing scholarships and facilitating progress of talented students and young researchers and artists • University of Novi Sad set up the Center for Career Development and Student Counseling in order to connect academic and business community as well as to improve the level of employability of its students • Association of teachers and associates • Trade union organizations of employees • Students' associations 		<ul style="list-style-type: none"> • To develop centralized system for monitoring these activities, keep records, measure the impact and effects of SE actions 	
University of Nis (UNI)			
<ul style="list-style-type: none"> • Center for career development was 		<ul style="list-style-type: none"> • To develop centralized system for monitoring SE activities, keep records, 	



		<p>established to support students of all levels in development of skills and abilities that are crucial for their employment, as well as to provide information on education and scholarship opportunities, both national and international.</p> <ul style="list-style-type: none"> • Student support center has a role to provide support to disadvantaged students - students with health disabilities or social problems as well as to provide legal and other help to students in the case of any type of discrimination. • Alumni center creates unique database on University alumni employed in country or abroad, organizes meeting of students and potential employers. 	<p>measure the impact and effects of SE actions.</p>
State University of Novi Pazar (SUNP)			
		<ul style="list-style-type: none"> • Career Center is focused on developing student services through various programs that provide support students and graduates in creating link between academic and business community. 	<ul style="list-style-type: none"> • To develop centralized system for monitoring these activities, keep records, measure the impact and effects of SE actions.
Technical College of Applied Sciences Zrenjanin (TCAS)			
		<ul style="list-style-type: none"> • No institutional infrastructure to support SE 	<ul style="list-style-type: none"> • To establish a unit or office or commission which would plan, organize and implement SE policy and activities
Belgrade Metropolitan University (BMU)			
		<ul style="list-style-type: none"> • There is no organizational unit 	<ul style="list-style-type: none"> • Internal measures to motivate and encourage faculties to be more socially



		<p>created to support social engagement of faculties and students</p> <ul style="list-style-type: none"> • There are projects aiming to support knowledge tournaments of secondary school students • 	<p>engaged.</p>
<p>Good practices</p>	<p>University of Brighton (UoB)</p> <ul style="list-style-type: none"> • A number of centralised support teams provide initiatives such as: <ul style="list-style-type: none"> ◦ STEM outreach, ◦ profitnet and greengrowth business forums, ◦ embedded business development managers, ◦ links between teaching/research and industry embedded in strategic policy and realised with course delivery. • There is also a number of student supported volunteer activities such as CUPP and active students. • Additionally, like many ex-polytechnics, the University of Brighton has strengths in its industrial links, providing practical problem solving and vocationally led courses. <p>University of Bari Aldo Moro (Uniba)</p> <ul style="list-style-type: none"> • UNIBA did not report good practices or activities in the field of Social Engagement. 	<p style="text-align: center;">University of Kragujevac (UKG)</p> <ul style="list-style-type: none"> • Scholarship foundation for supporting the best students, young scientists and artists • Foundation for the construction of apartments for young teaching, scientific and artistic staff • Foundation “Milos Maksimovic” • WBC regional model of cooperation between universities and enterprises • Organization of trainings for both employed and unemployed within Collaborative Training Centre • Catalogue on research and innovation potential of the University of Kragujevac represents a unified presentation of centers, laboratories, research teams at the University of Kragujevac, through the presentation of their activities, results, resources, international, national and projects including companies, the most important references, developed prototypes, patents and other measurable research results which have a commercial and innovative potential. • Participation in relevant projects (School-to-Work transition for higher education students with disabilities in Serbia, Montenegro and Bosnia and 	<ul style="list-style-type: none"> • To enhance the existing and introduce new activities that will contribute to the University’s development into socially responsible institution at highest possible level • To share good practices and improve their visibility and promotion within web site, local and national media, social networks



		Herzegovina	
		University of Belgrade (UBG)	
		<ul style="list-style-type: none"> • University Centre for Students with Disabilities with following mission and goals: <ul style="list-style-type: none"> ○ Development and improvement of the conditions for studying for the students with disabilities; ○ Providing support for reading, scanning and transforming the textbooks into audio and electronic format for students with disabilities; ○ Providing support for the translation into the gesture language; ○ Providing information for students with disabilities on the conditions for studying and ways of support at the faculties, helping them when choosing a future faculty, providing them information on the possibility of prospective employment upon the graduation; ○ Organising seminars, public panels and media coverage in order to motivate students with disabilities to enroll in faculties, as well as to raise the public awareness in Serbia of issues regarding the students with disabilities; ○ Cooperating with the relevant institutions so as to make the position of the disabled students 	<ul style="list-style-type: none"> • Promote good practices and improve their visibility through web site, local and national media, social networks, etc. • Ensure the consistent and effective use of the UB brand in SE actions • Promote Alumni initiatives



		<p>better.</p> <ul style="list-style-type: none"> • Providing scholarships for students and young scholars and improving the young university scholars' housing conditions through a number of foundations and endowments • "Equal access to higher education" campaign • Short-term Strategy for better support and aid for the students • Awards for best students and best MA/MSc/PhD theses 	
University of Novi Sad (UNS)			
		<ul style="list-style-type: none"> • There is Foundation for solving housing problems of young researchers and staff • There is Fund for providing scholarships and facilitating progress of talented students and young researchers and artists • There is Foundation "DrZoranDjindjic" for the best young researchers, best students and the best diploma work • Establishment of many spin-off (around 130) at the UNS and close collaboration with them at all levels • UNS's program of practical placement for students in Provincial Assembly, Provincial Government and other Provincial bodies 	<ul style="list-style-type: none"> • To enhance the existing and introduce new activities that will contribute to the University's development into socially responsible institution at highest possible level • To share good practices and improve their visibility and promotion within web site, local, provincial and national media, social networks
University of Nis (UNI)			
		<ul style="list-style-type: none"> • Foundation for the construction of apartments for young teaching, 	<ul style="list-style-type: none"> • To enhance the existing and introduce new activities that will contribute to the University's development into socially



