EURAXESS Country in Focus: Serbia

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1 EURAXESS Country in Focus: Serbia

1.1 Introduction of the national research landscape

Outlook of R&D ecosystem

In terms of both quantity and quality, R&D landscape is dominated by state and public research organisations. There are seven public universities with 89 faculties acting as independent legal units involved in tertiary education and R&D. Some of the universities host research institutes, while the other organisations are either independent or affiliated to Serbian Academy of Sciences or Arts.

Research funding

Most of the research funding comes from the Ministry of Education, Science and Technological Development which runs the framework, comprised of the basic science, technology development and interdisciplinary research actions. However, this framework is expected to be significantly revamped in 2019, as a result of recently passed legislation on National Science Fund.

Since 2011, the Serbian Innovation Fund implements various financial aid instruments for fostering the establishment of new and strengthening the existing innovative companies, by allowing them to access venture capital markets, and by attracting foreign direct investment in the high-tech research and development sectors. It also awards successful industry-academia collaborations through the Collaborative Grant Scheme for R&D Organisations and Private Sector Enterprises; it helps different stakeholders focusing on the technology transfer aspect of innovation through the Technology Transfer Facility programme; and it implements a number of mini and matching grants.
Research impact

For years, especially since 2009, Serbia is regularly being endorsed as a rising star in different scientific fields as it has achieved the highest percentage increase in total citations, based on bi-monthly Essential Science Indicators from Clarivate Analytics. According to Scimago Journal & Country rank, Serbia is ranked as 57th in number of citations, better than many European countries.

Regarding the participation in Horizon 2020 framework, Serbia is one of the top performers in the region, with 76.3 million € of net EU contribution and 158 unique participants. When considering its very low national investment in science and research (0.89% of GDP in 2017), all this can be taken as an exceptional result and reflection of its highly skilled work force in this domain.

Open science

In 2018, Serbian government formally adopted a national open science policy. The policy mandates deposits of all publicly funded research in open access (OA) repositories and recommends OA to research data. It also places a call to organisations for adopting institutional policies and repositories in the next six months. This is the latest addition to previous initiatives, such as local directories of OA journals (doiSerbia and SCIndeks) and national open access portal for PhD theses and dissertations.

About PhD studies

All public universities have accredited doctoral programmes in different scientific fields, welcoming also international students. The outlook of those programmes is very similar to the ones of other European academic organisations; it takes 3 years to complete, it involves attending courses (typically in the first 3 semesters) and independent research (second 3 semesters). The admission to a doctoral programme is conditioned to the completion of a master’s degree programme. Typically, the successful completion is conditioned by the results published or accepted for publication in scientific journals with a given impact factor associated to it. Every doctoral student has typically one mentor. Formally, there are three committees involved in the development of a doctoral thesis. First, there is the committee approving the subject and the title of the thesis. Second, the committee responsible for evaluating the thesis, and the third committee, appointed for the defense procedure.
Top research performers

Besides major public universities in Belgrade, Novi Sad, Kragujevac and Niš, top research performers (based on national funding) in Serbia include: Institute of Physics, Vinča Institute of Nuclear Sciences, Institute Mihajlo Pupin, Institute for Biological Research „Siniša Stanković“ and Institute of Chemistry, Technology and Metallurgy.

1.2 International cooperation

International cooperation is one of the top priorities of the national R&D ecosystem. All universities have very active international cooperation offices, while there are also similar institutional initiatives on the faculty level. Serbia is associated to the European research funding frameworks since FP7 (2007) and it is considered as an equal opportunity stakeholder in ERA. It participates in the H2020 programme development (19 Programme Committee members), it is committed to supporting local scientists in grant development through the network of National Contact Points (17 NCPs) and mobility (5 EURAXESS Centres). For years, Serbian government maintains its own fund of science collaboration grants with a number of countries. Bilateral cooperation with People Republic of China is one of the recent additions to this programme and it has shown to be quite successful in the first round of funding (2017-2019).

Serbian participation in Marie Skłodowska-Curie Actions (MSCA)

According to MSCA Country profile, 40 foreign researchers have been hosted by Serbian R&D organizations in period 2014-2020, most of them in RISE actions. However, as the interest in national R&D landscape for participation is growing (68 different organizations have participated in some MSCA action in the period above), this number is expected to significantly increase in the future.

1.3 Working as a researcher and living in Serbia

Since 2013, Serbian organisations are involved in achieving the highest level of commitment to the principles of The European Charter and Code for Researchers (so called, Charter and Code), demonstrating their care for human resources as the Country's most valuable asset. In the period of 2013-2019, all public universities have been awarded HR Excellence in Research label by the European Commission as an endorsement to successfully implemented HR management policies.

