

Researchers' Report 2014

Country Profile: Slovenia



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1. Key data

National R&D intensity target

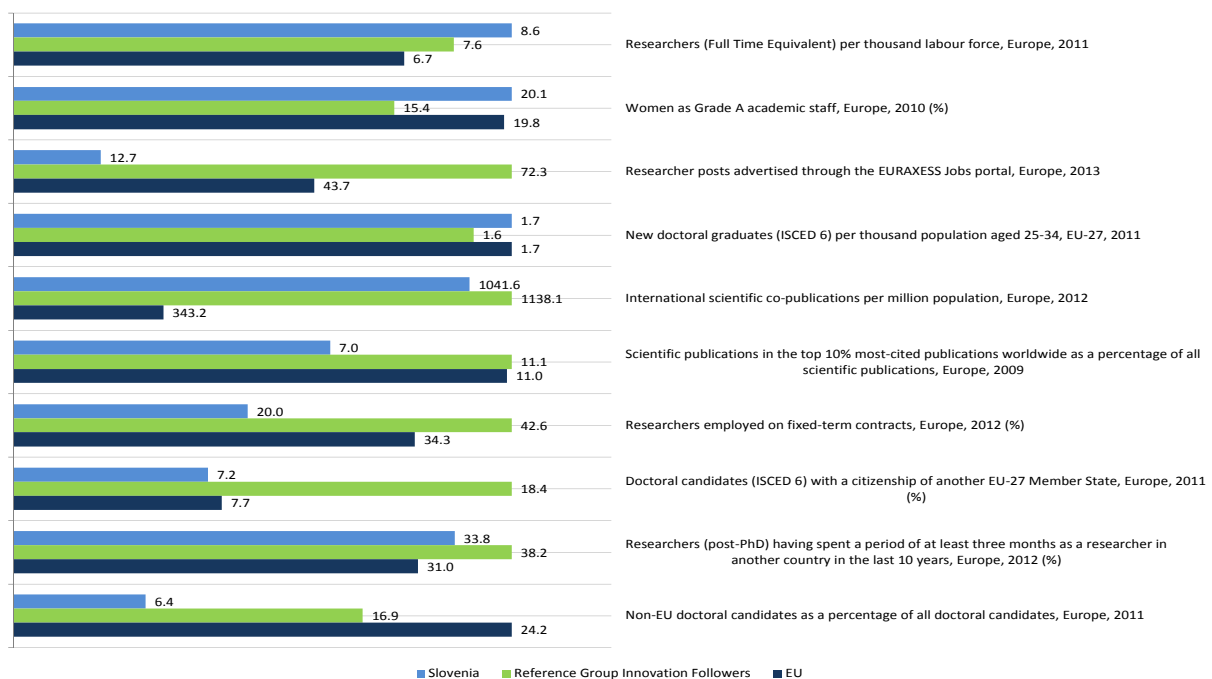
“R&D intensity in Slovenia increased from 1.66% in 2008 to 2.47% in 2011¹. Slovenia's R&D intensity target of 3% for 2020 is ambitious but achievable despite the economic crisis, provided that there is an effective and efficient increase of resources devoted to research and innovation. (...) In spite of the economic crisis, the share of R&D financed by business enterprise has been indeed higher than the EU average since 2007. In fact, in 2011 business enterprise expenditure on R&D as a percentage of GDP reached 1.83%, making Slovenia one of the top performers in the EU in terms of business R&D.

Slovenian research and innovation also receives support from the EU budget through two main instruments: the Structural Funds and the 7th Framework Programme. Slovenia is one of the countries where R&D expenditure has increased steadily both before and after 2008. As a result Slovenia had the sixth highest R&D intensity in the EU in 2011, a development which reflects the Slovenian counter-cyclic commitment to ensure increased and sustainable economic growth.”²

Key indicators measuring the country's research performance

The figure below presents key indicators measuring Slovenia's performance on aspects of an open labour market for researchers against a reference group and the EU average³.

Figure 1: Key indicators – Slovenia



Source: Deloitte

Data: Eurostat, SHE Figures, EURAXESS Jobs Portal, UNESCO OECD Eurostat education survey, Innovation Union Scoreboard 2014, MORE2.