		<p>scientific and artistic staff</p> <ul style="list-style-type: none"> • Scholarship foundation for supporting the best students, young scientists and artists • Involvement of university staff in Social awareness campaigns 	<p>responsible institution at highest possible level</p> <ul style="list-style-type: none"> • To share good practices and improve their visibility and promotion within web site, local and national media, social networks
State University of Novi Pazar (SUNP)			
		<ul style="list-style-type: none"> • Involvement of university staff in Social awareness campaigns 	<ul style="list-style-type: none"> • To enhance the existing and introduce new activities that will contribute to the University's development into socially responsible institution at highest possible level • Increased opening of university in form of events, research facilities toward community • Promoting involvement of teaching, administrative staff and students in SE activities • Establishing of partnership SE activities and projects with public and private business
Technical College of Applied Sciences Zrenjanin (TCAS)			
		<ul style="list-style-type: none"> • Student Parliament and the activities initiated by it (sport competitions, informal and formal events, participation in charity and fundraising) • Printing services offered to third parties 	<ul style="list-style-type: none"> • To develop new SE activities • To engage more students in SE activities and support them to offer new ideas • To inform the wider public of all SE activities • To invite all possible stakeholders to participate in finding new forms of SE activities
Belgrade Metropolitan University (BMU)			
		<ul style="list-style-type: none"> • Participation in governmental bodies of some professors dealing with education and R&D policies. 	<ul style="list-style-type: none"> • Promotion of e-society, e-business and e-learning. • Promotion of CE



		<ul style="list-style-type: none">• IT-literacy basic courses to parents of secondary school students	
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4 Identified targets and progress indicators

4.1 National targets and progress indicators

Table 10: Identified targets and progress indicators at national level

Serbia	
Target 1: To support development of third mission in terms of legal framework	
Specific goals	Indicators
To incorporate the third mission of universities into relevant laws and strategies, new or updated	Number of new or updated laws, strategies and legal acts where TM is tackled Number of action plans and actions related to TM Number of articles defining TM dimensions
To initiate the development of Smart Specialization Strategy	Smart Specialization initiated
To introduce performance indicators in national statistics requested by Ministry (limited number) to assess the progress of universities/faculties/institutes regarding the third mission activities	List of Metrics for monitoring of TM implementation Developed IT system for monitoring metrics and statistical processing
To recognize and formalize the work places in the Rectorates dealing with the third mission activities	Number of positions at Universities within TM units, formally recognized by Ministry
Target2: To support the development of technology transfer dimension at Serbian Universities	
Specific goals	Indicators
To allow accredited R&D institutions to apply for the national innovation projects	Number of accredited R&D institutions participating in national innovation projects
To introduce KT and TM activities of university staff in criteria for their academic and scientific advancement	New or updated criteria for academic and scientific advancement
To introduce incentives for IPR protection on international level where university/faculty/institute is patent applicant	Number of incentives measures Number of granted patents on international level
To support the development of competitiveness and innovativeness of SMEs through better collaboration with universities (TM activity) and tax incentives systems	Number of university-enterprises agreements for contract or collaborative research Annual income from external collaboration
To legally regulate, allow and encourage the establishment of spin-offs at universities	Number of established spin-offs
To support National competition for best student idea by Ministry as annual event	NCBSI supported by Ministry as annual event Number of students ideas collected Number of students participated Number of students' start-ups



Target 3: To support the development of continuous education dimension at Serbian universities	
Specific goals	Indicators
To adopt National Framework for Qualification	NFC approved
To establish national body(-ies) for certification of LLL programmes, their monitoring, and recognition of individual certificates	National body for LLL issues established and functional
To define part time study concept and its recognition	Part time recognized by law
To invest more in capacity building of human resources	Number of national programmes and incentives supporting CB of HR National annual investments
To introduce tax incentives for employers who invest in education of employees, as well as for the individuals interested in continuing their education	Number of employers who exercised incentive measures Number of employees engaged in CE
Target 4: To support the development of social engagement dimension at Serbian universities	
Specific goals	Indicators
To develop mechanisms and incentives for better employment of young population in order to stop the brain drain and to engage young perspective researchers and graduates at well-paid positions at R&D and other institutions and local enterprise	Number of national programmes supporting young people and their creativity Number of employed young people leaving in Serbia and supported by state incentives
To establish network of six Creativity centres in Serbia and to support their collaboration with other national and international institutions	Six Creativity centres established, equipped and functional Collaboration, joint actions and experience exchange among CCs supported within network Number of joint actions with similar organisations

4.2 HEIs targets and progress indicators

Table 11: Identified targets and progress indicators (University of Kragujevac)

University of Kragujevac	
Target 1: To define TM as strategic mission	
Specific goals	Indicators
To change Statute with new mission and related provisions on TM dimensions	The Statute changed and adopted by UKG Council
To define new criteria for scientific and academic advancements of university staff taking into account their TM activities	New by-law approved and implemented at UKG and its Faculties
Target 2: To develop and strengthen technology transfer and innovation dimension	



Specific goals	Indicators
To develop IPR policy at the university level and set of documents related to the IPR management at the University	<ul style="list-style-type: none"> • by-law on IPR management • form for invent disclosure • form on the share in IP creation • report form on technology evaluation • guide for selection and application of contract model • non-disclosure agreement (one side) • confidentiality agreement (one side) • confidentiality agreement (both sides) • contract on technology and material assessment • R&D cooperation agreement • licencing agreement • information exchange agreement • etc.
To strengthen KT and TM units at university	Number of employees in KT and TM units Number of capacity building programmes Number of practical exercises in patenting technology or its licensing
To introduce the efficiency indicators for different activities of knowledge and technology transfer as well as the procedure for collecting and assessing the information	Metrics for technology transfer developed and implemented in new IT system on the level of UKG and Faculties
By-law and procedure for realization of contract and collaborative research	By-law on contract and collaborative research developed
To develop and deliver trainings on IPR, creativity, innovation for university staff and students	Number of certified trainings Number of trainees
Target 3: To develop and strengthen continuous education dimension	
Specific goals	Indicators
To develop integrative approach and centralized system for defragmented LLL concept at UKG	Centralized system and approach developed
To map and promote LLL programmes at all 12 faculties at UKG	LLL programmes mapped and visible for end user inside and outside university
To present LLL programmes within Catalogue of BSOKG	On-line catalogue updated with new LLL programmes
To develop the action plan for implementation of the Strategy for Lifelong Learning	Action plan defining who/what/when developed
Target 4: To develop and strengthen social engagement dimension	
Specific objectives	Indicators
To develop the social engagement plan	Social engagement plan developed and adopted by April 2017
To support voluntarism by students and young researchers	Number of volunteers Number of actions organised on voluntary bases
To support students and pupils in creative and entrepreneurial activities within Creativity centre	Number of students engaged in Creativity centre activities Number of pupils visited CC and involved in hands-on exercises/workshops Number of students/pupils participated at