Work culture in Serbia is similar to the one dominant in Mediterranean countries. People prefer informal behavior and open communication; they cherish personal relationships. Serbs tend to respect the deadlines, agreements and obligations. Fluency in foreign language (especially English) is very high.

According to the statistical office of Republic of Serbia, out of 16,000 researchers employed in different R&D organisations (including industry),
50.04% are women. Some under-representation is visible at management layers though: 38.3% of all managers of R&D organisations are women.

Despite the rising quality of living and modern facilities, Serbia is still a cheap country to live in. Based on Numbeo online service index, it is ranked 89th of 119 countries, more expensive than Turkey, Philippines, Mexico and India, slightly cheaper than Russia, Bulgaria, Poland and China. According to Numbeo crowd-sourced data, the typical basket of goods and services for 3-member household with apartment rent costs approx. 1,600 EUR (for comparison, the cost of the same basket in Amsterdam is 5,000 EUR, in Boston, USA: 6,400 EUR).

On the latest release of the Transparency International corruption perception indexes, Serbia takes 72nd position (of 176 countries), with the global average score.

**EURAXESS Serbia**

Serbia joined EURAXESS in 2009. Since 2011, 5 EURAXESS Service Centres are continuously providing support to researchers on the topics such as relocation and career development. Since 2017, two Career Development centers (in Belgrade and Niš) are actively involved in the network. EURAXESS Serbian coordinator (Faculty of Mechanical Engineering, University of Niš) is continuously and actively engaged in network collaboration, especially in EURAXESS portal development (leader of TOPIV WP8 Open EURAXESS portals) and Open Science initiative, HRS4R assessment, different think-tanks (WG Network Management) and service data analysis (EURAXESS Service Data tool).

**1.4 Scientific cooperation Serbia and India**

In December 2016 representatives of the Department of Science and Technology of the Government of India and representatives of the Ministry of Education, Science and Technological Development of the Republic of Serbia met at the University of Belgrade and prepared the *Science and Technology Cooperation Program between the Government of India and the Government of the Republic of Serbia*.

In October 2017 the second session of the Joint Serbian-Indian Commission for scientific and technical cooperation was held. The Protocol of the Second Session of the Mixed Serbian-Indian Commission was agreed and signed, as well as the Cooperation Programme in fields of science and technology between the Ministry of Education, Science and Technological Development of the Republic of Serbia and the Science and Technology Department of the Ministry of Science and Technology of the Republic of India.

This science and technology cooperation programme between the two countries foresees that the first call for proposals will be preceded by two workshops related to priority areas of cooperation (information and communication technologies and biotechnology). Recently the both sides agreed to launch the first call for the joint project proposals in the second half of 2019, and to organize both of previously planned workshops in 2020.
2 Hot topic – Doctoral training in Europe

2.1 About Doctoral education

"Doctoral education is a primary source of new knowledge for the research and innovation systems in Europe. The outcomes of doctoral education are both:

a) young researchers who proved their skills for a professional life as "creative, critical and autonomous intellectual risk takers", and "those who go into roles beyond research and education, in the public, charitable and private sectors, where deep rigorous analysis is required.", as pointed out by LERU, "as well as

b) the research output in the form of a doctoral thesis that contributes to the development of world science and the innovation system."

2.2 Background

In its Report of Mapping Exercise on Doctoral Training in Europe "Towards a common approach" in 2011, the European Commission (EC) aimed at "shaping the future of doctoral training in the context of the Innovation Union policy. [...] Doctoral training is a primary progenitor of new knowledge, which is crucial to the development of a prosperous and developed society. Developed economies rely on new knowledge and highly skilled knowledge workers to feed a process of continuous innovation. They rely also on adequately trained responsible citizens that can adapt to changing environment and can contribute to the common good. Grand societal challenges like climate changes and healthy ageing require complex solutions based on high level frontier research carried out by new generations of researchers.

Several initiatives have been taken to identify and promote good practice in doctoral training, most notably [...]" by the European University Association (EUA). "In the framework of the Bologna process, the European University Association (EUA) launched in 2005, after extensive consultation through a structured bottom-up process, Conclusions and Recommendations on Doctoral Programmes for the European Knowledge Society, better known as "Salzburg Principles". These principles were confirmed and enriched, in 2010, in the Salzburg II Recommendations."

2.3 Seven Principles for Innovative Doctoral Training

Based on the initiatives cited above and many other (by the League of European Research Universities LERU, Coimbra Group, different thematic and international initiatives), as well as good practices in Member States and the Marie Curie experience, the European Commission identified seven
principles composing a common approach to enhance the quality of doctoral training in Europe.