Notes: Based on their average innovation performance across 25 indicators, Austria, Belgium, Cyprus, Estonia, France, Ireland, Luxembourg, Netherlands, Slovenia and the UK show a performance above or close to that of the EU average. These countries are the “Innovation followers”⁴.

¹ In 2012, R&D expenditure was 2.8% (Eurostat, 2014). (It is 2.63% based on Statistical Office of the Republic of Slovenia, February 2014).

² European Commission (2013), “Research and Innovation performance in EU Member States and Associated countries. Innovation Union progress at country level 2013”

³ The values refer to 2013 or the latest year available

⁴ European Commission (2014), “Innovation Union Scoreboard 2014”

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	Slovenia	EU Average/Total
Head Count per 1 000 active labour force (2011)	12.28	10.55
Head Count (2011)	12 514	2 545 346
FTE per 1 000 active labour force (2011)	8.61	6.75
Full time equivalent (FTE) (2011)	8 774	1 628 127

Source: Deloitte

Data: Eurostat

2. National strategies

The Government of Slovenia has 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 as well as in business. The table below presents key programmes and initiatives intended to implement the strategic objectives to train enough researchers to reach Slovenia's R&D targets, to promote attractive working conditions and to address gender aspects.

Table 2: National strategies

Measure ⁵	Description
Research and Innovation Strategy of Slovenia 2011-2020 (RISS)	The Strategy places people at the heart of Slovenian R&D system and supports scientific excellence, career development, researchers' mobility, training and knowledge transfer. One of its main objectives is to achieve greater development of human resources by: – Increasing the number of researchers and doctorate holders; – Adequately allocating new researchers to R&D; – Strengthening the competencies of R&D personnel; – Ensuring effective inter-sectoral and international researcher mobility; – Improving researchers' career opportunities, and – Respecting gender equality. Over the period 2012-20, the Council of Science and Technology of the Government of the Republic of Slovenia is monitoring and assessing the implementation of the RISS annually.
Resolution on National Higher Education Programme 2011-2020	This parliamentary Resolution provides a vision for renewing the educational structure and strengthening the institutional autonomy of HEIs in Slovenia in order to improve career opportunities for teaching staff and researchers by: – Improving researchers' status, workload, remuneration and mobility; – Promoting the quality of tertiary education and training; – Increasing the volume of teaching staff in higher education; – Enhancing co-operation between higher education institutions, research institutes and business; and – Strengthening the social and international dimensions of tertiary education. Over the period 2012-20, the Council of Science and Technology of the Government of the Republic of Slovenia is monitoring and assessing the implementation of the Resolution annually.

Source: Deloitte

Slovenia's **Smart Specialisation Strategy (SSS)** was at the stage of public consultation at the time of this report and will be an important tool for the allocation of public funds. It is based on comparative advantage and will take into account previous investments in capacity and scientific excellence. Its goal is to support further development of the public and business R&D potential in chosen areas and thus to enable Slovenia to become a technology leader in its priority fields.

⁵ Available at: http://www.arhiv.mvzt.gov.si/en/legislation_and_documents/legal_acts_in_force/

On the basis of comparative analyses of Slovenian competencies and potential, the following horizontal priority areas were identified: materials and technologies; electrical and electronic components and devices; tools, building blocks and technologies for the management of process systems. Six complementary vertical priorities were also identified: smart cities; smart factories; smart homes; power and energy systems; bio-med; and eco-Slovenia. The priority areas are currently the subject of a broad public discussion which will result in adoption of SSS priority areas.

Slovenia will concentrate domestic and international public funds on the priority areas in order to underpin its competencies and advantages in the relevant fields of science and business innovation. The allocation of the majority of EU Structural Funds and a part of the national budget for R&D is, and will be, linked to the Smart Specialisation Strategy.

Overall, the number of researchers (FTE) in Slovenia increased by 26% in the five-year period 2008-12⁶. The largest increase was in the business sector (51%); in the higher education sector, the increase was 34%. In the government sector, the number was down 14%. The data also show that in the period 2010-2012, the total number of R&D personnel (by head count) decreased by 18% in the government sector, was stable in the higher education sector and rose by 43% in the business sector.