	Competition for best student idea
To increase the participation of relevant stakeholders in the management structures, development and implementation of curriculum	Number of stakeholders in management structures Number of stakeholders engaged in development and implementation of curriculum
To develop the procedure for engagement of industry representatives in the development and implementation of study programmes	Decision on engagement of industry representatives in the development and implementation of study programmes
To develop the centralized system for monitoring there SE activities	Recommendations for establishment of centralized system for SE monitoring List of metrics to be used

Table 12: Identified targets and progress indicators (University of Belgrade)

University of Belgrade	
Target 1: To define TM as strategic mission	
Specific goals	Indicators
To include TM dimension in the Statute of UBG	The Statute amended and adopted by UBG Council
Target 2: To develop and strengthen technology transfer and innovation	
Specific goals	Indicators
Provide stronger support to University units dealing with TT and innovation support	<ul style="list-style-type: none"> • TT capacities strengthened • Number of patents registered by UBG or its faculty • Number of licensing contracts
Introduce efficiency indicators for different TT activities	Developed metrics for TT activities and applied on University level
Establish a central information system to collect information on TT activities in UBG member institutions (faculties, institutes and centres)	Information system developed and information of TT activities and results collected and integrated
Target 3: To develop and strengthen continuous education dimension	
Specific goals	Indicators
To develop the action plan for implementation of the Strategy for Lifelong Learning	Action plan developed
Develop centralized IT system for collecting data about LLL progress from faculties and university units dealing with LLL	Information system developed and information of LLL activities and results collected and integrated
Target 4: To develop and strengthen social engagement dimension	
Specific goals	Indicators
To develop social engagement policy, strategy and action plan at UBG	SE policy developed and adopted by authorising University bodies
To develop action plan and appropriate mechanisms for implementation SE plan	SE Action plan developed
Define a position within the University management structure responsible for SE activities (eg. a Vice Rector for SE)	Appointed person (Vice Rector or similar) responsible for SE aspect at UBG
To develop centralized system for	Information system developed and



monitoring SE activities, keep records, measure the impact and effects of SE actions	information of SE activities and results collected and integrated
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*Note: The proposed targets and indicators are provided as recommendations and need to be further evaluated, developed and validated with UB representatives

Table 13: Identified targets and progress indicators (University of Novi Sad)

University of Novi Sad	
Target 1: To additionally extend technology transfer and innovation dimension	
Specific goals	Indicators
To develop IPR policy at the university level and set of documents related to the IPR management at the University	<ul style="list-style-type: none"> • form for invent disclosure • form on the share in IP creation • report form on technology evaluation • non-disclosure agreement • confidentiality agreement • licencing agreement
To extend KT and TM units at university	Number of employees in KT and TM units Number of practical exercises in patenting technology or its licensing
To introduce the efficiency indicators for different activities of knowledge and technology transfer as well as the procedure for collecting and assessing the information	Metrics for technology transfer developed and implemented in new IT system on the level of UNS and Faculties
To develop and deliver trainings on IPR, creativity, innovation for university staff and students	Number of certified trainings Number of trainees
Target 2: To develop and strengthen continuous education dimension	
Specific goals	Indicators
To develop centralized system for LLL concept at UNS	Number of faculties with LLL concept acquired
To map and promote LLL programmes at all 14 faculties at UNS	Number of LLL programmes mapped and visible for end user inside and outside university
To present LLL programmes within Catalogue of BSONS	Number of new LLL programmes in on-line catalogue of research and Innovation potential of UNS
To develop the action plan for implementation of the Strategy for Lifelong Learning	Action plan defining who/what/when developed
Target 3: To develop and strengthen social engagement dimension	
Specific objectives	Indicators
To develop the social engagement plan	Decision on Social engagement plan adopted
To support voluntarism by students and young researchers	Number of volunteers Number of actions organised on voluntary bases
To support students in creative and entrepreneurial activities within Engineering creativity centre of UNS	Number of students engaged Engineering creativity centre of UNS activities Number of students participated at Competition for best student idea
To increase the participation of relevant stakeholders/industry representatives in development of curriculum	Number of curriculum/study programs in which creation stakeholders/industry representatives was involved



To develop the centralized system for monitoring there SE activities	List of metrics to be used
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Table 14: Identified targets and progress indicators (University of Nis)

University of Nis	
Target 1: To develop and strengthen technology transfer and innovation dimension	
Specific goals	Indicators
To develop IPR policy at the university level and set of documents related to the IPR management at the University	Required forms, guides, reports and agreements
To strengthen KT and TM units at university	Number of employees in KT and TM units Number of practical exercises in patenting technology or its licensing
To introduce the efficiency indicators for different activities of knowledge and technology transfer as well as the procedure for collecting and assessing the information	Metrics for technology transfer developed and implemented in new IT system on the level of UNI and Faculties
To develop and deliver trainings on IPR, creativity, innovation for university staff and students	Number of certified trainings. Number of trainees.
Target 2: To develop and strengthen continuous education dimension	
Specific goals	Indicators
To develop centralized system for LLL concept at UNI	Centralized system and approach developed
To map and promote LLL programmes at all faculties at UNI	LLL programmes mapped and visible for end user inside and outside university
To present LLL programmes within Catalogue	On-line catalogue updated with new LLL programmes
To develop the action plan for implementation of the Strategy for Lifelong Learning	Action plan defining who/what/when developed
Target 3: To develop and strengthen social engagement dimension	
Specific goals	Indicators
To develop the social engagement plan	Decision on Social engagement plan
To support voluntarism by students and young researchers	Number of volunteers Number of actions organised on voluntary bases
To support students in creative and entrepreneurial activities within Creativity centre	Number of students engaged in Creativity centre activities
To increase the participation of relevant stakeholders/industry representatives in development and implementation of curriculum	Number of stakeholders engaged in development and implementation of curriculum
To develop the centralized system for monitoring SE activities	List of metrics to be used