1. Research Excellence
2. Attractive Institutional Environment
3. Interdisciplinary Research Options
4. Exposure to industry and other relevant employment sectors
5. International networking
6. Transferable skills training
7. Quality Assurance

More visually:


These principles have been endorsed in the Council conclusions on the modernization of higher education, Brussels, 28-29 November 2011.

The Council calls on institutions and Member states "to link, where relevant and appropriate, national funding to the Principles for Innovative Doctoral Training". With that aim, the European Commission is supporting National funding agencies through the Marie Skłodowska-Curie Actions COFUND scheme that covers the co-financing of national or institutional doctoral training programmes in compliance with the 7 principles.
2.4 A diversified European higher education system

The EC 7 principles were not meant to be constraining and are rather considered by EU member states and associated countries as a “guiding tool” to inspire in the reforms in doctoral training and education in Europe. Doctoral training remains very different from a country to the other. It can also vary within a country across universities, faculties/departments or disciplines. It is important to note that, as stated by LERU, those “varied practices [...] successfully achieve high quality doctoral education within a vigorous research culture and these must not be stifled.”

For more details on how doctorate training is organised in the different European member states and associated countries, check EURODOC survey on the Doctorate structures across Europe [here](#).

To date, country fiches were published on Croatia; Czech Republic; Italy; Netherlands; Norway; Poland; Slovenia; Spain; Switzerland; Ukraine.

2.5 Marie Skłodowska-Curie Actions and innovative doctoral training

MSCA is a European Commission research fellowship programme. It is funded under the framework programme for research and innovation [Horizon 2020](http://ec.europa.eu/euraxess/). Under Marie Skłodowska-Curie Actions (MSCA) structured research and training programmes are based on the [Principles for Innovative Doctoral Training](http://ec.europa.eu/euraxess/)(European Commission, 2011).

About Innovative Training Networks (ITN)

ITN is the main European doctoral training programme. The objective of the MSCA ITNs is to train a new generation of creative, entrepreneurial and innovative early-stage researchers able to face current and future challenges and to convert knowledge and ideas into products and services for economic and social benefits. The projects funded will allow structuring and raising doctoral training at European level by providing researchers with enhanced career perspectives both in the academic and non-academic sectors through international, interdisciplinary and inter-sectoral mobility combined with an innovation-oriented mind-set.

Innovative training networks bring together universities, research institutes and other sectors from different countries worldwide. The maximum duration of an ITN project is 4 years. All research areas can be funded.

There are three types of Innovative Training Networks:

1. **European Training Networks (ETN)**

   Joint research training, implemented by at least 3 partners from in and outside academia. The aim is for the researcher to experience different sectors and develop their transferable skills by working on joint research projects.

   The organisations should be established in at least 3 different EU or associated countries. Additional participants can join from across the world, including India.
2. **European Industrial Doctorates** (EID)

Joint doctoral training delivered by at least one academic partner entitled to award doctoral degrees, and at least one partner from outside academia, primarily enterprise. Each participating researcher is enrolled in a doctoral programme and is jointly supervised by supervisors from the academic and non-academic sector, where they spend at least 50% of their time.

The aim is for the doctoral candidates to develop skills inside and outside academia that respond to public and private sector needs. The organisations should be established in at least two different EU or associated countries. A wider set of partner organisations from anywhere in the world may also complement the training.

3. **European Joint Doctorates** (EJD):

A minimum of 3 academic organisations form a network with the aim of delivering joint, double or multiple degrees. Joint supervision of the research fellow and a joint governance structure are mandatory. The aim is to promote international, intersectorial and multi/interdisciplinary collaboration in doctoral training in Europe. The organisations should be from different EU or associated countries. The participation of additional organisations from anywhere in the world, including from the non-academic sector, is encouraged.

**ITN calls and positions**

ITN annual calls are open to consortia of organisations such as universities, research centres or companies, that propose a research training network, including Latin American and Caribbean institutions. Check MSCA calls 2019 calendar [here](#) to know when the annual call will be announced and read the [guide for applicants](#) for more details. Please note, that the call is not open to individual researchers/students. => Indian researchers interested in high quality doctoral-level training in and outside academia can apply to the PhD positions created by these networks. They are advertised on the Euraxess Job portal and many will be published in the coming months to start your PhD in September.

Sources:

- Report of the ERA Steering Group Human Resources and Mobility (ERA SGHRM) [Using the Principles for Innovative Doctoral Training as a Tool for Guiding Reforms of Doctoral Education in Europe](#);
- LERU Advice paper no 19, March 2016, [Maintaining a quality culture in doctoral education at research-intensive universities](#): eurodoc
2.6 Meet the researcher: Interview with Aparna Chandrasekar

What led you to pursuing research in Europe?

