

Deloitte.

Researchers' Report 2013

**Country Profile: Former
Yugoslav Republic of
Macedonia**



TABLE OF CONTENTS

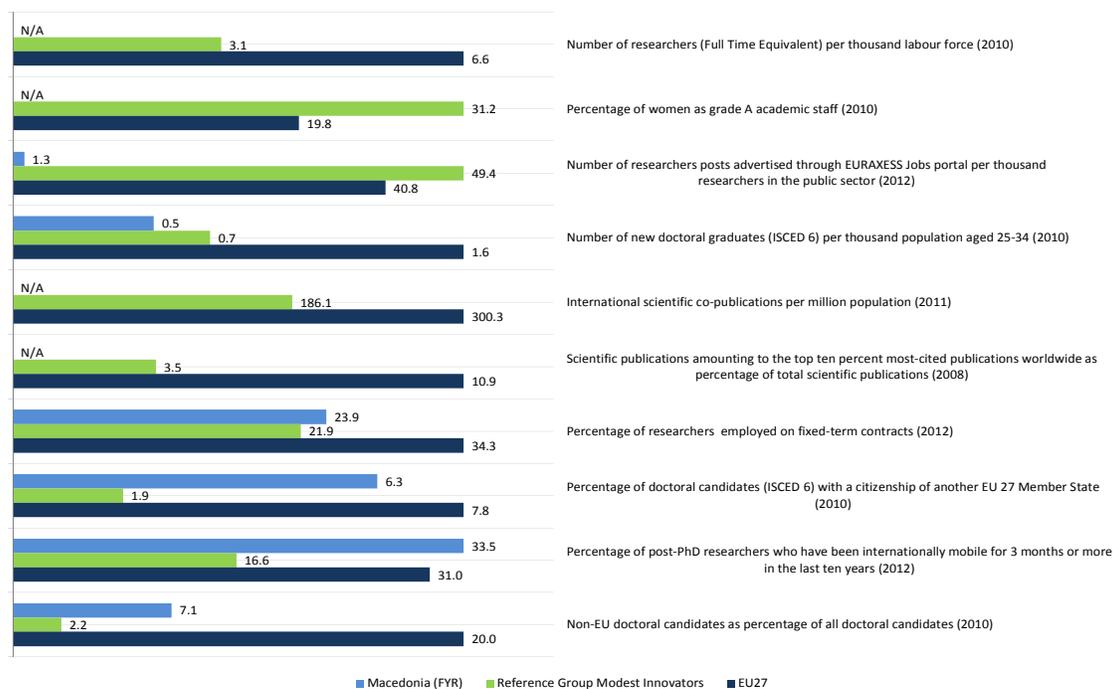
1. KEY DATA	3
<i>Key indicators measuring the country's research performance.....</i>	<i>3</i>
<i>Stock of researchers</i>	<i>3</i>
2. NATIONAL STRATEGIES.....	3
3. WOMEN IN THE RESEARCH PROFESSION	5
<i>Measures to support women researchers in top-level positions.....</i>	<i>5</i>
<i>Measures to ensure a representative gender balance.....</i>	<i>5</i>
<i>Maternity leave.....</i>	<i>5</i>
4. OPEN, TRANSPARENT AND MERIT-BASED RECRUITMENT	5
<i>Recruitment system</i>	<i>5</i>
<i>Open recruitment in institutions</i>	<i>5</i>
<i>EURAXESS Services Network</i>	<i>6</i>
5. EDUCATION AND TRAINING	6
<i>Measures to attract and train people to become researchers.....</i>	<i>6</i>
<i>Doctoral graduates by gender</i>	<i>6</i>
<i>Funding of doctoral candidates</i>	<i>7</i>
<i>Measures to increase the quality of doctoral training.....</i>	<i>7</i>
6. WORKING CONDITIONS.....	7
<i>Measures to improve researchers' funding opportunities</i>	<i>7</i>
<i>Remuneration</i>	<i>7</i>
<i>Researchers' Statute</i>	<i>7</i>
<i>'European Charter for Researchers' & 'Code of Conduct for the Recruitment of Researchers'.....</i>	<i>7</i>
<i>Autonomy of institutions.....</i>	<i>7</i>
<i>Career development.....</i>	<i>8</i>
<i>Social security benefits (sickness, unemployment, old-age)</i>	<i>8</i>
7. COLLABORATION BETWEEN ACADEMIA AND INDUSTRY	8
8. MOBILITY AND INTERNATIONAL ATTRACTIVENESS	8
<i>Outbound mobility.....</i>	<i>9</i>
<i>Access to cross-border grants</i>	<i>9</i>

1. Key data

Key indicators measuring the country's research performance

The figure below presents key indicators measuring former Yugoslav Republic of Macedonia's performance on aspects of an open labour market for researchers against a reference group and the EU-27 average¹.

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



Source: Deloitte

Data: Eurostat, SHE Figures, EURAXESS Jobs Portal, UNESCO OECD Eurostat education survey, Innovation Union Scoreboard 2013, MORE2

Note: 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.