Table 15: Identified targets and progress indicators (State University of Novi Pazar)

State University of Novi Pazar	
Target 1: To develop and strengthen technology transfer and innovation dimension	
Specific goals	Indicators
Establishment of creativity center	Creativity center will be established in the SUNP



To develop and deliver workshops on entrepreneurship and creative thinking for pupils and students	Number of workshops that will be delivered to pupils and students
To involve students and researchers in entrepreneurial and innovative activities within open-innovation campaigns in collaboration with enterprises	Active participation in open-innovation campaign, number of students, researchers and enterprises.
To promote involvement in National competitions for (BSc, MSc, PhD) best ideas of students	Number of project ideas submitted in national competitions
To establish sustainable collaboration with partner organizations (schools, City of Novi Pazar, Chamber of Commerce, Regional Development Agencies, etc.)	Number of joint activities with stakeholders.
Target 2: To develop and strengthen continuous education dimension	
Specific goals	Indicators
To define LLL an CE in the strategic documents of SUNP	CE is included in the mission of the HEI. This indicator measures the extent of the HEI's institutional commitment towards CE on a long term basis CE is included in the strategy of the HEI. This indicator measures the extent of the HEI's institutional commitment towards CE on a long term basis. A strategy plan dedicated to CE with indicators reflects the fact that CE is taken into account on the HEI's administrative level and financial plans as well
To develop regulations defining of new LLL programs and their quality control	Existence of the policy managing of defining new programmes for CE and LLL on university level
Establishing comprehensive and unified approach to CE on SUNP	Existence of the policy managing of CE and LLL on university level
Development of comprehensive CE plans, programs and training modules	Total number of CE programmes active in the year of reference
To include representatives of enterprises, in creation of CE courses. To continuously monitor the current status of job offers at the National office for employment and demands and needs of enterprises	Total number of partnership CE programmes with public and private business designed and approved for implementation with any external partner
Target 2: To develop and strengthen social engagement dimension	
Specific goals	Indicators
SE is included in the strategic and policy document	Clear inclusion of SE as integrative part of the strategic documents Development of a policy plan for SE. Existence of SE in the mission of HEI This indicator evaluates the commitment of



	the HEI at the administration level and on a long term basis
To increase the participation of relevant stakeholders in creation and implementation of curriculum, development and implementation of social engagement strategy/policy	Total number of partnership SE programmes with public and private business designed and approved for implementation with any external partner
To enhance the existing and introduce new activities that will contribute to the University's development into socially responsible institution at highest possible level	Total number of SE programmes active in the year of reference
To Increase opening of university in form of events, research facilities toward community	<p>Number of events open to community/public. Events organized or delivered by the HEI free or charged which are open to the general public without needing an invitation to attend e.g concert art exhibition, lectures, open days</p> <p>Number of research initiatives with direct impact on the community Research must be carried out with a stated benefit for the broader community whether it is collaborative research or HEI driven research</p> <p>Number of facilities available free or reduced cost HEI facilities to communities</p>
To promote involvement of teaching, administrative staff and students in SE activities	<p>Number of academics involved in volunteering towards the community</p> <p>Number of non academics or technical or administrative staff involved in volunteering towards the community</p> <p>Number of students involved in volunteering towards the community</p>
To establish partnership SE activities and projects with public and private business	<p>Number of community based learning community modules offered by HEIs</p> <p>Number of activities specifically targeting disadvantaged students/community</p> <p>Amount of grants/donations/contracts arising from engaged partnerships</p>

Table 16: Identified targets and progress indicators (Technical College of Applied Sciences Zrenjanin)

Technical college of applied sciences Zrenjanin	
Target 1: To develop and strengthen technology transfer and innovation dimension	
Specific goals	Indicators
To include the TT policy/strategy in the	Amendments to the Statute of TCAS



Statute of TCAS	
To develop the TT policy/strategy	The relevant document adopted
To establish Technology Transfer Office/Centre	Decision on establishing TTO/TTC
To appoint the responsible person/s	Decision on appointing the responsible person/s
To develop the action plan	Adoption of the action plan
Target 2: To develop and strengthen continuous education dimension	
Specific goals	Indicators
To develop the LLL policy	The relevant document adopted
To establish LLL Office/Centre	Decision on establishing LLL Office/Centre
To develop LLL programmes, curricula and modules	The relevant document adopted
To appoint the responsible person/s	Decision on appointing the responsible person/s
To develop the action plan	Adoption of the action plan
To develop courses and trainings and e-learning courses and trainings	Curricula and syllabuses for LLL courses and trainings
Target 3: To develop and strengthen social engagement dimension	
Specific objectives	Indicators
To include the SE policy in the Statute of TCAS	Amendments to the Statute of TCAS
To develop the SE policy	The relevant document adopted
To appoint SE commission (teachers and students) responsible for implementation of SE policy	Decision on appointment of SE commission
To develop the general and annual action plan	Adoption of the general and annual action plan
To engage more students in SE activities and support them to offer new ideas	Number of students engaged in SE activities
To invite all possible stakeholders to participate in finding new forms of SE activities	Number of stakeholders participating in activities

Table 17: Identified targets and progress indicators (Belgrade Metropolitan University)