The research work conducted by me during my Master thesis work motivated me to pursue a PhD. Being accepted as a Marie-Curie Fellow at the TU Dresden in Germany, was the best start to my research career. The budget allocated for research and personal expenses is the highest obtainable by a researcher in Europe. This allowed me to think freely, explore new ideas and even set-up individual experiments. In addition, I had the opportunity to work temporarily in other research labs in Europe, via secondments. This independence and encouragement provided me with an excellent groundwork.

Furthermore, I had the opportunity to attend seminars given by experts in the field of wastewater and antibiotic resistance, by attending training events organized by the beneficiary universities collaborating in the ANSWER project, and international conferences in this field.

In your experience, what are the advantages of MSCA fellowships?

A Marie-Curie fellow is required to disseminate research knowledge to the public, by organizing school talks, radio talks, visits to end users, press articles, Café Scientifique events, Open Science days and making video clips. The conduction of these activities enabled me to hone my communication skills (verbal, written, presentation) and organization skills. Simplifying research results and spreading knowledge on environmental problems like antibiotic resistance enabled me to develop skills beyond academic expertise. Overall, being a Marie-Curie fellow is the best impetus for a young researcher, towards a successful career.

Early Stage Researcher funded by the European Union Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie research project “ANTibioticS and mobile resistance elements in WastEwater Reuse applications: risks and innovative solutions (ANSWER)” (H2020-MSCA-ITN-2015/675530). After completing her degree in Chemical Engineering from B.M.S. College of Engineering in Bangalore, she moved to The Netherlands, to pursue a Master degree in Chemical Engineering.

http://ec.europa.eu/euraxess
In your four years as Head of Science and Technology Section at the German Embassy in India, what have been the most important developments between the two countries?

Science and Technology is a very important pillar of our bilateral relations. We have developed numerous comprehensive long-term programmes, institutions and partnerships, such as the Indo-German Science and Technology Centre (IGSTC) or the German Centre for Research and Innovation (DWIH) New Delhi. Our cooperation is therefore less based on individual, short-term ad-hoc initiatives than in the past. This is a very solid foundation for the future.

Where do you see Indo-German collaboration developing in the coming years?

Today, excellent science is internationally oriented. India is becoming an increasingly important and interesting partner, e.g. in developing scientific solutions to global challenges such as climate change or antibiotic resistance. There is a great deal of potential for further expanding cooperation both in basic research and in applied research in the natural sciences as well as in the humanities and social sciences.

What role does innovation play in this collaboration?

Germany is one of the most innovative countries in the world. India requires both high-tech and frugal innovations to cater to its large population. Innovation therefore plays a pivotal role in our cooperation. Innovation is also the focus for the German Centre for Research and Innovation (DWIH New Delhi). DWIH has also organised various events in this field in the past years.

For German researchers, what are benefits from working in a collaborative project funded by Horizon 2020 joint India-EU Calls?

For both German and Indian researchers, the benefit of working in a collaborative EU project is the multilateral dimension which the EU projects give. Not only can a German researcher work with an Indian partner but have multiple partners including ones from EU partner countries. This widens the horizon and gives EU researchers another platform to work with each other.

Which areas of research benefit the most from India-Germany collaboration?

A large number of Indian students visit Germany for higher studies and research in the STEM subjects. A lot of collaborative projects are also in natural sciences and technology. With some new initiatives, we are also trying to promote collaborative projects and joint research in the area of social sciences and humanities as well.
What advice do you have for Indian researchers who seek collaboration with German partners?

My advice to Indian researchers would be to do some ground work and look for potential partners in Germany. It is important to take a targeted approach and carefully select suitable partners which have the right profile. Once you have found a partner, there are many ways to finance joint projects. On the German side, traditionally a variety of scholarship and funding programmes is available. Recently the Indian Government has launched some excellent initiatives like GIAN and SPARC. In addition, there are bilateral programmes and funding platforms, such as the Indo-German Science and Technology Centre. My advice to both Indian and German researchers would be to take maximum advantage of these programmes and platforms.

The number of students from India in Germany is increasing. In your eyes, what makes Germany such an attractive study destination?

High quality teaching and research, a large number of degree courses being offered in English language, low or no tuition fee at German Universities and great career prospects make Germany an attractive destination.

What advice would you give Indian students aspiring to study in Germany?

