

The Researchers Report 2012
Country Profile: former Yugoslav Republic of
Macedonia



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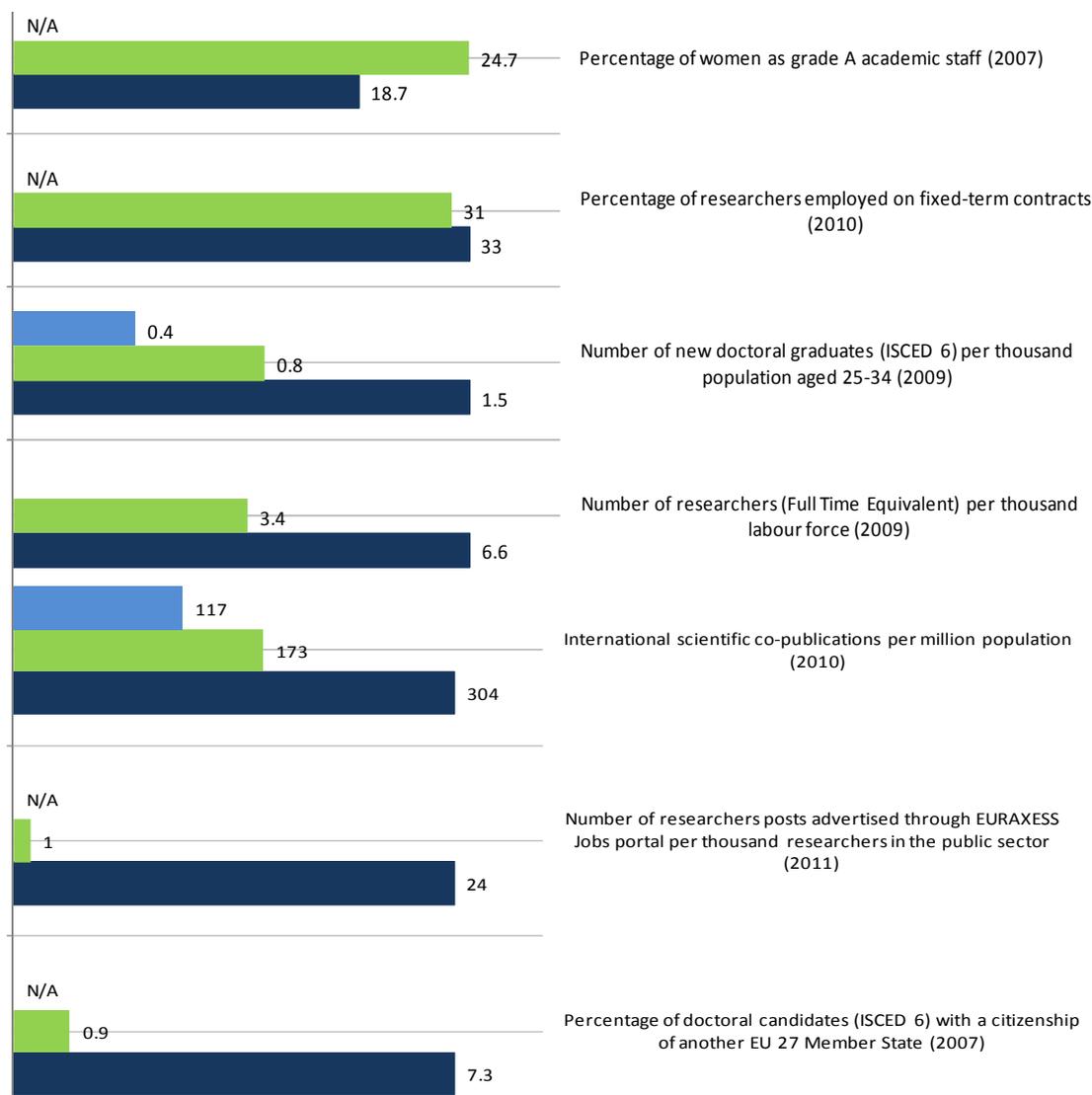
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1. Key data