Belgrade Metropolitan University	
Target 1: To define TM as strategic mission	
Specific goals	Indicators
To change Statute with new mission and related provisions on TM dimensions	The Statute changed and adopted by BMU Council
To define new criteria for scientific and academic advancements of university staff taking into account their TM activities	New promotion rules are adopted and implemented
Target 2: To develop technology transfer and innovation dimension	
Specific goals	Indicators
To develop IPR policy at the university level and set of documents related to the IPR management at the University	<ul style="list-style-type: none"> • New internal IPR regulations adopted • form on the share in IP creation • report form on technology evaluation • non-disclosure agreement • confidentiality agreement • licencing agreement
To enable the spin-off of BMU <i>Innovative Software Technologies d.o.o.</i> to run	<ul style="list-style-type: none"> • SW development contracts with



commercial SW development projects	clients <ul style="list-style-type: none"> • 5 scholarships to BMU students each year
Creation of the Creativity Centre in Nis	<ul style="list-style-type: none"> • The Creativity Centre opened
Creation of the IT Innovation Centre	<ul style="list-style-type: none"> • The IT Innovation Centre opened
Creation of the IT Business Incubator	<ul style="list-style-type: none"> • The IT Business Incubator opened
Target 3: To develop and strengthen continuous education dimension	
Specific goals	Indicators
Creation of new CE strategy	New CE strategy document adopted
BMU CE methodology, rules and procedures	BMU CE methodology, rules and procedures adopted
Design and development of CE short cycle programmes and courses, according to new BMU methodology, rules and regulations	Min. one short cycle (SC) programme offered and 10 CE courses in 2017 Min. two new SC programmes and 20 CE courses offered
Promotion of new BMU short cycle programs and courses of CE programme (catalogue, brochures, internet marketing, special web side etc.)	Promotion campaign and new promotional materials and channels are available
Target 4: To develop and strengthen social engagement dimension	
Specific goals	Indicators
To be a member of a cluster of IT companies	Member of at least one IT cluster
To establish communities with secondary schools and their teachers to realize collaboration projects	A community created with secondary schools in NIs and its region
	A community created with secondary schools in Belgrade

5 Conclusions and recommendations

Three laws define the legal framework for higher education, scientific research and innovation development in Serbia: *Higher Education Act*, *Science and Research Activity Act* and *Innovation Activity Act*. They specify regulations and public funding programs of all three dimensions of universities:

- Education (1st Mission)
- Research (2nd Mission)
- Technology Transfer and Innovations, Continual Education, and Social Engagement (3rd Mission)

There is a set of laws related to IPR protection, but, as we did not identify the need for any modification of these laws related to the 3rd mission.

Figure 4 shows the roles and public funding of education, research and 3rd mission by the Higher Education Act and Science and Research/Innovation Activity Acts. **Higher Education Act and Science and Technology Development Act** mainly support and fund 1st and 2nd missions of universities, HEIs and research institutes (basic and applied research ones), but may fund also some of activities of the 3rd mission, such as Continual Education (partially). **Innovation Activity Act** supports and specifies public funding of the 3rd mission of universities, HEIs, applied research institutes (ARIs) and (partially) companies, but through companies (micro/ small/medium/large) that are project coordinators and grant holders, obliged to engage relevant HEIs and ARIs, with provided public funding of their activities.

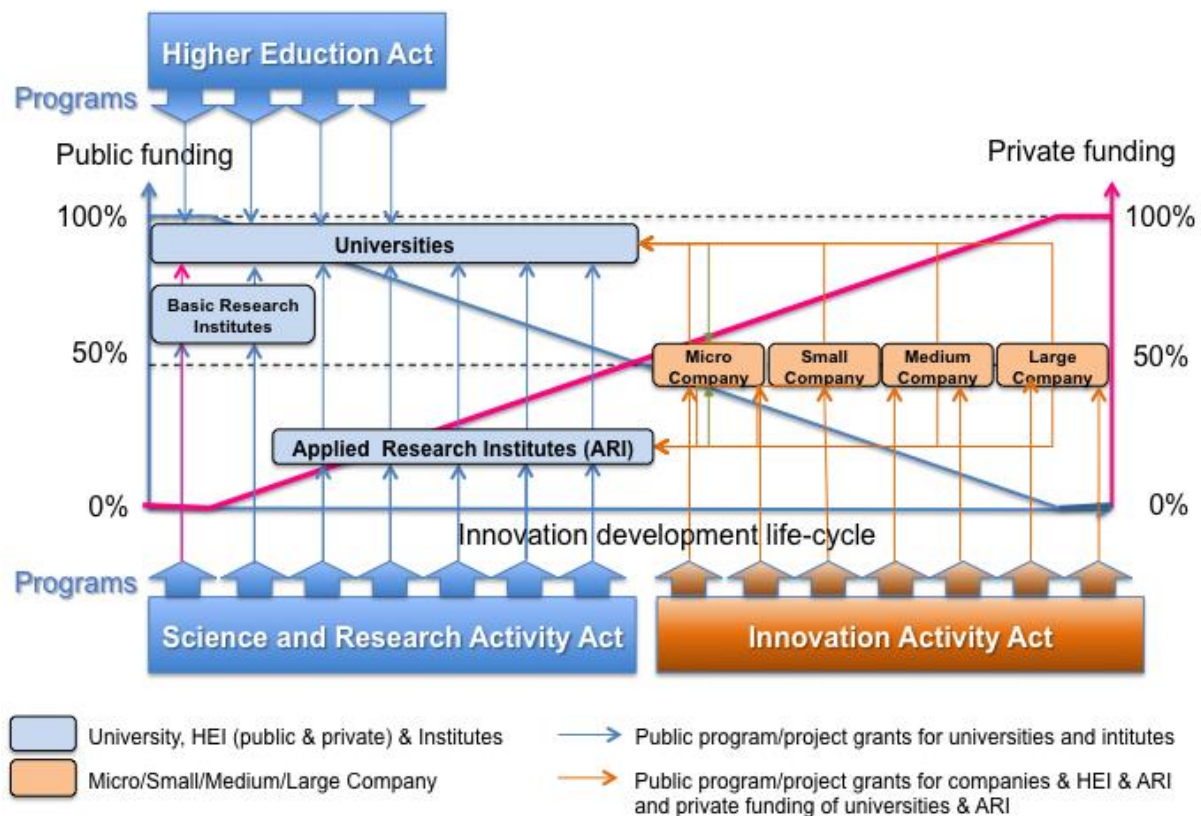


Figure 4 The roles and funding of all three missions of universities



As this document is aiming to specify recommendations for the 3rd mission of the university, only recommendations for this mission will be given

5.1 Dimension 1: Technology transfer and innovations

Recommendations given in this section are only related to *technology transfer and development of innovations*, such as innovative products, services and processes.