3. Women in the research profession

Measures supporting women researchers in top-level positions

In 2010, the percentage of women grade A academic staff⁷ was 20.1% in Slovenia compared with 15.4% among the Innovation Union reference group and an EU average of 19.8%⁸.

The Slovenian ministry responsible established a National Committee on Women in Science in 2001. The National Committee is an advisory/expert body with an Annual Work Plan. It reports annually to the Ministry. It has 18 members from different institutions and scientific disciplines. Its main focus is collecting data and raising awareness, networking researchers from different scientific disciplines dealing with gender issues, and cooperation with other relevant organisations in Slovenia and the Helsinki Group on Women and Science⁹.

The Slovenian government has strengthened the role of women in science in line with the national Action Programme on Gender Equality and the Research and Innovation Strategy of Slovenia 2011-2020.

The Strategy recognises the necessity of adopting measures for gender equality, changing the current legislation, and focusing on the role of gender in research, education and in the management of institutions. With the support of a professional body – the National Committee for Women in Science – Slovenia will launch promotional activities and follow the principle of ensuring balanced representation of both genders when appointing working bodies within the competency of the ministry responsible for education and science, as well as when preparing legal acts and other strategic documents.

Under the Work Programme of the National Committee for Women in Science for 2013, the following measures were to be implemented:

- Support to programmes and projects that enhance participation of women in science and research;
- Support to research in the field of gender equality (with special reference to equality in working conditions);

⁶ In 2012, the number of researchers in head count terms was 12 362 and the number of FTE was 8 884 (latest available data from the Statistical Office of the Republic of Slovenia).

⁷ Full Professor

⁸ See Figure 1 “Key indicators – Slovenia”

⁹ The Helsinki Group on Women and Science was established in November 1999 as part of the Commission action plan “Women and Science: mobilising women to enrich European research”. The group’s mandate is to exchange experience and inform the Commission about policies and measures implemented at local, regional, national and European levels to promote gender equality in science. For more information about the group’s mandate, see: http://ec.europa.eu/research/science-society/document_library/pdf_06/mandate-final-march2007_en.pdf

- Establishment and monitoring of EU indicators with relevance for integration of the gender equality principle into policies and programmes for research;
- Continuous monitoring of strategic and legal documents in the field of research, along with their implementation, and of statistical data on women in science;
- In-depth analysis of difficulties in the recruitment of women in the academic and research spheres, with special consideration for their professional positions, promotion and equality of opportunity.

The share of female researchers in total headcount did not evolve significantly between 2008, when it was 35.1% and 2012, when it was 35.8%. However, over the same period, the number of women researchers did increase more rapidly (+25%) than the total number of researchers in Slovenia (+22%).

The Young Researchers Programme (introduced in 1986), which is dedicated to doctoral study, is continuing and has had a significant flow-on benefit on increasing the number of women in science. The Programme targets post-graduate students employed for a fixed term. The budget of the programme represents 18% of the total government budget for the research activities of the Slovenian Research Agency. The instrument incorporates important gender equality elements. In 2012, young women researchers made up 51% of those participating in the programme. The same proportion (51%) benefit from a post-doctoral programme (post-doctoral projects).

Top level positions in Slovenian research programmes and projects are mainly held by male researchers. In research programmes, which are the main funding instrument of the Slovenian Research Agency and represent 35% of its total budget, women researchers account for only 21% of principal researchers. The share of women researchers as principal researchers in basic research projects is higher (36%). There are only a few women researchers in top-level positions in research institutes and universities.

Measures to ensure a representative gender balance

The Slovenian Act on Equal Opportunities for Women and Men was adopted in 2002 and states that the participation of both genders in positions is unbalanced when the share of one gender is less than 40%. In the event of unbalanced participation, the Act makes provision for concrete remedial measures such as: affirmative action (advantages for the underrepresented gender), incentive measures (special advantages or incentives to reduce unbalanced representation) and programme measures (action plans, awareness-raising). It thus obliges the Government and Ministries to follow the rule of balanced gender representation of gender when forming/establishing different bodies.

A Resolution on a national programme for equal opportunities for women and men 2005-2013 was adopted in 2005.

