



Researchers' Report 2013

**Country Profile: Bosnia
and Herzegovina**



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1. National strategies

Bosnia and Herzegovina (BiH) is a potential candidate to enter the European Union. The Stabilisation and Association Agreement (SAA) with the EU was signed in June 2008 encouraging BiH to develop socio-economic policies which include strengthening the role of science in the country and prospects for national economic growth based on domestic knowledge-intensive businesses.

The research system in Bosnia and Herzegovina is decentralised, each entity enjoying decision-making and policy coordination autonomy. The two entities are the Federation of BiH (FBiH) that comprises 10 cantons and the Republic of Srpska (RS).

Among other tasks, the Science and Culture Sector of the Ministry of Civil Affairs (MoCA) is responsible for defining strategy in the fields of science and culture at international level, participating in the work of international organisations in the field of science and culture and fulfilling the international obligations of the country in these areas (e.g. participation in the preparation of international agreements/contracts in the fields of science and culture).

The BiH Council of Science is an advisory and expert body of the Ministry of Civil Affairs and its responsibility is spread over both the Federation of BiH and the Republic of Srpska. As such, the Council makes recommendations and expresses its opinions, with the aim of developing science and technology in Bosnia and Herzegovina. It participates in the development and the monitoring of the implementation of the Strategy for Science in Bosnia and Herzegovina, and it also performs other tasks within its assigned jurisdiction.

The Federal Ministry of Education and Science and the Ministry of Science and Technology of the Republic of Srpska perform administrative tasks and others related to the development of scientific research activities, with a focus on fundamental and applied research, HR policies in the scientific and research activities, monitoring processes, innovation, technology, preparation of programmes and agreements on scientific and technical cooperation in accordance with the Constitution of Bosnia and Herzegovina and supervision of these areas.

The Governments of BiH have put in place a range of measures aimed at training enough researchers to meet its R&D targets and at promoting attractive employment conditions in public research institutions. The table below presents key programmes and initiatives intended to implement the strategic objectives to train enough researchers to reach BiH's R&D targets, to promote attractive working conditions, and to address gender and dual career issues.

Table 1: National strategies

Measure	Description
Strategy for the Development of Science in BiH (STI Strategy) (2010-2015)	<p>The Strategy for the Development of Science in BiH covers all aspects of the country's science and research. It includes the following actions to improve research infrastructure:</p> <ul style="list-style-type: none"> – Increase investments in research equipment as well as in the revitalisation of research infrastructure to increase investment in R&D to reach 1.5% of GDP by 2015; – Enable unlimited access to electronic scientific databases (Science Direct, EBSCO, etc.); – Work on internationalising and raising the quality of domestic scientific journals with the aim of becoming internationally recognised and to have a journal for each scientific field by 2013; and – Strengthen support for the publication of high quality scientific books. <p>The STI Strategy requires other ministries to invest in research, e.g. the ministries of Agriculture, Health, etc.</p>
Strategy of Development of Scientific-Research and Research-Development Work in the Federation of BiH for the period 2012-2022 (2012-2022)	<p>On 19 April 2012, the Government of the Federation of Bosnia and Herzegovina adopted a proposal for the "Strategy of Development of Scientific-Research and Research-Development Work in the Federation of BiH for the period 2012-2022" which was submitted to the Parliament of the Federation of BiH for adoption. The strategy aims to improve the promotion of scientific work in universities, with a particular focus on education and the promotion of young researchers.</p>
Centre for Information and	The main duties of the Centre for Information and Recognition of Qualifications in