Studying in Germany is both challenging and rewarding. Germany offers excellent conditions. Nevertheless, international students must meet the academic requirements and prepare well for their stay. My advice to Indian students would be to check out the conditions and collect all information required either by contacting the German Academic Exchange Service (DAAD) or the International Office of the University of their choice and carefully make all necessary arrangements including applying for a student visa in time.

After spending the last four years in India, what will you miss the most?

I will miss many, many people with whom I have had the honour and pleasure of working here for the past four years, resulting in many successful projects. I have made many friends here and it is hard to leave all these great and fascinating personalities.

Besides, I love mangoes and it is very hard to leave India in the middle of the mango season.

Thank you, Mr. Lanzinger!
4 In case you missed it...

4.1 From our Flashnotes (July - September)

(click on the respective link for more details)

Selected News and still open Calls (in order of publication on EURAXESS India website):

News: European Research Council announces €2.2 billion for funding frontier research in 2020 and calendar of calls

News: More than 10,500 researchers to be funded in 2020, with €1,046 billion allocated to the Marie Skłodowska-Curie Actions

Call: Spain: CONEX-Plus Programme-20 Postdocs Fellowships

News: Six Eminent Scientists and Scholars Appointed to the ERC Scientific Advisory Council

Call: Individual FRIAS COFUND Fellowship Programme (FCFP) for the academic year 2020/21

News: Have your say on future objectives for EU-funded research and innovation

News: Global Young Academy Call for New Members

Call: ERC Synergy Grant Call 2020 is now open - apply before 5 November 2019

News: 1000th ERC Proof of Concept grant awarded

News: ERC grants and Horizon 2020 projects in ICT and energy generate flurry of patents

News: Impact of ERC-funded research confirmed by independent study

Call: Sweden: 15 PhD positions in the European project “SHAPE-IT”

Call: 15 Fully funded PhD Positions in the EU Funded Project and Networking for Beyond 5G

News: ERC calls - calendar 2019 & 2020

Call: REinforcing Women In REsearch (REWIRE) MSCA COFUND Programme

Call: Up to 5 PhD-fellowship positions - ICFO International PhD Program in Barcelona, Spain

Call: Call for papers: Virtual Exchange – borderless mobility between the European Higher Education Area and regions beyond

Call: 15 PhD Positions on MSCA ITN “Healthage - Lifespan Regulation Mechanisms in Health and Disease”

Call: Newton Bhabha Fund PhD Placements
Call: Postdoctoral Junior Leader Fellowships Programme in Spain and Portugal (MSCA COFUND)

Call: Open positions in doctoral programme "Dynamics of Complex Continua" in Austria (MSCA COFUND)

Call: Post-doc fellowships to conduct research in Turkey (MSCA-COFUND)

Call: India-UK Tackling AMR in the Environment from Antimicrobial Manufacturing Waste

News: Open to the world: 51 Nationalities among winners of 2019 ERC STARTING GRANTS

4.2 Event Outlook

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<th>Location</th>
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<td><strong>1 Europe/Outside India</strong></td>
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<tr>
<td>Engineering PhD Summit</td>
<td>Lausanne, Switzerland</td>
<td>2-4 October</td>
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<td><strong>Germany: Postdoctoral Researchers’ Networking Tour 2019</strong></td>
<td>Germany</td>
<td>22-28 September</td>
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<td>Basel Life 2019</td>
<td>Basel, Switzerland</td>
<td>9-12 September</td>
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<tr>
<td>European Research and Innovation Days in Brussels</td>
<td>Brussels, Belgium</td>
<td>24-26 August</td>
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<td><strong>2 India</strong></td>
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<td>Dystopian Futures of the Past: Artificial Intelligence (AI) and its Social Impact through Film and Literature</td>
<td>New Delhi</td>
<td>13 September</td>
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<td>European Research Day</td>
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<td>EURAXESS Science Slam India</td>
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About us

**EURAXESS India** is a networking tool for European researchers active in India and for Indian and international researchers wishing to collaborate with and/or pursue a career in Europe. EURAXESS India provides information about research in Europe, European research policy, opportunities for research funding, for EU-India and international collaboration and for trans-national mobility. Membership is free.

Visit us at [india.euraxess.org](http://india.euraxess.org) and Join the EURAXESS India community.

EURAXESS Worldwide has dedicated teams in the following countries and regions ready to assist you: ASEAN (focus on Singapore, Thailand, Indonesia, Malaysia, and Vietnam), Latin America and the Caribbean (LAC, focus on Brazil, Argentina, Chile, Mexico, and Colombia), China, India, Japan, Korea, and North America (USA and Canada). Additionally, a EURAXESS information website for Australia and New Zealand went online in June 2018.