The Slovenian government has set national targets on the gender composition of expert bodies attached to public research institutions and agencies, requiring that those bodies be constituted in such a way that each gender represents at least one third of all the positions in the body (except in the case of natural sciences and technical sciences, where the ratio is one fifth). The targets were set by the Slovenian Research Agency (SRA) and are monitored by the Office of the Government of Slovenia for Equal Opportunities.

Parental leave

Female researchers are allowed to interrupt their contracts for maternity leave and continue them later. They are paid by the Centre for Social Work (national social care institution) during their leave. The Slovenian Research Agency works on the principle that evaluation periods do not take maternity leave (one-year period) into account and that it has no negative implications for promotion. This principle has been introduced in all legislation relevant to the research profession. This principle is strictly followed and respected by the Young Researchers Programme as a national measure for strengthening the research population in Slovenia.

For other fellowship and grant programmes in Slovenia, maternity leave issues are subject to individual decisions, and the maternity leave provisions are not automatically applied by all the programmes that offer stipends and

grants. Whether a female researcher may take paid maternity leave or not is subject to determination by each individual project or programme offering fellowships.

4. Open, transparent and merit-based recruitment

Recruitment system

The fundamental recruitment system for researchers in public research and higher education institutions is based on general rules which are mandatory for all public servants in Slovenia. Additionally, the Slovenian Research Agency, which is responsible for funding, evaluation and distribution of national public funds for research activities, provides merit-based, open and transparent rules on funding different research activities (programmes, projects, young researchers, international cooperation, science meetings etc.) The Agency provides transparent procedures for evaluation and selection by public calls. All criteria and indicators, including the research and bibliometric references for evaluation and selection, are publicly available through its website.

Proposals for funding are assessed by domestic and foreign reviewers, working panels and expert committees. The Agency publishes on its portal the list of the applications selected and rejected, as well as a detailed list of all beneficiaries.

The National Higher Education Programme 2011-2020 and the Research and Innovation Strategy of Slovenia 2011-2020 provide the possibility for employees at public research and higher education institutions to step out of the salary system for civil servants. Both documents state that research and higher education institutions should enjoy greater autonomy in their recruitment system and management of human resources.

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	Institutions publish job vacancies on relevant national online platforms.
– publish job vacancies on relevant Europe-wide online platforms (e.g. EURAXESS)	Yes	Institutions publish job vacancies on relevant Europe-wide online platforms, including the EURAXESS portal.
– publish job vacancies in English	No	Institutions usually do not publish job vacancies in English on their websites
– 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	-
– 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	Institutions publish the selection criteria together with job advert.
– 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 adequate feedback	Yes	Institutions offer applicants the right to receive adequate feedback.
– offer applicants the right to appeal	Yes	Institutions offer applicants the right to appeal.

Source: Deloitte

EURAXESS Services Network

In 2013, the number of researcher posts advertised through the EURAXESS Jobs portal per thousand researchers in the public sector was 12.7 in the Slovenia compared with 72.3 among the Innovation Union reference group and an EU average of 43.7¹⁰.

Information on entry conditions, transfer of social security and pension contributions, accommodation and administrative assistance is available on national portals as well as through the national EURAXESS Services Network.

5. Education and training

Measures to attract and train young people to become researchers

The Slovenian government has taken a number of measures since the mid-1980s to promote, attract and train young people to become researchers. An important national science policy instrument is the co-financing of doctoral students (Young Researchers, Young Researchers in the Economy, and Innovative Scholarship Scheme) from national and European public resources. Consequently, in the last five years, the number of doctoral students increased from 1 994 in 2008 to 3 604 in 2012 (an increase of 80%). The number of female doctoral students increased by even more, namely by 89% (1 019 female students in 2008; 1 927 female students in 2012).

The ministry responsible for science and education runs a special Science Promotion Programme (publishing annual calls) designed to raise general awareness of scientific knowledge and technological innovation, particularly in primary and secondary education.

The Research and Innovation Strategy of Slovenia 2011-2020 puts special emphasis on increasing the number of people working in natural science and engineering, including encouragement to follow these fields at tertiary level. The number of students at ISCED level 5-6 enrolled in STEM fields increased from 24% in 2008 to 27% in 2012, which is above the EU-28 average for 2012 of 26%. At the same time the number of ISCED 5-6 graduates in STEM fields increased even more (from 18% in 2008 to 25% in 2012) and is also above the average of the EU-28 (23% in 2012).