Measure	Description
Recognition of Qualifications in Higher Education (CIP/CIR) (2008)	<p>Higher Education are:</p> <ul style="list-style-type: none"> – Inform the Universities in Bosnia and Herzegovina about foreign universities and programmes (via the International Information Centres – ENIC.NARIC); – Coordinate the international exchange programmes of academic employees, students, and programmes in higher education; – Represent BiH through international projects and networks; – Provide information about the recognition of degrees and diplomas to safeguard attendance levels at national universities; – Provide legal advice and information; and – Make recommendations to the Ministry of the Republic of Srpska, to the Ministries of the Cantons, and to the Brčko District of BiH.
EU-Balkan countries Action Plan in Science and Technology (2003)	<p>In June 2003, the EU Thessaloniki Summit approved the Action Plan on Science and Technology for the Countries of Western Balkans. This plan aimed to provide special assistance to the countries in the region, including BiH, to increase their participation in the EU's research and technology development (RTD) Framework Programmes and other EU-funded initiatives and schemes. Nevertheless, BiH does not participate in longer term, more advanced or risky research platforms, such as Integrated Projects, Networks of Excellence or ERA-NET.</p>
Framework Law on Higher Education in Bosnia and Herzegovina (Official Gazette of BiH, No 59/07) and its Modification and Amendment (Law No. 59/09)	<p>The Law on Higher Education in Bosnia and Herzegovina determines the organisation of higher education in BiH and the responsibility of the competent authorities in charge of this area. The law also establishes the international obligations of Bosnia and Herzegovina, and the methodology for ensuring quality in the area of higher education. In addition, the Centre for Information and Recognition of Qualifications in Higher Education (CIP/CIR) was provided for in this legislation.</p>
Framework Law on Scientific Research Activities and the Coordination of Internal and International Scientific Cooperation of Bosnia and Herzegovina (Official Gazette of BiH, No. 43/09)	<p>The Law provides for the creation of a coordination body called the Science Council to contribute to the policy development of priority areas in science. The Law also underlines the importance of the need to improve significantly the current S&T information system, including statistical data collection, in accordance with international guidelines set out by EUROSTAT, OECD and UNESCO.</p>
Law on Scientific Research Activities and Technological Development (Official Gazette RS, No. 6/12) (2011)	<p>The Republic of Srpska's legislation on science and technology was adopted in December 2011 by the National Assembly of the Republic of Srpska (Official Gazette RS, No. 6/12). It contains many programmes for achieving strategic goals and it also represents a framework for research structure and financial support.</p>
Memorandum of Understanding (MoU) on science and technology (S&T) co-operation (2008)	<p>In 2008, the Memorandum of Understanding on science and technology co-operation was signed between the EU and BiH granting the country associated status in the 7th Framework Programme (FP7).</p>
Strategy for Scientific and Technological Development of Republic of Srpska 2012-2016 (2012) & Action Plan for implementation Strategy for Scientific and Development of Republic of Srpska 2012-2016 (2011)	<p>The Strategy for Scientific and Technological Development of the Republic of Srpska 2012-2016 was adopted in July 2012, together with its Action Plan. The aim of the Strategy is to pave the way for the leading role of research and development as one of the main factors for enhanced long-term development of the Republic of Srpska. At the same time, the implementation of the strategy should allow for stronger networking and joint research between universities, research institutes and industry, higher participation of researchers and institutions in European research networks and European Research Area; development of research infrastructure in accordance with international and EU standards, participation in the activities of the 7th Framework Programme (FP7) of the EU as well as in other international programmes. The main objectives of the Strategy are to:</p> <ol style="list-style-type: none"> 1. Ensure the leading role of science and technology as a factor of long-term development; 2. Increase the amount of money allocated to science and technology in both the public and private sectors based on short and long-term defined priorities and plans, and provide continued support for innovation, technology transfer and commercialisation, and application of scientific achievements; 3. Increase the participation of researchers and institutions in the European Scientific Network (EU Framework Programmes, EUREKA and COST) and the European Research Area (ERA); 4. Promote structural changes in scientific and research systems, with an emphasis on cooperative and joint research of universities, scientific

Measure	Description
	<p>institutes and industry, and ensure greater cohesion between science and industry in order to achieve development goals;</p> <ol style="list-style-type: none"> Promote research infrastructure development respecting international standards; Strengthen the promotion and popularisation of science; Further develop human resources as the main capital for research and development and innovative activity, and adopt proper conditions to accelerate progress and increase the competitiveness of the Republic of Srpska; and Increase financial investments in research and development to correspond to the needs of the real potential, as well as in accordance with EU strategic documents (Declarations of Lisbon and Barcelona, Europe 2020). <p>The Action Plan is an integral part of the Strategy for Scientific and Technological Development 2012-16 and was adopted together with the Strategy. The Action Plan provides an overview of the priority thematic tasks and measures for their implementation. The plan provides specific indicators, which are relatively easily monitored in the same time period. The indicators will be used to monitor the implementation of the Strategy. This will be carried out through cooperation between relevant ministries and research organizations with the Council for Science and Technology of the Republic of Srpska.</p>
The Science Council under the Minister of Civil Affairs of Bosnia and Herzegovina (MoCA)¹ (ongoing)	<p>The Science Council advises the minister during the preparation of the annual programmes for scientific research, proposes initiatives for domestic and international projects, comments on the annual programmes of scientific and research activities, carries out internal and manages external evaluations of scientific and research activities, etc. The Council ensures equal representation of all scientific fields in accordance with the 'field of science and technology (FOS) classification in the Frascati Manual'². The entities in FBiH have the Science and Technology Development Councils under their administrative structure. Also, the Republic of Srpska has its own Science and Technology Development Council. It was elected in 2012.</p>

Source: Deloitte

2. Women in the research profession

Measures supporting women researchers in top-level positions

The Governments in Bosnia and Herzegovina have not put in place concrete measures to promote gender equality in the research profession or to increase the number of female researchers in top-level positions/decision-making bodies.

Data on Research and Development (R&D) in the Republic of Srpska are collected regularly from economic entities, higher education institutions, the state and non-profit organisations and reported by gender in an annual report (the Statistical Bulletin)³. According to the Statistical Yearbook of the Republic of Srpska, 2012, Research and Development, the total number of women researchers in top-level positions in 2011 was 9 (of 27).

Measures to ensure a representative gender balance

The Governments in Bosnia and Herzegovina do not have quotas and/or national targets or other measures to ensure a representative gender balance for researchers.

Maternity leave

Women researchers have the right to paid maternity leave for a year, as well as social and health insurance.

¹ MoCA coordinates science policy at state level as well as international cooperation through its Department for Science and Culture.