5.1.1 National legislation related to the technology transfer and innovations

Regarding IT legislation, there are no recommendations related to laws dealing with intellectual property rights, as these laws satisfy all aspects of legal IPR protection relevant to the 3rd mission.

Three sets of recommendations are specified for three relevant laws for Technology Transfer and Innovation Development, and, in general, for the 3rd mission of universities.

Higher Education Act:

1. Support of the Third Mission of universities:
 - a. Building stronger commitment to Third Mission by explicitly including these activities into universities' mission statements, regulatory and strategic documents;
 - b. Include Third Mission activities in promotion criteria of professors
2. Strengthening of entrepreneurial component and innovative potential of higher education:
 - a. Support the concept of "entrepreneurial university";
 - b. Encourage market/entrepreneurial activities of HEIs.
 - c. Educate students for the development of innovations and entrepreneurship
 - d. Research and innovation development need to be part of HE system by changing the organizational structures, funding models and incentives systems
3. Improvement of cooperation with employers and industry:
 - a. Allow experts from companies to be adjunct professors (without part-time employment, contract-based engagement);
 - b. Support of innovation centers as organizational units of HEIs for realization of joint innovation projects with industrial partners
 - c. Form Employers Councils to analyze existing and approve new curricula;
 - d. HEIs need to define rules, forms, mechanisms and procedures for development of university-industry cooperation.
 - e. Encourage development of organizational units for dissemination of research results, patent management, and building ties with industrial and business partners such as TT (Technology Transfer) centers, IPR offices,
4. Improvement of cooperation with research institutes:
 - a. Allow distinguished researchers to teach students as adjunct professors and mentors (without part-time employment, contract-based engagement)
 - b. Develop and offer joint PhD study programs
5. Financing of higher education:
 - a. Implement scholarships (paid by public and/or private sources) that reflect the cost of education of student.
 - b. If graduates educated by the state grant leave Serbia, they should pay back the costs of their education.



Science and Research Activity Act:

Science and Research Activity Act provides the legal framework for scientific research predominantly realized at HEI and research institutes, that supports initial phases of the innovation development process, such as basic and applied research, as well as development of technologies in different disciplines, as foundation for programs provided by the Innovation Activity Act.

1. Support of the priority-driven applied research, as the basis for innovation development, by changing funding ratio Basic/Applied research to 1:2.
2. Support of commercialization of research results of technical HEIs and applied research institutes (ARI) through their collaboration with partner companies.
3. Provide tax incentives to organizations that are successful in international projects, invest in to R&D and innovations development, invest in education of their existing and future staff (student scholarships).
4. Reorganization of public research institutes - most of them should be applied research institutes with market-driven and need-driven research. Basic research institutes will work on contracted long-term research programs in line with national priorities providing the basis for future applied research.
5. Support increase of the number of researchers and innovation developers in HEIs, applied research institutes and companies.
6. Provide regular public investments into R&D infrastructure
7. Support applied research at colleges of applied sciences, if they satisfy specified conditions.
8. Instead of using the existing long-term and unique Technology Development Program, it is recommended to offer smaller and shorter specific programs designed for specific type of companies (micro/small/medium/large) in several priority application areas (Fig.4). Calls for proposals should be open every year.

Figure 5 shows programs groups that consists of one or more programs specifically designed for a industrial priority area and type of companies. In this way programs and their projects will be more in line with specifics of industrial priority areas and type of companies. As a consequence, results of projects should be more effective, providing a visible and significant impact to an industrial sector of high priority. This scheme can be implemented in case of applied research and technology development programs provided by the *Science and Technology Development Act*, as well as for innovation development projects supported by the *Innovation Activity Act*.

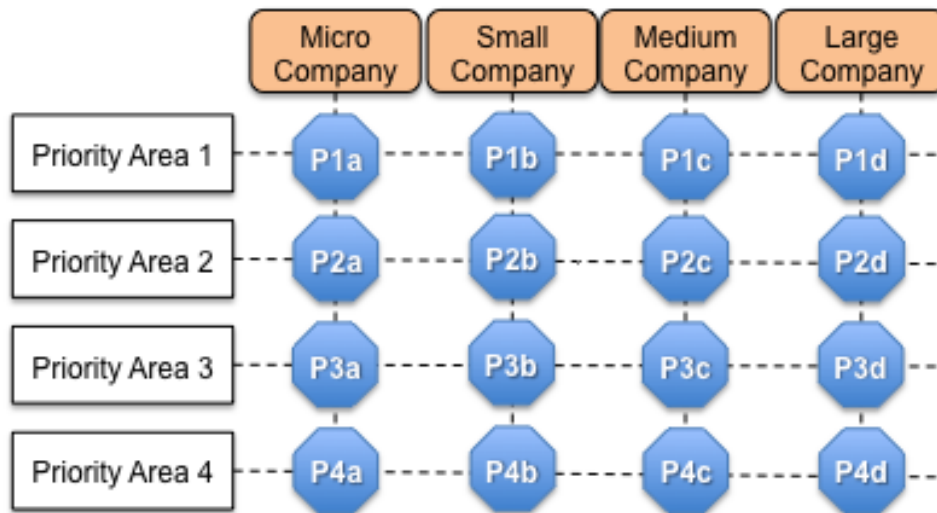


Figure 5 Specific programme groups for each priority application area and type of company

Grant holders and project coordinators should be companies developing innovative products or services for global and local market. They will be obliged to include in their project proposals, HEIs and applied research institutes (ARI) as project partners, responsible for applied research and specific development tasks. In some cases, such as in case of micro or small companies, HEIs and ARIs may be also founders and share holders of these companies. Depending of the type of projects in these program groups, call for proposals may be opened every year, or some of program should be open permanently, as ideas for innovations and needs for their analysis and elaboration may occur in any time and do not need to wait annual program calls. This might be the case for short projects with small budgets, but with needs to evaluate and elaborate innovative ideas as soon as possible.