However, the public image and position of researchers in Slovenian society remains low. Researchers' achievements often remain unknown and their work is not always perceived as being relevant to society. To improve this, the Research and Innovation Strategy of Slovenia 2011-2020 envisaged a set of new objectives and measures covering:

- Popularisation of science;
- Promotion of creativity, innovativeness and the culture of entrepreneurship; and
- Renewal of study programmes at the tertiary level.

The Strategy also proposed an increase in resources for promotional purposes from EUR 1 million in 2010 to EUR 2 million in 2014, and an increase in the number of practical creativity and entrepreneurship programmes for primary and secondary schools – establishing a network of model creative schools, such as eco-schools.

Moreover, the Strategy also places emphasis on the improvement of career opportunities for researchers through creation on the one hand of a living environment that will attract young people from abroad, and on encouragement to domestic researchers on the other to be internationally mobile. It is also regarded as important to establish statutory provisions which will guarantee social security for researchers, favourable working conditions and clear employment procedures. The Ministry of Education, Science, Culture and Sport is responsible for the implementation of these policy measures.

Doctoral graduates by gender

The table below shows the number of doctoral graduates in Slovenia by gender as a ratio of the total population.

¹⁰ See Figure 1 "Key indicators – Slovenia"

Table 4: Doctoral graduates by gender

Indicator	Slovenia	EU Average
New doctoral graduates (ISCED 6) per 1 000 population aged 25-34 (2011)	1.7	1.7
Graduates (ISCED 6) per 1 000 of the female population aged 25-34 (2011)	1.7	1.6
Graduates (ISCED 6) per 1 000 of the male population aged 25-34 (2011)	1.8	1.8

Source: Deloitte

Data: Eurostat

In the period 2008-2012, the number of doctoral graduates increased by 40%. Enrolment in the third cycle of doctoral study also increased, by 80% in the five-year period 2008-12.

Funding of doctoral candidates

In Slovenia, public funding is available to full-time and part-time doctoral candidates. Approximately 60% of all doctoral students are co-funded by public and European resources.

One of the main instruments for funding doctoral candidates in Slovenia is the Young Researchers' programme. It has a long tradition and has contributed significantly to increasing the quality and scope of research and to new recruitment procedures for research teams. Through this programme, Slovenia strives to renew human resources in research and education organisations, increase the research capacity of research groups and raise human resource potential in both the private and public sectors. Young Researchers participate in basic or applied research projects during their postgraduate studies. They also sign regular, fixed-term employment contracts. They receive their salaries, social contributions, and material and non-material costs for research and postgraduate study.

Slovenia has since 2006 provided financing for more than 1 200 young researchers annually. The funding for the training of Young Researchers is allocated for a fixed term of up to a maximum of three years and six months for a PhD programme. The average annual cost of financing one Young Researcher is approximately EUR 30 000. A postgraduate student who wishes to become a Young Researcher has to apply for employment with a mentor at a Slovenian research organisation who has been successful in the Call for mentors for young researchers.

The selection of the candidates is carried out by the universities or other contractors of PhD students. The Slovenian Research Agency, which is in charge of this programme, devoted EUR 24 million to the programme and funded 1 300 Young Researchers in 2013. More than 60% of those funded by this measure in 2013 were STEM doctoral students. Some 20% of the mentors are women.

The Young Researchers in the Economy programme is a comparable programme of run by SPIRIT Slovenia – the Public Agency of the Republic of Slovenia for the Promotion of Entrepreneurship, Innovation, Development, Investment and Tourism. It is funded by the European Structural Funds. It targets doctoral students employed in business, who would like to produce deeper theoretical and research insights into the day-to-day challenges for business. In 2013, the Agency devoted EUR 13.5 million to this programme and funded more than 400 young researchers in business.

In 2011, the Slovenian ministry responsible for higher education introduced the Innovative Scholarship Scheme for Funding Doctoral Studies. The purpose of this measure is to encourage doctoral students to choose relevant doctoral thesis topics for innovation, industry and sustainable development. The scheme covers student's tuition fees, living expenses and material costs for their research. It is co-funded by the European Structural Funds. Selection of the candidates is carried out by the universities or other contractors of the PhD students. In 2013, 1 633 doctoral candidates were funded for an annual amount of EUR 3.4 million.