² Available at: http://www.oecd.org/document/6/0,3746,en_2649_34451_33828550_1_1_1_1,00.html

³ Source: The Republic of Srpska Institute of Statistics, data on Research and Development reported by gender (2010). Annual Release and Statistical Yearbook

In the Republic of Srpska, based on the Law on Scientific Research Activities and Technological Development (Official Gazette RS, No. 6/12), deadlines for applying for or extending a scientific position can be put on hold during maternity leave.

3. Open, transparent and merit-based recruitment

Recruitment system

In BiH, all public institutions are obliged to publish vacancies together with selection criteria in one of the public media. Public authorities require that institutions publish job vacancies in the government gazette, newspapers and on the institution's website. If a specific job position requires foreign experts, a mixed selection panel is established including professionals and HR experts. Job description, duties and responsibilities are the standard requirements published.

By virtue of the Constitution, the area of labour and employment is organised at entity level. In the Republic of Srpska, this area is under the jurisdiction of the Ministry of Labour and Veterans. The relevant institution for employment in the Republic of Srpska is the Employment Institute. The institute is organised in six regional employment offices, with 58 at municipality level. The relevant institution for employment in the Federation BiH is also the Employment Institute.

EURAXESS BiH and the PEOPLE National Contact Point work jointly on the promotion of the 'Charter & Code'⁴ principles. However, none of the national institutions has signed the C&C. They have only produced their own documents to regulate the issue of recruitment. This is usually done within human resource departments or quality assurance departments at universities.

In addition, only two public BiH universities participated in the cohorts of the European Commission's initiative "Human Resources Strategy for Researchers"; the University of East Sarajevo (in the 4th Cohort) and the University of Banja Luka (in the 3rd Cohort).

Open recruitment in institutions

The table below presents information on open recruitment in higher education and public research institutions.

Table 2: Open recruitment in higher education and public research institutions

Do institutions in the country currently have policies to ...?	Yes/No	Description
– publish job vacancies on relevant national online platforms	No	Each institution publishes job vacancies on its own website.
– publish job vacancies on relevant Europe-wide online platforms (e.g. EURAXESS)	Yes/No	Institutions may choose or not to publish vacancies on the BiH EURAXESS portal.
– publish job vacancies in English	No	Job vacancies are not published in English.
– systematically establish selection panels	Yes	Institutions systematically establish selection panels.
– establish clear rules for the composition of selection panels (e.g. number and role of members, inclusion of foreign experts, gender balance, etc.)	Yes	Institutions establish clear rules for the composition of selection panels.
– publish the composition of a selection panel (obliging the recruiting institution)	Yes	Institutions publish the composition of a selection panel.
– publish the selection criteria together with job advert	Yes	Public institutions must publish vacancies together with the selection criteria in one of the existing public media.
– regulate a minimum time period between vacancy publication and the deadline for applying	Yes	Institutions regulate a minimum time period between vacancy publication and the deadline for applying.
– place the burden of proof on the employer to prove that the recruitment procedure was open and transparent	Yes	Institutions place the burden of proof on the employer to prove that the recruitment procedure was open and transparent.
– offer applicants the right to receive	Yes	Institutions offer applicants the right to receive adequate

⁴ Available at: <http://ec.europa.eu/euraxess/index.cfm/rights/index>

Do institutions in the country currently have policies to ...?	Yes/No	Description
adequate feedback		feedback.
– offer applicants the right to appeal	Yes	Institutions offer applicants the right to appeal.

Source: Deloitte questionnaire

EURAXESS Services Network

As part of the BAMONET Project (BiH Researchers' Mobility Network), the BiH EURAXESS Centre has created a portal for 'online' delivery of information and services to the wider academic community, especially to mobile researchers (incoming and outgoing). The BiH EURAXESS Network consists of one Bridgehead organisation, four (4) EURAXESS Service centres and a number of local Contact Points at all major universities in BiH.

The BiH EURAXESS portal is a unique, free web service providing access to updated and complete information and services.

The portal provides information and online tools designed for foreign researchers interested in visiting one of the scientific and research institutions in Bosnia and Herzegovina and for national researchers who plan to develop their scientific career either in BiH or in the wider European Research Area (ERA).

The BiH EURAXESS portal gathers useful information for incoming researchers related to their work and stay in BiH, contains a database of all scientific and research organisations in BiH and provides various search tools on job vacancies, research grants and scholarships. In addition, the portal is regularly updated with news and press releases, both on general issues on science and research, as well as activities and events related to the work of the EURAXESS Network in BiH.

BiH legislation has not yet recognised the BiH EURAXESS portal as a place for obligatorily publishing researcher job vacancies. Therefore, the vacancies are published only on a voluntary basis. More intensive promotional activities need to take place to promote the BiH EURAXESS portal as a place available for job postings.

As there is no other official website where all publicly funded research jobs are gathered (each institution publishes vacancies on their own websites), the government is looking into solutions to make the EURAXESS portal sustainable once BAMONET comes to an end (in 2013).

4. Education and training

In Bosnia and Herzegovina, R&D jobs are unattractive because of low salaries, lack of social security coverage, limited career incentives and poor employment opportunities. BiH has suffered from the departure of its most expert and highly qualified young people. Scientists that stayed in the country left the R&D sector for better paid jobs in the private sector. This has resulted in a shortage of experienced middle-aged researchers.