This recommendation of replacing current “one (program) for all (application areas)” with “many (specific programs) to few (priority application areas and types of companies)” should be more effective and efficient. So, **our recommendation is the implementation of “many to few” program paradigm instead of the existing “one for all” program paradigm in case of applied research and innovation development projects.**

Innovation Activity Act:

Innovation Activity Acts provides the legal framework for innovation development *predominately realized by knowledge-based companies* (from micro to large companies), collaborating with HEIs and research organizations, that commercialize results of their basic and applied research, or development of innovations based on newly developed technologies (globally or locally) aiming to offer new innovative products, processes or services on the market.

7. Public-private funding of market-driven R&D and innovation development projects, coordinated and managed by companies, but with participation of universities and R&D organizations financially supported by public funds, by implementing the recommended “many to few” program paradigm.
8. Support the establishment of organizations and units at universities dealing with the innovation activities, with a simple registration.
9. Besides grants for R&D and innovation development projects, new public and public-private funding mechanisms for innovation development should be introduced:
 - a) Matching public and private funding of **innovation development projects**



- b) Public-private **venture capital funds** for investment to high-technology start-ups for innovation development (joint start-ups)
 - c) Public-private **business accelerators** for commercialization of new ideas
 - d) Public **angel funding** of the initial prototyping of initial ideas for innovation.
 - e) Public funding of **due diligence** of ideas for new innovations
 - f) Implementation of **crowd investment model** to support of start-ups with ideas for new innovations – creating the legal framework and support
10. Public funding to support of ST parks, incubators, innovation centers, TTPs, IPR offices
11. Encouragement of innovation activities in academic, research and all other sectors and also support all other forms of transfer and diffusion of innovative solutions.
- a) Offer a permanent open call for proposals of innovation projects (duration-one year, grant – up to 10.000 EUR) for elaboration, analysis and testing of new ideas for innovations.
 - b) Annual calls for proposals of innovation projects (duration – one/two years, grant – 30.000 EUR)
12. Matching public-private funding to support of **joint university-industry centers** for research, education (MS & PhD levels) and innovation development, aiming to attract foreign and local companies to invest and cooperate with universities.

5.1.2 Recommendation to HEIs

1. All three dimension of the 3rd mission: Continuous Education (CE), Technology Transfer (TT) and Social Engagement (SE) should be included in the mission and in the development strategies of universities.
2. Support of TT, entrepreneurship, and development of innovations
3. Develop third mission indicators and ranking methodology of HEIs
4. Institutions should develop separate action plans for CE, TT and SE and include quality assurance (QA) procedure for these three pillars into institutional documents on quality control and assurance
5. Inform all stakeholders of third mission activities of HEI
6. Rise and disseminate awareness of the third mission of HEIs
7. Encourage the entrepreneurial spirit in academic environments
8. Increase of investments in capacity building of the third mission.

5.2 Dimension 2: Continuing education

Universities have to respond promptly to new market needs and job requirements, due to dynamic changes in our social, economic and industrial environments. Education “for whole life” does not work any more. New jobs, and even new professions are occurring each year. Universities need to adopt itself to these dynamics, by offering new or modified existing academic programs according to new needs of job markets and predictions of future needs of employers. Life-Long Learning (LLL) and Continuing Education are the responses to these challenges. Employees need to adopt their skills and knowledge to new job requirements and unemployed need to modify and upgrade their knowledge and skills according to job markets demands. Due to these reasons, Continuing Education (CE), the 2nd dimension of the 3rd mission of universities, is becoming “a must” that university have to provide. It is not difficult to predict that CE will become equally significant or even predominately form of education that university are going to offer in near future.

In order to respond to these challenges and development opportunities, Serbian universities need to change themselves, but also, Serbian legislation for HE needs to be modified



according to the needs of CE. Some of the most important recommendations for legislators and HEIs will be given in this section.

5.2.1 National legislation related to the continuing education

The *Adult Education Strategy* and *Higher Education Act* should be modified according the following recommendations:

7. *CE legislation*: CE should be a regular form of higher education as it is now in the case with higher education of young students (age 18-24).
8. *Short-cycle programs and online & blended learning*: The legislation should allow HEIs to offer the most convenient modes of education (such as online or blended e-learning, or F2F seminars and workshops) to CE students (age 30-60), providing durations of CE programs as short as possible, and providing learning personalization as much as possible. *Short-cycle programs and courses* may be the most convenient form of education to many CE students and may complement normal academic bachelor and master programs.
9. *External lecturers*: HEIs should be allowed to hire experts from companies and from other organizations that are the most competent for transfer of new knowledge and skills, not yet provided by lecturers employed at HEIs. This provides needed flexibility, access to new knowledge and skills, and minimizes time to job market needs. These “*expert lecturers*” should not need to have PhDs, but should have relevant implementation references and should be experts in disciplines and application areas that they teach³. University professors may be engaged to supervise their teaching, according to specified program curricula and their course syllabi.
10. *No accreditation for HEIs*: CE short-cycle programs and courses should be developed and offered in minimum time, in order to answer to new job market needs. This is the main reason why they need not to be accredited if HE is already accredited for relevant academic programs. But, HEI must have institutional rules for development of and internal approval of new short-cycle programs and courses. Institutional rules must be compliant with recommendations specified by the National Council of Higher Education. Service providers of short-cycle programs and courses that are not HEIs need to get the accreditation for their programs and courses.
11. *Quality assurance (QA)*: QA system should be introduced for formal and non-formal adult education at all levels
12. *Funding*: Different funding sources (private sector, individuals, fiscal policy, international projects) are necessary to provide support to CE students in order to minimize their financial contributions. Scholarships for CE education should be partially supported from public funds, especially for highly demanded job skills. Companies paying scholarships for their employees or students should have appropriate tax deductions. Special loans for the subsidized scholarship should be provided for CE students. Cooperation with international organizations is needed for better access to LLL funding programmes. A national campaign is necessary in order to change the mindset regarding the adult educations and need for appropriate public, private and individual funding for CE education

³ This is the practice of the Danube University Krems (DUK), our project partner from Austria, is hiring large number of external lecturers.