Measures to increase the quality of doctoral training

The main idea of the National Higher Education Programme 2011-2020 is that Slovenian higher education must be of quality and to enable excellent scientific and research development. Its goals included some which are also relevant to increasing the quality of doctoral training:

- Ensuring the operation of a quality assurance system fully in line with European Standards and Guidelines for Quality Assurance in Higher Education;
- Strengthening the culture of quality and responsibility within higher education institutions;
- Making the transition from programme to institutional accreditation;
- Encouraging higher education institutions to develop supporting activities for didactic training and support for teaching staff;
- Increasing human resources in higher education institutions;
- Facilitating procedures for modifying study programmes and formulating joint study programmes;
- Internationalising study programmes, students and professors as well as research staff.

A very successful example of doctoral study is the *Jožef Stefan* International Postgraduate School (IPS) established by the *Jožef Stefan* Institute (JSI) in 2004 as an independent higher education institution. It is strongly supported by industry (*Gorenje*, *Kolektor* and *Salonit*) and an international network of cooperating universities and research institutes from the European Union, Japan, the USA, and a number of other countries. The *Jožef Stefan* Institute provides a central research-education basis. Within the IPS, invited research institutes, industrial and other enterprises contribute their knowledge and innovation capacities to solve developmental problems. There were 180 doctoral students enrolled in the programme (in 2012).

The table below summarises the main programmes introduced by the Slovenian Government to increase the quality of doctoral training.

Table 5: Measures to increase the quality of doctoral training

Measure	Description
Research and Innovation Strategy of Slovenia 2011-2020 (RISS) (2011)	The Strategy aims to improve researchers' mobility, training and career development. For more information, see chapter 2 "National strategies".
Resolution on National Higher Education Programme 2011-2020	For more information, see chapter 2 "National strategies".

Source: Deloitte

In the National Higher Education Programme 2011-2020, third cycle study programmes will be exclusively research-oriented and provide students with the competencies needed for independent academic work by including doctoral students in active research programmes and projects. The third cycle will last 3-4 years depending on the academic decision of the universities. Doctoral candidates and young researchers with doctorates will be able to be included in the pedagogic process with mentor support.

Skills agenda for researchers

The Research and Innovation Strategy of Slovenia 2011-2020 encourages the strengthening of the qualifications of research personnel so as to be systematic and based on the principle of lifelong learning. The Strategy envisages that researchers need to gain knowledge of managerial techniques, communication, intellectual property rights management, and entrepreneurship. The Strategy provides for the adoption of an Action Plan for Improving Career Opportunities for Researchers in all Career Periods and for Ensuring the Gender Equality Principle in order to implement these objectives. The ministries of science and of technology are jointly responsible for carrying this through.

6. Working conditions

Measures to improve researchers' funding opportunities

The Research and Innovation Strategy of Slovenia 2011-2020 sets out to achieve greater development of human resources by increasing funding. The Strategy aims to attract excellent research staff with new incentives in the fields of tax, labour and immigration inter alia, and including the mobility of researchers between public research organisations and business. The Strategy also provides for more funds to be available for areas designated as national priorities based on Slovenia's recognised competencies and competitive advantage in science and

business. Creating a stimulating environment and ensuring the necessary conditions for increasing private investment in R&D is thus another top priority of the strategy.

See also chapter 5 “Education and training”.

Remuneration

Researchers’ remuneration is fixed by the Act on the Civil Servant Payment System. The Research and Innovation Strategy of Slovenia 2011–2020 recognises that the current administrative situation of researchers in public research organisations, which is governed by the laws relating to civil servants and the salary system in the public sector, does not represent a stimulating environment for developing excellence in human resources.

For that reason, the Strategy allows for institutions to exercise greater autonomy in their recruitment policy and management of human resources by allowing researchers in institutions to withdraw from the salary system based on an agreement between those involved. The Strategy expects the managers and employees of research institutions to make a joint proposal on how to regulate the salary system, and the rights and duties of the employees, with one possibility being a collective contract between public research organisations as the employers and the unions as the employees. Any new salary system should be uniform for the higher education and research positions. In such cases, basic rights and duties will be regulated less rigidly in line with the Employment Relationship Act.