The resources for funding longer-term research or researcher mobility are almost non-existent and donor assistance is often short-term, small, and targets concrete investments in certain key areas, such as S&T infrastructure and modernisation of laboratories.

Measures to attract and train people to become researchers

In 2011-12, there were 46 547 students in tertiary education in the Republic of Srpska⁵ compared to 27 421 in 2005-06. In 2012-2013, there were 72 332 students in tertiary education in the Federation of BiH (FBiH) compared to 62 546⁶ in 2005-06.

In BiH, there are in total 45 registered public research organisations; 30 in the Federation of BiH and 15 in the Republic of Srpska. There are also six private research institutions and 44 higher education institutions in total, of which 22 are universities⁷.

⁵ Statistical Bulletin, Higher education, Institute of Statistics or RS, no.7, Banja Luka, 2010. Statistical Bulletin, Higher education, Institute of Statistics or RS, no.8, Banja Luka, 2011. Statistical Bulletin, Higher education, Institute of Statistics or RS, no.9, Banja Luka, 2012

⁶ Statistical Bulletin, Higher education, Federal office of statistics

⁷ MoCA Strategy for development of science in BiH 2010-2015. Available at: http://www.mcp.gov.ba/zakoni_akti/strategije/?id=1251

The number of students in the Social Sciences and Humanities has remained constant at around 27 000 whereas the number of graduates in Social Sciences and Humanities has grown significantly, from 4 069 graduates in 2000, to 5 562 in 2008.

The table below summarises practical measures aiming to attract and train young people to become researchers.

Table 3: Human Resources - Key programmes and initiatives

Measure	Description
'Annual Lump-sum Scholarship for Talented Students of Final Years of Studies at the Higher Education Institutions of the Federation of Bosnia and Herzegovina' (2006-present)	The Ministry of Education and Science provides approximately 100 scholarships annually in the framework of the Annual Lump-sum Scholarship for Talented Students of Final Years of Studies at the Higher Education Institution of the Federation of Bosnia and Herzegovina.
'Fund for student loans', the Federation of Bosnia and Herzegovina (2008- present)	The Federation of Bosnia and Herzegovina has awarded a total of 200 student loans during the academic year 2011/2012. The total amount of funds was BAM 500 000 (some EUR 255 645). Each of the students received an amount of BAM 2 500 (some EUR 1 278). Student loans are interest-free funds earmarked to cover the basic costs of education. They provide funds and support, which enable students to study at recognised higher education institutions and universities in the Federation.
'Co-funding of research, scientific training and study visits at home and abroad', Federal Ministry of Education and Science (2006-present)	The co-funding measure aims to raise the level of scientific vocations for candidates who are not employed by any of the public higher education and scientific institutions in the Federation. Every year, approximately 25-30 researchers receive support. The total budget is BAM 50 000-70 000 (some EUR 30 677-35 790).
'Participation in national and international scientific meetings', Federal Ministry of Education and Science (2006-present)	This funding measure is an integral part of the call for the allocation of resources in the field of science, which is announced every year. Every year, approximately 40-50 researchers receive support. The total budget is BAM 60 000-80 000 (some EUR 30 677-40 903).
'Competition for funding/co-funding of scientific research and research and development projects in the Federation of Bosnia and Herzegovina', Federal Ministry of Education and Science (2001-present)	In order to receive funding, the research team must be staffed with at least one young researcher below the age of 32. Every year, the funding/co-funding scheme supports approximately 30-40 projects. The total budget is BAM 500 000 (some EUR 255 645).
'Fund Dr Milan Jelić' of the Ministry of Science and Technology of Srpska (2009-present)	<p>The Fund Dr Milan Jelić of the Ministry of Science and Technology of the Republic of Srpska provides financial support (scholarships and grants) to the most talented students from the Republic of Srpska, Bosnia and Herzegovina of all three levels of higher education (undergraduate, postgraduate and doctoral level of studies) studying at national and foreign universities. Annually, the Fund dr Milan Jelić provides:</p> <ul style="list-style-type: none"> – 110 scholarships for undergraduates (75 scholarships for students studying at national universities and 35 scholarships for students at foreign universities); – 15 scholarships for postgraduate students; and – 10 scholarships for doctoral students at national and foreign universities. <p>In 2012, the Fund launched a new programme of grants for students from the Republic of Srpska, BiH, studying at prestigious universities (top ranked universities in the world). In December 2012, 13 students were awarded study grants as financial support for their own initiatives of scientific and other sorts of cooperation between foreign and national universities and scientific institutions. The annual budget of the Fund dr Milan Jelić is BAM 750 000 (some EUR 384 615).</p>
'Programme for young researchers' of the Ministry of Science and Technology of the Republic of Srpska (2010-present)	The Ministry of Science and Technology of Srpska manages the 'Programme for young researchers' by providing financial incentives to researchers to secure their paid full-time participation in science and research projects, in an effort to increase the number of doctorates in science, technology, engineering and mathematics (STEM) subjects. The Programme provided support to four young researchers in 2010 and eight in 2011. For 2012, the Programme aims to support six young researchers. The annual budget of this programme is BAM 300 000 (some EUR 153 387).
Scholarships of the Ministry of	The Ministry of Education and Culture of the Republic of Srpska provides scholarships