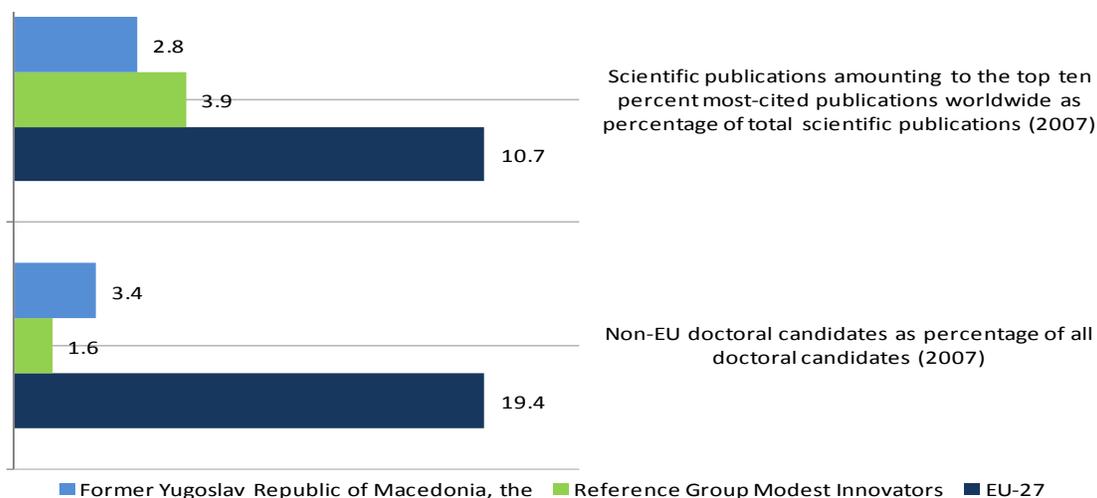
Key indicators measuring the country's research performance

The figure below presents key indicators measuring the former Yugoslav Republic of Macedonia's research performance against a reference group and the EU-27 average¹.

Figure 1: Key indicators – former Yugoslav Republic of Macedonia (F.Y.R.O.M.)



¹ The values refer to 2011 or the latest year available.



Source: Deloitte

Data: Based on the average innovation performance, the former Yugoslav Republic of Macedonia belongs to the group of Modest Innovators showing a performance well below that of the EU-27².

2. National strategies

In the former Yugoslav Republic of Macedonia, the Ministry of Education and Science is fully responsible for the development and administration of national R&D funding as well as for research and education policy. The ministry's Department of Science and Technology Development decides on the promotion of education and science, the development of the national science system, the technological development and international scientific-technical cooperation.

The table below presents key programmes and initiatives intended to implement the strategic objectives to train enough researchers to reach the country's R&D targets, to promote attractive working conditions, and to address gender and dual career issues³.

Table 1: National strategies

Measure	Description
Industrial Policy 2009-2020	The Industrial Policy presents a structured and guided development path for the country's innovation, including in the following key areas: applied research, development and innovation, collaborative approaches for enhancing competitiveness, human resource development and knowledge creation, internationalisation, etc. Cooperation across entities, and between universities and industry in undertaking scientific research activity is strongly promoted.
National Strategy for the Development of Education 2005 - 2015	The purpose of the strategy is to create opportunities for improving education and training, research, development and promotion of cultural values for young people and adults. It also strengthens the collaboration between industry and academia. The Strategy also requires that by 2015 the Ministry of Education and Science increase the university intake to 3 500 students per 100 000 inhabitants, so that the minimum required in the developed European countries can be reached.
National Innovation Strategy for 2012-2020 (planned)	The main objective of the National Innovation Strategy is to respond to the challenges of the absence of a domestic strategy and policy for developing a National Innovation System. The strategy deals with issues of concentration of research activities at one university, overlapping responsibilities between the Ministry of Education and Science and the Ministry of Education, and the low level of awareness and demand for innovation. The strategy is also expected to propose tax incentives for companies that invest in R&D and an intensified focus on entrepreneurial learning at all levels of education.
Programme for Scientific and Research Activities (year)	The objective of the Programme for Scientific and Research Activities is to encourage and support the research community in several areas with appropriate state budget

² European Commission (2011), "Innovation Union Scoreboard 2010".

³ F.Y.R.O.M. Country Page. Erawatch, Available at:

http://erawatch.jrc.ec.europa.eu/erawatch/opencms/information/country_pages/mk/country?section=Overview Accessed 19.04.2012.