Opening up the possibility that researchers will not be employed as civil servants should attract top-level (including foreign) experts to institutions (and industry), thus enabling the institution to meet its development objectives more easily.

The ministries responsible for public administration and science are responsible for implementing the exercise of the option to exit the civil service salary system in line with the strategy.

For further information, see the country profile on remuneration of researchers from the MORE2 study on the EURAXESS website.¹¹

Researchers’ Statute

The Research and Development Activities Act (2001) provides a definition of a researcher in the Slovenian R&D system. Researchers in Slovenia have hitherto always been civil servants; that statute (including remuneration provisions) is defined in the Amendment to the Act on the Civil Servant Payment System (2010).

By law, a researcher is a natural person carrying out research or development activities. Researchers are obliged to have appropriate scientific knowledge and research skills and they have to fulfil specific formal requirements and criteria. Researchers are subject to periodic evaluation. The Slovenian Research Agency keeps researcher data to monitor their performance.

‘European Charter for Researchers’ & the ‘Code of Conduct for the Recruitment of Researchers’

The Slovenian Rectors Conference signed the ‘Charter & Code’ principles in 2008. Slovenian research institutions participate in the European Commission Human Resources Strategy Group activities.

Autonomy of institutions

Higher education and public research organisations in Slovenia enjoy autonomy to offer different academic staff profiles. However, the National Higher Education Programme 2011-2020 and the Research and Innovation Strategy of Slovenia 2011-2020 also call for greater autonomy in terms of personal development, management, finance, education and research. Research institutions will have strategic, financial and managerial autonomy, but also

¹¹ <http://ec.europa.eu/euraxess/index.cfm/services/researchPolicies>

responsibility for the implementation of socially relevant missions. Research institutions will independently define the teaching, research and mobility tasks of their personnel.

Both documents also tend to increase the autonomy and responsibility of public research organisations and universities by increasing institutional funding. Institutional funding of R&D activity is being harmonised between public research organisations and universities. Public funding mechanisms will be designed to allow more independent decision-making on the part of the public research organisations, in terms of use and integrated management of resources earmarked for institutional funding.

Career development

The Research and Innovation Strategy of Slovenia 2011-2020 states that the basic requirement for establishing career opportunities for researchers is an effective information network which promotes the possibilities of research work in Slovenia and abroad. The document calls for national efforts in support of the development of research careers comparable to international efforts, regardless of the area of research work, and primarily in conformity with the premises of the European common framework for the development of careers in scientific research.

The main Slovenian science policy initiatives for strengthening human resources are:

- Increase the number of researchers in the business sector;
- Increase the number of PhDs;
- Strengthen the qualifications of R&D personnel;
- Ensure effective inter-institutional and international mobility of researchers;
- Improve career opportunities for researchers and include the gender equality principle;
- Provide incentives to support young researchers, doctoral students and postdoc fellowships.

In addition, the National Higher Education Programme 2011-2020 places emphasis on improving the habitation system and the career paths of higher education staff in various institutions. It states that the current situation does not always enable the selection and academic development of the best researchers because it is a very 'closed' system. The conditions and criteria need to be rationally designed, focusing on scientific and research performance and teaching qualifications, as well as the applicability of the knowledge produced. In particular, there needs to be a separation between staff members participating in the educational process in universities and those taking part in professional study programmes.

In relation to career paths, the documents points out that maintaining the same researchers within the same institutions can lead to stagnation and to a reduced quality of research work. Consequently, there is a need to facilitate the mobility of higher education staff. PhDs and other young researchers should be employed in a different higher education institution from that in which they studied or have worked so far.

Shift from core to project-based funding

According to the OECD¹², the share of institutional funding in the overall public funds for public research organisations in Slovenia is 22.2%, which is the lowest share among the 13 countries covered in the OECD study.

In spite of the public servant status of researchers in Slovenia, their salaries are covered by programme/project-based funding schemes. As a consequence, public research organisations are unable to adapt appropriately to global processes in terms of their strategic development, as this is prevented by the current system for funding research groups. The centre of decision-making on development is at the level of a basic research cell, i.e. programme group, and not at the level of an individual institution fully managing its operation.