Measure	Description
Education and Culture of the Republic of Srpska (2008-present)	<p>for students enrolled in mathematics, natural sciences and technology, so as to promote their career in these professions. The scholarships have been allocated as follows:</p> <ul style="list-style-type: none"> – In 2008-09: 540 students who enrolled for the first time in the study of mathematics, physics, informatics, electrical engineering, mechanical engineering and geodesy; – In 2009-10: 618 students who enrolled for the first time in the study of mathematics, physics, informatics, electrical engineering, mechanical engineering and geodesy and students in the second year of the same study programmes; – In 2010-11: 731 students who enrolled for the first time in the study of mathematics, physics, informatics, electrical engineering, mechanical engineering and geodesy, and students in the second and third year of the same study programmes; and – In 2011-12: 474 students who enrolled for the first time in the study of mathematics and physics, and students in the second, third and fourth year of study of mathematics, physics, informatics, electrical engineering, mechanical engineering and geodesy.

Source: Deloitte

Funding of doctoral candidates

In Bosnia and Herzegovina, the main funders allocating financial resources via competition-based research grants are: (a) at state level, the Ministry of Civil Affairs of BiH, (b) at entity level, the Ministry of Science and Technology of the RS and the Ministry of Education and Science of the FBiH, (c) and at cantonal level, the Ministry of Education, Science, Culture and Sport of the Cantons of Sarajevo, Tuzla and Zenica-Doboj.

The table below summarises different funding opportunities for doctoral candidates:

Table 4: Funding schemes available to PhD candidates

Funding scheme	Description
'Support for doctoral studies and dissertation defence' Programme, Federal Ministry of Education and Science (2006-present)	This funding measure is an integral part of the call for the allocation of resources in the field of science, which is announced every year. In 2012, the Programme supported 378 PhD candidates. The total budget was BAM 100 000 (some EUR 51 129).
Stipend/Grant	<p>The Ministry of Science and Technology of Srpska covers 70% of researchers' funding. The allocation of stipends was approximately:</p> <ul style="list-style-type: none"> – 7% in natural science; – 12% in engineering and technology; – 13% in agricultural sciences; – 10% in medical and health sciences; – 46% in social science; and – 13% in humanities. <p>The Ministry of Science and Technology co-financed 101 PhD candidates in 2012, 52 PhD candidates in 2011 and 50 PhD candidates in 2012.</p> <p>The Ministry of Education and Culture of the Republic of Srpska provides doctoral students with scholarships/grants to study either in the Republic of Srpska or abroad. Of the total number of PhD students who applied for the scholarship/grant, 30% met the criteria and approximately 15% of them actually received receiving the scholarship/grant.</p> <p>The Ministry of Education and Culture of the Republic of Srpska awards scholarships for students in the third cycle of study abroad and in RS. In 2009-10, it awarded 17 scholarships for study abroad. In 2010-11, it awarded 15 scholarships (3 in the RS and 12 abroad) and in 2011-12, 22 (4 in RS and 18 abroad).</p>

Source: Deloitte

The table below provides information on total R&D investment in BiH (in EUR million):

Table 5: R&D investments (2007-2013)

Entity	2007	2008	2009	2010	2011	2012	2013
BiH	N/A	0.25	N/A	0.25	N/A		
FBiH	1.7	2.22	2.7	1.5	1.5	1.45	1.5
SR	1.86	3.1	12.6	10.6	13.4		

Source: Data: Ministry of Civil Affairs of BiH, Federal Ministry of Education and Science, Ministry of Science and Technology of RS. Also, Republic of Srpska Institute of Statistics: Research and Development in 2009, Annual release, no. 235/10. Research and Development in 2010, Annual release, no. 219/11. Research and Development 2011, Annual release, no. 233/12

In 2011, the Government of the Republic of Srpska approved EUR 13 million for the modernisation of the two public universities, the University of Banja Luka (EUR 6 million) and the University of East Sarajevo (EUR 7 million). The project includes providing state-of-the-art equipment for the research laboratories of these two public universities and also founding the Research Centre for Biomedicine, Food Technology and Nutrition.

By signing the Memorandum of Understanding and paying the entrance fee for the 7th Framework Programme, BiH was granted full access to the PEOPLE programme which funds doctoral study programmes through mobility, such as Initial Training Networks, Innovative Doctoral Programmes, European Industrial Doctorates, etc. However, the national academic community does not make use of these funding programmes citing numerous problems, including the lack of equipment for advanced research, the uncertainty about retaining his/her research positions at home when becoming mobile, etc.

Measures to increase the quality of doctoral training

The Council for Development of Higher Education and Quality Assurance of the Republic of Srpska has developed the Guidelines for Conduct of Doctoral Studies (2008). Based on these guidelines, the universities in the territory of the Republic of Srpska have developed and adopted their own Rulebooks for Conduct of Doctoral Studies. The Guidelines for doctoral studies are in line with European standards for quality assurance.

The Governments of the country have called for further promotion of the EU programmes and other tools for funding doctoral studies, including mobility. Candidates for doctoral studies need to be more aware of these possibilities since access to additional doctoral training and mobility opportunities are crucial for the transfer of knowledge from advanced universities.