Stock of researchers

The table below presents the stock of researchers by Head Count (HC) and Full Time Equivalent (FTE) and in relation to the active labour force.

Table 1: Human resources – Stock of researchers

Indicator	F.Y.R.O.Macedonia	EU Average/Total
Head Count per 1 000 active labour force (2010)	N/A	10.17
Head Count (2010)	1 727	2 435 487
FTE per 1 000 active labour force (2010)	N/A	6.64
Full time equivalent (FTE) (2010)	855	1 589 140

Source: Deloitte

Data: Eurostat

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.

¹ The values refer to 2012 or the latest year available

² European Commission (2013), "Innovation Union Scoreboard 2013"

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 2: 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 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.
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.
Programme for Scientific and Research Activities (2013-2017)	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 funds. The Programme targets 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: <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; and – Access to electronic databases.
Programme of the Government for the period 2008-2012	The Programme aimed 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 incorporated the following reform measures and policies: <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; and – Support for cooperation between scientific research institutions and economic institutions.
Stop Brain Drain Strategy (2013-2020)	The strategy aims to combat the brain drain and to actively encourage brain gain or the repatriation of national researchers that are currently working abroad. The strategy will address the key issue of stimulating brain circulation, harbouring a creative work force and investing in human capital.
Strategy for Scientific–	The primary goal of the Strategy for Scientific–Research Activity is to create a

³ F.Y.R.O.M. Country Page. Erawatch, Available at: http://erawatch.irc.ec.europa.eu/erawatch/opencms/information/country_pages/mk/country?section=Overview Accessed 19.04.2012.

Measure	Description
Research Activity (planned)	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%.
Legal framework for scientific research and technological development	
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.	

Source: Deloitte

3. Women in the research profession

Measures to support women researchers in top-level positions

The government has no policy measures to increase the number of women researchers in high-level positions in research, technology and innovation (RTD). However, in the Action Plan for Gender Equality 2007-2012, under the strategic objective for “gender balancing in the choice of educational occupations and profiles in secondary and higher educational institutions”, there is an activity planned to “initiate amendments and modifications to the legal and other regulations on enrolment policy from the perspective of gender equality”.

Measures to ensure a representative gender balance

The Action Plan for Gender Equality also mentions quotas as indicators for the activities planned; however no specific targets are set.

Maternity leave

Maternity leave provisions are not specifically regulated for scholarship or fellowship holders. Only if women are employed at an institution, are they entitled to maternity leave; otherwise this is not specified.

4. Open, transparent and merit-based recruitment

Recruitment system

The Law on public servants (2010) and the Law on civil servants (2000) regulate the recruitment procedure; for public institutions. The recruitment of public servants is seen as a transparent procedure based on the criteria of professionalism and competence, including the principle of “equitable representation of minorities”, published in at least two daily newspapers (in 2010). The Agency for Administration is responsible for the recruitment process and it further regulates these issues based on its own internal rulebooks.

Open recruitment in institutions

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

Table 3: 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	Yes	They publish job vacancies on their own websites.
– publish job vacancies on relevant Europe-wide online platforms (e.g. EURAXESS)	No	The call for EURAXESS FYRoMacedonia will be launched in 2013. Activities are foreseen in early 2013 so as to begin the promotion of publishing job vacancies on the EURAXESS platform.
– publish job vacancies in English	No	However, certain institutions, such as St. Paul the Apostle University in Ohrid do publish job vacancies in English.
– systematically establish selection panels	Yes	-
– establish clear rules for the composition of selection panels (e.g. number and role of members, inclusion of foreign experts, gender balance, etc.)	Yes	The number and the role of members is clearly defined; two people from the institution and one person from the Agency for Administration. The inclusion of foreign experts and gender balance are not foreseen.
– publish the composition of a selection panel (obliging the recruiting institution)	No	-
– publish the selection criteria together	Yes	The selection criteria are clearly spelled out in each

Do institutions in the country currently have policies to ...?	Yes/No	Description
with job advert		public announcement for a job vacancy.
– regulate a minimum time period between vacancy publication and the deadline for applying	Yes	The law stipulates the time between vacancy publication and the deadline for applying cannot be less than five days.
– place the burden of proof on the employer to prove that the recruitment procedure was open and transparent	Yes	-
– offer applicants the right to receive adequate feedback	No	-
– offer applicants the right to appeal	Yes	Applicants have the right to appeal within eight days of the decision.

Source: Deloitte and Law on Public Servants, article 3.

EURAXESS Services Network

In 2012, the number of researchers posts advertised through the EURAXESS Jobs portal per thousand researchers in the public sector was 0.3 in the former Yugoslav Republic of Macedonia compared with 49.4 among the Innovation Union reference group and an EU average of 40.8⁴.

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

5. 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 was for 25% of the population to be receiving higher education by 2012. To achieve this strategic goal and enable a larger group of students to enrol at universities, the government in 2008 opened a new university in Shtip, as well as new faculties in bigger cities with decreased or no tuition fees⁵.