Measure	Description
	<p>funds. The Programme targets the public and private universities, faculties, the Academy of Sciences and Arts, independent research institutions and individual researchers. It is implemented via annual programmes and provides government funding for:</p> <ul style="list-style-type: none"> – scientific research projects (national and international); – publishing activity; – scholarships for young researchers; – organisation of national scientific conferences; – participation of scientific researchers in international conferences, seminars, congresses and symposiums; – study trips; – public institutions' programmes; – purchase of foreign literature; – access to electronic databases.
Programme of the Government for the period 2008-2012	<p>The Programme aims to set strategic priorities and goals for the period 2008-12 in different areas, such as economic development, e-society, education, science, R&D, etc. The Programme implements the following reform measures and policies:</p> <ul style="list-style-type: none"> – increased investments in scientific research infrastructure in order to create a foundation for the use of modern research methods; – promotion of cooperation with scientific-research institutions from abroad to enable better knowledge transfer; – creation of possibilities for joint degrees with foreign universities; – establishing strict and fair selection criteria for staff employment in scientific research institutions; – supporting cooperation between scientific research institutions and economic institutions.
Strategy for Scientific–Research Activity (year)	<p>The primary goal of the Strategy for Scientific–Research Activity is to create a knowledge-based society through increased expenditure on research and technological development, rising to 1.8% of GDP by 2020, with a private sector share of 50%.</p>
Legal framework for scientific research and technological development	
<p>Law on Scientific and Research Activities, Law on Encouragement and Support of Technological Development (2011), Law on the Academy of Sciences and Arts, Law on Higher Education (2010), Law on Industrial Property.</p>	

Source: Deloitte

3. Open, transparent and merit-based recruitment

EURAXESS Services Network

The former Yugoslav Republic of Macedonia has developed its own EURAXESS portal (<http://www.euraxess.mk/>) where researchers can find available information on life and work in the country.

4. Education and training

Measures to attract and train people to become researchers

The government developed the 'Higher Education for All' policy, as part of the Programme of the Government 2008-2012. The goal is for 25% of the population to receive higher education by 2012. To achieve this strategic goal and enable a larger group of students to enrol at universities, in 2008 the government opened a new university in Shtip, as well as new faculties in bigger cities with decreased or no tuition fees⁴. The table below shows the number of tertiary education graduates between 2006-2009.

Table 2: Tertiary education graduates per gender (2006-2009)

Bachelor's degree graduates	2006	2007	2008	2009
Male	2 185	3 218	4 352	4 321
Female	4 028	5 142	6 486	5 911
Total	6 213	8 360	10 838	10 232

Source: Deloitte

⁴ F.Y.R.O.M. Country Page. Erawatch, Available at: http://erawatch.jrc.ec.europa.eu/erawatch/opencms/information/country_pages/mk/country?section=Overview Accessed 19.04.2012.

Data: ERAWATCH website⁵

Doctoral graduates by gender

The table below shows the number of doctoral graduates in the former Yugoslav Republic of Macedonia by gender as a ratio of the total population.

Table 3: Doctoral graduates by gender

Indicator	F.Y.R.O.M.	EU average
New doctoral graduates (ISCED 6) per 1 000 population aged 25-34 (total) (2009)	0.4	1.5
Female Graduates (ISCED 6) per 1 000 of the female population aged 25-34 (2009)	0.4	1.4
Male Graduates (ISCED 6) per 1 000 of the male population aged 25-34 (2009)	0.3	1.6

Source: Deloitte

Data: Eurostat

Funding of doctoral candidates

As part of the Programme of the Government 2008-12, the government provides scholarships and other funds for students. For instance, PhD or master's studies candidates enrolled in one of the top 100 world universities or top 20 European universities from the Shanghai Jiao Tong University ranking receive funding for their complete costs during their studies. The Ministry of Education and Science also awards scholarships for undergraduate, post-graduate and doctoral studies at local universities. All scholarship candidates are selected through competitive calls⁶.

Measures to increase the quality of doctoral training

The project entitled 'Equipping Laboratories for Scientific Research and Applicative Activities' (2009-14), aims to advance research at state universities and public scientific organisations by creating and equipping research laboratories. The first list of 22 laboratories selected for financing was announced in October 2010. By the end of the project it is expected that a total of 130 laboratories will have received finance totalling EUR 60 million⁷.