Skills agenda for researchers

The Governments in Bosnia and Herzegovina have not developed a Skills Agenda and/or any other measure to improve researchers' employment skills and competencies.

5. Working conditions

Education and research institutions were first evaluated in 2003. The European University Association (EUA) was invited by seven universities in Bosnia and Herzegovina (BiH) to undertake an institutional evaluation of each university. This state-wide series of evaluations was part of a project supported by the European Commission and the Council of Europe entitled "Modernising the management and governance capacities of the universities in Bosnia-Herzegovina". The purpose of the evaluations was, through a European peer review process, to assist each university in identifying progress already made in the reform of their governance and management structures and systems, to highlight the steps which still needed to be taken, and to contribute to the development of policies and strategies in order to ensure that the BiH universities become fully integrated into the European Higher Education Area.

Measures to improve researchers' funding opportunities

The Governments in Bosnia and Herzegovina provide researchers with financial support to implement science and research projects, contribute to scientific publications⁸, participate in scientific meetings, receive training abroad, etc.

Remuneration

For information, see the new country profile on remuneration of researchers from the MORE2 study (forthcoming, on the EURAXESS website).

'European Charter for Researchers' & the 'Code of Conduct for the Recruitment of Researchers'

The Governments in Bosnia and Herzegovina do not actively promote the implementation of the 'Charter & Code' by research institutions and funders. Nevertheless, the BiH EURAXESS Centre and PEOPLE National Contact Point promote the implementation of the 'Charter and Code' and have initiated the process of signing them. Two service centres (UNIBL and UNSA) are currently working on this issue. It is anticipated that the adoption of the 'Charter and Code' will not be possible without a large promotional and awareness campaign. Another option might be to introduce the 'Charter and Code' as an obligatory element in the accreditation process of an institution.

Autonomy of institutions

At state level, no ministry is in charge of higher education. All ten cantons in the Federation of BiH have adopted the Law on Higher Education. In the Republic of Srpska, a single ministry of education manages the educational sector, including higher education.

In the Federation of Bosnia and Herzegovina, the relevant cantonal ministries of Education, Science, Culture and Sports have jurisdiction over higher education. Public universities are located in the following cantons: Canton Sarajevo, Tuzla, Una-Sana Canton, Zenica-Doboj Canton and Herzegovina-Neretva Canton (University "Džemal Bijedić" in Mostar and University of Mostar).

There are nine private universities (40 faculties and four colleges, and two private faculties) in the Federation of BiH and six in RS. In FBiH, there are also six public universities (70 faculties and 3 colleges). In total, there are 140 faculties and 10 academies. There are 21 research institutes in RS (15 public and 6 private) and 30 in FBiH (20 public and 10 private).

There are two academies of science: The Academy of Science and Arts of BiH (active in the whole territory of the FBiH) and the Academy of Science and Arts of the Republic of Srpska.

According to the Law on Higher Education of the Republic of Srpska which applies to the territory of the Republic of Srpska, and is harmonised with the BiH Framework Law on Higher Education, higher education institutions enjoy full autonomy to recruit teachers and other academic staff. Teachers' and researchers' salaries are defined by the Law on Wages of Employees in the Field of Education of the Republic of Srpska. This does not provide for any performance-based differentiation.

Career development

Since 2004, the Ministry of Science and Technology of the Republic of Srpska, has applied specific evaluation criteria for awarding scientific research degrees to scientific institutes' employees⁹. The Ministry of Science and Technology establishes the Scientific Commission responsible for the evaluation of the candidates. The evaluation criteria include scientific publications, work experience in science and research work on science projects. There are three categories of scientific research degree: "scientific assistant", "senior scientific assistant" and "scientific adviser".

⁸ In the Central and Eastern European Online Library (C.E.E.O.L), which provides access to articles from a comprehensive list of 312 humanities and social sciences journals and documents pertaining to Central, Eastern and South-Eastern European issues, Bosnia and Herzegovina is represented in 15 journals, including the Forum Bosnae and STATUS. BiH comes last behind Croatia and Serbia, in both the number of journals (15 compared to 22 from Croatia and 21 from Serbia), and downloaded articles from those journals (3 145 compared to 7448 from Croatia and 5 664 from Serbia). Source: The Assessment of Social Research Capacities at Universities and Civil Society Organizations in Bosnia and Herzegovina, Sarajevo, 2010

⁹ There are three categories of scientific research degree: 'Scientific Assistant', 'Senior Scientific Assistant' and 'Scientific Adviser'

Shift from core to project-based funding

Development of entrepreneurial thinking at the university and shift to project-based organisation of research should be further developed. These trends are still at an early stage and the public research institutions are strongly depending on public budget. The core funding guarantees the salaries of the staff (researchers, technicians and administrators), while project-based funding covers research activities and infrastructures.

Up to now, grants from ministries have not been sufficient for the improvement of the overall research system (infrastructure) although there are initiatives by the Government of Republic of Srpska which are moving in this direction.