The table below shows the number of tertiary education graduates between 2006 and 2009.

Table 4: Tertiary education graduates per gender (2006-2009)

Bachelor's degree graduates	2006	2007	2008	2009	2010	2011
Male	2 185	3 218	4 352	4 321	4 333	4 264
Female	4 028	5 142	6 486	5 911	5 611	5 538
Total	6 213	8 360	10 838	10 232	9 944	9 802

Source: Deloitte

Data: ERAWATCH website⁶

Source: Republic of Macedonia State Statistical Office

In 2009, the St. Paul the Apostle University for Information Science & Technology was established in Ohrid, employing staff from the USA, Great Britain, Italy, Albania, Iran, Israel and Ukraine and adopting English as its primary teaching language. The university's main focus is on science and research.

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 5: Doctoral graduates by gender

Indicator	F.Y.R.O.Macedonia	EU Average
New doctoral graduates (ISCED 6) per 1 000 population aged 25-34 (2010)	0.5	1.5
Graduates (ISCED 6) per 1 000 of the female population aged 25-34 (2010)	0.5	1.4

⁴ See Figure 1 "Key indicators – former Yugoslav Republic of Macedonia"

⁵ 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.

⁶ Ibid

Indicator	F.Y.R.O.Macedonia	EU Average
Graduates (ISCED 6) per 1 000 of the male population aged 25-34 (2010)	0.5	1.6

Source: Deloitte

Data: Eurostat

Funding of doctoral candidates

As part of the Programme of the Government 2008-12, the government provided 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 Jao Tong University ranking received 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 calls⁷.

Measures to increase the quality of doctoral training

The 'Equipping Laboratories for Scientific Research and Applicative Activities' (2009-14) project 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 million⁸.

6. Working conditions

Measures to improve researchers' funding opportunities

Measures to improve researchers' funding opportunities are foreseen within the National Programme for Research and Scientific Activity 2013-2017 which indicates the need for increased funding. Specifically, the programme calls for an increase in the budget for research funding and encourages the establishment of a special fund dedicated to research.

Remuneration

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

Researchers' Statute

The country does not provide a statute for researchers; however all researcher rights and obligations are closely regulated in the internal statutes of scientific and higher education institutions.

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

The country does not itself have a promotion plan for the 'Charter & Code'. However, three institutions are already part of the 3rd and 4th cohort of the HRS4R: the Macedonian Academy of Sciences and Arts and the South East European University are part of the 3rd cohort, and University American College Skopje is part of the 4th.

Under the leadership of the Macedonian Academy of Sciences and Arts in the WeB-InUnion project (Bringing Western Balkan Countries closer to the Innovation Union), a road show is envisioned in 2013 to bring awareness of the 'Charter & Code' to at least four different cities in Macedonia.

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 business⁹. The

⁷ Ibid

⁸ Ibid

⁹ F.Y.R.O.M. Country Page. Erawatch, Available at:

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

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) introduced tighter criteria for obtaining a PhD degree as well as for promotion of academic staff to professors' positions at the national universities¹⁰. 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 postgraduate study. The only exception is the new public University for Information Science & Technology. This hires experienced professors from abroad. The private universities have specific human resource policies in line with their strategies.

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

Only researchers who are full time employees of institutions are entitled to receive social security benefits.

7. 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.

The National Programme for Scientific and Research Activities (2013-2017) foresees putting activities in place early in the Programme to encourage researchers to move from the public to private sector.

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 collaboration¹¹.

8. Mobility and international attractiveness

In 2010, the percentage of doctoral candidates (ISCED 6) who were citizens of another EU-27 Member State was 6.3% in the former Yugoslav Republic of Macedonia compared to 1.9% among the Innovation Union reference group and an EU average of 7.8%¹². In the same year, non-EU doctoral candidates were 7.1% of all doctoral candidates in the former Yugoslav Republic of Macedonia compared with 2.2% among the Innovation Union reference group and an EU average of 20.0%¹³.

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, etc.¹⁴

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, Croatia¹⁵, Egypt, Israel, Japan, Kosovo, Russian Federation, Turkey, USA.

Over the period 2006-10, 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:

¹⁰ Ibid

¹¹ Ibid

¹² See Figure 1 "Key indicators – former Yugoslav Republic of Macedonia"

¹³ Ibid

¹⁴ 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.

¹⁵ An EU Member from July 1, 2013

- 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.

Outbound mobility

There is no official strategy or programme to encourage researchers to spend some time as a researcher in another country; however, the government launches a yearly call for applications for scholarships, fellowships, grants and other sources of funding to spend a research period abroad.

Access to cross-border grants

There is no national programme or strategy granting non-residents access to national grants or fellowships does not exist; however, the government provides access to grants and scholarships for minorities, non-residents included.

Several private universities also offer scholarships to foreign students; however, these are mostly funded through private sources.