5. Working conditions

Autonomy of institutions

There are five state universities, ten private universities and nine private higher education institutions, supervised by the Ministry of Education and Science and established by the Law on Higher Education (2010).

The Decree on Norms and Standards for Establishing Higher Education Institutions and Performing Higher Education Activities (2010) defines the criteria required for the accreditation of the Higher Education Institutions (HEIs) and evaluation of their scientific research. One of the mandatory requirements for universities is the involvement in the educational process of professionals with experience in business⁸. The Ministry of Education and Science ensures that the criteria are met through the Evaluation and Accreditation Board for Higher Education in the country.

The national universities are granted full autonomy under the Law on Higher Education (2010), including academic freedom and management autonomy in recruitment of teaching and research staff.

Career development

The Law on Higher Education (2010) introduces stronger criteria for obtaining a PhD degree as well as for promotion of academic staff to professors' positions at the national Universities⁹. The general human resources policy, which is common to all existing older public universities, is to recruit from those university students who have achieved the best results during their undergraduate and/or post graduate study. The only exception is the new public University for Information Science and Technology. This hires experienced professors from abroad. The private universities have specific human resource policies in line with their strategies.

⁵ Ibid.

⁶ Ibid.

⁷ Ibid.

⁸ F.Y.R.O.M. Country Page. Erawatch, Available at:

http://erawatch.jrc.ec.europa.eu/erawatch/opencms/information/country_pages/mk/country?section=Overview Accessed 19.04.2012.

⁹ Ibid.

6. Collaboration between academia and industry

The Memorandum for Cooperation between the main universities and chambers encourages them to cooperate via the organisation of mutual training programmes. Enterprises which are members of the chambers provide internships for students.

In 2010, the government made a 30-day internship in a company or government institution compulsory for all students in line with the objectives of the 'National Strategy for the Development of Education 2005–2015' for strengthening university-industry collaboration¹⁰.

7. Mobility and international attractiveness

In 2007, the percentage of non-EU doctoral candidates as a percentage of all doctoral candidates was 3.4% in the former Yugoslav Republic of Macedonia compared with 1.6% among the Innovation Union reference group and an EU average of 19.4%¹¹.

The EURAXESS Services Network supports the mobility of researchers both to and from the country. The participation of the national researchers in EU programmes is strongly encouraged by the government. Research mobility is mainly achieved through bilateral agreements between universities and through EU programmes, such as Erasmus Mundus, Marie Curie, etc¹².

The former Yugoslav Republic of Macedonia has signed bilateral cooperation agreements for education, science and technological development with 20 countries (nine EU and eleven non-EU):

- EU: Austria, Bulgaria, France, Hungary, Germany, Italy, Poland, Slovenia, and Spain;
- non-EU: Belarus, Bosnia and Herzegovina, China, Croatia, Egypt, Israel, Japan, Kosovo, Russian Federation, Turkey, USA.

Over the period 2006-2010, the Ministry of Education and Science carried out a total of 109 scientific research projects and awarded 45 scholarships under the bilateral agreements. These agreements cover:

- Expert exchanges;
- Cooperation between higher education institutions;
- Scholarships;
- Joint scientific research projects;
- Exchange of information and publications; and
- Other forms of cooperation as agreed between the parties.

The main areas of international cooperation are: agriculture, biotechnology, food processing, chemistry, pharmaceutical research, and environmental protection.

Of the total of 109 projects, 67 were with EU countries with a total value of EUR 0.676 million and 42 projects with non-EU countries with a total value of EUR 0.448 million.

In 2010, the Ministry of Education and Science signed an agreement with the Israeli company MP Labs for the implementation of international projects involving students from the former Yugoslav Republic of Macedonia.

The former Yugoslav Republic of Macedonia has also developed cross-border cooperation in support of projects that will include cooperation of institutions and organisations from both the former Yugoslav Republic of Macedonia, and organisations and institutions from Albania, Bulgaria, Greece, Kosovo and Serbia.

¹⁰ Ibid.

¹¹ See Figure 1 "Key indicators – former Yugoslav Republic of Macedonia".

¹² F.Y.R.O.M. Country Page. Erawatch, Available at:

http://erawatch.jrc.ec.europa.eu/erawatch/opencms/information/country_pages/mk/country?section=Overview Accessed 19.04.2012.