Project-based activities should in future improve researchers' working conditions. However, there is a significant gap between BiH research institutions and their counterparts in the EU in relation to advanced research equipment. As mentioned above BiH institutions have been incapable of participating more in FP7 research infrastructure projects because these require advanced research equipment, while BiH universities (especially technical and technological faculties) lack basic research equipment and premises.

Social security benefits (sickness, unemployment, old-age)

In BiH, researchers (both doctoral candidates and post-doctorates) are fully covered by social security benefits if they are employed under the corresponding laws¹⁰ and regardless of their nationality. The health and social security scheme covers sickness, maternity, disability, pensions, unemployment, accidents, occupational diseases and family benefits.

6. Collaboration between academia and industry

In Bosnia and Herzegovina, the involvement of the industry sector is very limited and only provides financial resources towards the practical application of the R&D results.

In July 2012, the National Assembly of the Republic of Srpska adopted the Strategy of scientific and technological development of the Republic of Srpska for the period 2012-2016. Two of the six general strategic goals of the Strategy focus on strengthening collaboration between academia and industry. These are:

1. Strengthening cooperation and the transfer of research results from academia to the economic sector, support to technology transfer and strengthening the innovation capacity of enterprises; and
2. Redefining the role and tasks of all scientific and technological development actors: universities, research institutes, public administration at all levels and development centres in companies.

Some of the activities proposed for achieving the two strategic goals are:

- Support joint university/enterprise research projects;
- Additional professional training to strengthen the competencies of professionals from the business sector, universities and other research organisations;
- Promote researchers who generate and implement scientific research with a focus on specific problems in the economy and society; and
- Strengthen the innovation aspect of companies and promote innovation in enterprises, schools and universities/colleges.

In addition, there is a need to:

- Redefine the role and tasks of the major actors in scientific and technological development, be they universities, research institutes, public administration at all levels or companies;
- Promote the networking with universities abroad;
- Define common criteria and implementation of international standards for progress in scientific and educational titles;
- Develop quality control systems;
- Support R&D capacity in enterprises and encourage innovation in enterprises; and

¹⁰ Refers to researchers employed by an institution on a permanent or temporary contract. Researchers may have a contract for performing a specific task (*Ugovor o djelu*) – these types of contracts do not entitle researchers to social security benefits

- Respecting the European integration process, and EU legislation and policy documents, such as the Europe 2020 Innovation Union.

In April 2012, the Government of the Federation of Bosnia and Herzegovina adopted a proposal for the “Strategy of Development of Scientific Research and Research Development Work in the Federation of BiH for the period 2012-2022”, which was submitted to the Parliament for adoption. The law aims to support collaboration between academia and industry by:

- Creating an infrastructure for the development of scientific research, including a network of universities, institutes and research;
- Creating development centres in universities and scientific institutions;
- Setting-up technology parks and incubation centres for the creation and implementation of innovation centres and the promotion of public-private partnership in scientific and technological research.

In December 2011, the Republic of Srpska also adopted the Law on Scientific Research Activities and Technological Development. The law provides for:

- Promoting research in the area of technological development: The Ministry of Science and Technology supports the development of technologies in the Republic of Srpska through the funding of grants for projects in the field of technological development, e.g. introduction of modern technologies, testing and introduction of significant existing technologies, manufacturing and testing of equipment, procurement of modern equipment, participations and organisations of professional conferences about new technologies inward and abroad. In addition to the universities and institutes, one of the target groups of these activities are small and medium-sized enterprises;
- Encouraging invention, innovation and intellectual property protection: the Ministry of Science and Technology supports innovation in companies through a special grant;
- Transferring knowledge and technology, and encouraging the application of research results; and
- Supporting research infrastructure (the programme has been recently launched).

The governments in Bosnia and Herzegovina have not promoted any concrete measures encouraging researchers to move from the public to the business sector and vice-versa. However, the Ministry of Civil Affairs of Bosnia and Herzegovina has participated actively in number of projects dealing with the issue of overcoming the obstacles in industry-academia cooperation, such as FP6-WEBMOB¹¹ and FP7 ISEEMOB¹².

Some of the most important measures to be implemented to improve geographical and sectoral mobility are:

- Facilitate the procedures for the Scientific Visa for researchers;
- Simplify the visa requirements and working permits in line with EU initiatives, such as the Blue Card;
- Deal with issues of mutual recognition of degrees and diplomas;
- Deal with issues of tax relief and double taxation for health and social security;
- Deal with issues of supplementary pensions for mobile researchers; and
- Implement the “European Partnership for Researchers” recommendations at national and/or regional levels.

7. Mobility and international attractiveness

Measures aimed at attracting and retaining ‘leading’ national, EU and third country researchers

Bosnia and Herzegovina has not promoted concrete measures to attract and retain ‘leading’ national, EU and third-country researchers.

Nevertheless, BiH’s academic community has signed numerous bilateral agreements on international cooperation with foreign institutions from, for example, Austria, Croatia, Egypt, Italy, Slovenia, Switzerland, (mutual agreements between faculties/colleges, universities, institutes, etc.) that also cover the field of science and research, as well as joint projects. This type of cooperation agreement mainly involves individual participation of BiH researchers in research projects. The greatest involvement in this type of cooperation is in the biomedical and technical sciences.