13. *Educational demands:* Support of partnerships at local, regional and international levels between the service providers and service users in order to define the educational demands.

The National Council and local councils should be established to identify current and future needs of employers and of new jobs, as well as for consulting in the area of development of human resources. A development of a model of participation of social partners in curriculum development needs to be introduced.

11. Adopt the National Qualification Framework
12. Define the concept of part-time studies and its legal support
13. Increase investment in human resources (capacity, knowledge,...)

5.2.2 *Recommendation to HEIs*

1. CE/LLL should be part of the overall university strategy and a more specific CE/LLL strategy should be specified that defines mission, vision, goals and subordinate goals, and a time-plan for the continuing education activities of the university.
2. Specify a policy and regulations regarding the establishment of new CE/LLL programs.
3. Specify a metric and analysis for income gains by CE/LLL programs and courses.
4. Specify a policy for the use of university staff for LLL programs (e.g. teaching or administration as part of the regular job, or an additional assignment outside normal working hours with extra remuneration).
5. *Clear responsibilities for CE/LLL* within the university management should be specified, e.g. a vice-rector or vice-deans for continuing education.
6. *Establish a Continuing Education office* that runs all newly-established LLL programs; CE office develops the program portfolio; CE office gets a professional manager (full-time). CE office may have a separate brand and market appearance or can become a separate legal entity (company) owned by the university.
7. Short-cycle programs: Duration of short-cycle programs, consisting of many short courses, correspond to one to four normal semesters, and may provide for 60 to 120 ECTS⁴
8. Target groups of CE students are former students of the same institution and students from other institutions. English-taught programs are also recommended to attract international students.
9. It is a good practice that university runs joint programs – with other scientific institutions or with other players
10. A central e-Learning Center is recommended to support blended learning and online courses.
11. University should adopt a specific pedagogical concept for continuing education.

5.3 Dimension 3: Social Engagement

5.3.1 *National legislation related to the social engagement*

1. The legal framework should
 - a. support the development of competitiveness and innovativeness of SMEs through better collaboration with universities (TM activity) and
 - b. provide tax incentives systems for R&D education and training expenditures.

⁴ DUK had over 9.000 CE students in 2015., and the average ECTS of a Continuous Education course is 90 ECTS.



2. It is recommended that the national legislation
 - a. introduces performance indicators (limited number) to assess the progress of universities regarding the third mission activities and to monitor long-term impact and they should be included in statistics regularly required by the Ministries;
 - b. reduce the gap between education and employment through well-defined enrolment policy and monitoring of labour market needs;
 - c. establishes several levels of quality control and monitoring of third mission activities (local, regional, national).

5.3.2 *Recommendations to HEIs*

- 1) Universities must leave their comfort zones (pure teaching and fundamental research) and establish better communication based on thrust with enterprises and other external institutions
- 2) Universities should
 - a) develop and introduce in practice the third mission policies and implement related legal framework;
 - b) focus more on partnerships, young people and creativity as the drivers for change;
 - c) enable the development of academic entrepreneurship;
 - d) develop the strategy for development of third mission within TM dimensions;
 - e) strengthen first two missions (education and research) in terms of quality, efficiency and relevance for society before the development of third mission.
- 3) Universities need to
 - a) motivate academic staff and students to direct their activities towards society needs;
 - b) build the creativity culture and entrepreneurial spirit among students, faculties and its staff;
 - c) enable the development of academic entrepreneurship;
 - d) consider the graduates (alumni) while implementing third mission activities;
 - e) evaluate of third mission activities performed by academic staff and to introduce these criteria in the criteria for professional advancement;
 - f) engage student organizations and students in third mission activities especially within the social engagement dimension through volunteering and in some case paid activities within universities scholarships;
 - g) identify examples of good practice in implementing of TM activities and promote them on different media;
 - h) Encourage the establishment of spin-offs at universities
- 4) TM activities of universities are crucial for development and implementation of the Smart Strategy in Serbia, aiming to identify regional or sectorial strengths, specificities and potential in both industrial and research sector.

5.3.3 *Recommendations to academic staff*

- 1) Academic staff need to
 - a) be more engaged in fund raising activities through preparation of project proposals within EU funding schemes (e.g. Horizon2020), which will improve their research capacities (human resources, scientific equipment);
 - b) identify the research results that could be commercially exploited and to find the appropriate partners and ways for their transformation into innovations;



- c) file for patent application before the submission of scientific papers and doctoral dissertations to repository (in case that this kind of IPR protection is needed);
 - d) boost the creativity of students with multidisciplinary group student projects;
 - e) encourage students and young researchers to develop their ideas and to change the mind-set.
- 2) If commercialization of results is possible at international level, IPR protection should be extended from national to international level.
 - 3) In case of multiple innovators/applicants for IPR protection - to use the open concept with predefined ownerships, rights and obligations, terms of exploitation in Partnership Agreement before the collaboration starts.

5.3.4 *Recommendations to all stakeholders*

1. Establishment of innovation ecosystem, through involvement of relevant actors
2. To form the Ministry for Higher Education, Science and Innovation Development
3. The First and Second Missions of HEIs need to provide the quality, as preconditions for success of the Third Mission.
4. Better communication within and among academic, scientific, research community, business sector, etc.
5. To emphasize the role of university-industry cooperation and foster it through specific programmes and government incentives
6. To raise awareness on the specificities of Serbia in the area of third mission development
7. To introduce and implement Crowd Funding concept in order to support idea development and launching the innovations on the market
8. The chambers of commerce need to be more present and visible as key actor in third mission development
9. Business incubators and ST parks should cooperate closely with universities and initiate jointly with them the establishment of start-ups and spin-offs

To conclude, we emphasize the recommendations given to legislators regarding the modifications of three relevant laws (Higher Education Act, Science and Technology Development Activity Act, and Innovation Activity Act), and sets of recommendations to universities and other HEIs, all related to the development and implementation of their 3rd mission, along all three dimensions: Technology transfer and innovation development, Continuing education, and Social engagement.



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