¹¹ Available at: <http://webmob.masfak.ni.ac.rs/sitegenius/index.php?done>

¹² Available at: <http://www.iseemob.eu/sitegenius/index.php>

The table below summarises key bilateral agreements between BiH and other countries to promote international cooperation.

Table 6: Bilateral agreements to promote international cooperation

Measure	Objectives
Agreement between BiH Council of Ministers and Republic of Serbia in Area of Education, Culture and Sport (2010)	The Agreement supports the following activities: <ul style="list-style-type: none"> – Establishment and development of cooperation between educational institutions; – Exchange of experts, teachers and graduate students; – Participation in symposia, conferences and similar gatherings in the field of education; – Approval of scholarships for students, post-graduates as well as exchange of teachers and scholars; and – Exchange of publications and information.
Agreement on Equivalences in University Education with Austria	The Agreement is based on the 'Agreement between the Republic of Austria and the Federal Socialist Republic of Yugoslavia on Equivalences in University Education' (1979) with the intention of promoting exchanges in the sciences and cooperation in the field of university education.
Cooperation Agreement with Slovenia (1999)	Bosnia and Herzegovina has signed a Cooperation Agreement with Slovenia on the promotion of cooperation activities in the areas of science and technology, which is an example of successful bilateral activities. Every two years the programme launches competitive calls for co-financing of joint research projects. Project criteria are: importance of research results for economic and social development of BiH, scientific value and/or research applicability, potential opportunities for participation in EU research projects, use of the research results for commercial purposes. On average, every year, 20-30 teams apply to these calls. The Joint Committee for Scientific and Technological Cooperation of BiH and Slovenia evaluates the proposals and retains the best for financing.
Request for Determination of Equality of the University Diplomas (ongoing)	Between BiH and Croatia, former Yugoslav Republic of Macedonia, Italy, Liechtenstein, Montenegro, Serbia and Slovenia.

Source: Deloitte

Inward mobility (funding)

The major difficulty in promoting mobility patterns is the lack of a specific institution, or any type of formal organisation dealing with mobility issues, as well as the insufficient infrastructure for exchange and dissemination of information related to researcher mobility.

One of the major administrative barriers to researchers' mobility is the process of recognition of foreign degrees in Bosnia and Herzegovina, regardless of the nationality of the person.

The table below summarises some efforts on behalf of the Ministry of Civil Affairs to promote researcher inward mobility.

Table 7: Measures supporting researchers' inward mobility

Measure	Description
Development of Bosnia and Herzegovina's Network of Mobility Centres (BAMONET) (2010-2013)	The objective of the project is to develop a network of mobility centres for researchers at public universities. The role of these centres is to offer quality and consistent services and personalised assistance to mobile researchers, especially researchers from Europe and worldwide, who want to start or continue their scientific career in BiH. The project is funded by the European Commission through the 'PEOPLE' programme of FP7. The participants are the Ministry of Civil Affairs (project coordinator), the University of Banja Luka ('Bridgehead' partner) and the University of Sarajevo (partner). The EURAXESS Centre BiH was set up as part of this project, as were two other service centres (one at the University of Banja Luka and the other at the University of Sarajevo). They communicate with other public universities. The intention of the project is to expand this network to other universities and institutions, both public and private, interested in science and research.
EURAXESS Centre BiH (2011)	The EURAXESS Centre BiH at the University of Banja Luka is the starting point for the establishment of one official institution to deal with diploma recognition issues.

Measure	Description
National Contact Points (NCP) structure	The NCP structure aims to provide assistance to researchers and the academic community to participate in Framework Programme 7 funding projects. In this respect, the role of PEOPLE NCP is very important in promoting mobility programmes (PEOPLE programme and Marie Curie Actions) and providing personalised assistance to interested researchers, organisation of info days, etc. The NCP structure in BiH is funded through an Austrian Development Agency project and it is coordinated by the Ministry of Civil Affairs of Bosnia and Herzegovina.

Source: Deloitte

Finally, the budget of the Republic of Srpska covers all the relevant costs of the inward mobility of teachers at public universities.

Outbound mobility

Bosnia and Herzegovina is facing a brain drain. Official statistical data showing the number of professionals and researchers who have left the country or data on inward mobility funding are not available. Researchers return to BiH only if there is no possibility of extending their research abroad, or when they are obliged to return when a project comes to an end.

Researchers' outbound mobility (like inward mobility) is very limited and usually occurs as part of research projects funded by the EU or other donors. Within the scope of the various projects, researchers have the chance to spend some time in another country in order to meet specific project goals, work further on capacity building or educate researchers in some fields where there are skill shortages.

In cooperation with the academic world, the Ministry of Education and Culture of the Republic of Srpska has developed the Rulebook on Co-financing of Mobility Programmes (for academic staff and students) and Projects of Student Organisations. The objective of this document is to encourage and promote researcher mobility.

Promotion of 'dual careers'

The governments in Bosnia and Herzegovina do not actively promote policies/measures supporting researchers' dual-careers.

Portability of national grants

In Bosnia and Herzegovina, publicly funded grants or fellowships are portable to other EU countries only for local students.

Access to cross-border grants

In Bosnia and Herzegovina, national grants or fellowships are not open to non-residents.