¹² OECD review of Slovenia's innovation policy: Overall assessment and recommendations – preliminary draft, OECD, Paris, 2010 is the only OECD document quoted in the original

The Research and Innovation Strategy of Slovenia 2011-2020 points out that with gradually increasing institutional funding due to reduced/terminated programme funding, Slovenian public research organisations will be assured of greater autonomy and responsibility in preparing their human resources management strategy.

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

Researchers (including young researchers, post-docs, and researchers at early career stages) are considered to be like any other employees and enjoy all the benefits related to sick leave or maternity. Contributions to pension and health insurance are normally automatic if the research work is supported by an employment contract.

The Young Researcher Programme provides beneficiaries with full social coverage.

Social benefits for other young researchers (i.e. those on stipends from different funds and foundations) are subject to conditions specified by each individual programme or project.

7. Collaboration between academia and industry

The Slovenian government grants special incentives (including tax reductions) to enterprises that employ doctoral candidates and young researchers.

Several public calls have been issued over the last three years for co-funding researchers at different stages of their careers for the purpose of promoting R&D in business sector. The Ministry of Economic Development and Technology published a Call for strengthening R&D departments in business enterprises (KROP) annually for the last three years. The goals were to establish new R&D departments in enterprises, strengthen existing ones, increase the proportion of researchers and doctoral holders in the business sector, and the employment of young researchers in companies. This measure replaced three earlier measures (dealing with young researchers in the business sector, Interdisciplinary teams in the business sector and mobility grants for researchers from public sector to enter business enterprises). The funds available for the last three public calls amounted to EUR 40 million. This measure is financed 85:15 by the European structural funds and national funds.

In addition, the Ministry of Education, Science and Sport published a call in 2013 designed to assist researchers in the earlier stages of their career. The goal was to co-fund post-doctoral researchers in PROs working closely with business companies in areas of strategic importance to them. The funds available for the call amounted to EUR 6 million. This measure was financed 85:15 by the European structural funds and national funds.

The following table summarises key programmes designed to boost collaboration between academia and industry, and to foster doctoral training in cooperation with industry.

Table 6: Collaboration between academia and industry

Measure	Description
Young Researchers in the Economy Programme (SPIRIT Slovenia) (ongoing)	Young Researchers in the Economy is designed to introduce more highly educated staff into private companies and stimulate companies to hire young graduates to enhance their R&D and innovation activities. The support is mainly financial, providing co-financing for salaries and some materials costs for a young researcher who is employed in a company while pursuing a PhD at the university. Through this support the young researcher engages in research work with mentoring by both the company and university. The programme was run by SPIRIT Slovenia in the 2007-2013 financial cycle and was co-financed by the European Social Fund. The beneficiaries are enterprises and technology centres – as employers of young researchers, and research organisations and universities – as providers of formal education.

Source: Deloitte

The Slovenian Research Agency funds up to 75% of the cost of applied research projects. An applied project applicant must obtain at least 25% of the eligible project costs from other interested users and submit evidence of co-financing. If an applied research project is an industrial project, the applicant must provide co-financing from

interested users of 50% of eligible project costs. In 2013, the Agency spent EUR 8 million for the co-financing of 126 applied research projects.

In the period 2004-08, Slovenia implemented a first round of Centres of Excellence (CoE) programmes, mainly financed from the EU Structural Funds. Ten CoEs were financed with some EUR 15 million in total for a duration of three years. Positive feedback encouraged the Government to publish a call for eight new CoE's in 2009-13 with a budget of EUR 77.5 million. (The budget per CoE ranges between EUR 8.4 and 10 million). The instrument is co-financed by the European Structural Funds.

Moreover, with the development of the Competence Centres (CC's), the integration of knowledge and competencies of companies and research organisations in certain technological areas is encouraged, namely the areas that show a critical mass of knowledge, and capability for development and the use of new technologies. The scheme is industry-led (complementary to the science-led CoE's) and is considered a state aid. The call for Competence Centres for the period 2010-13 was launched in the summer of 2010. The funding available for the call was around EUR 45 million and seven CCs were awarded funding of EUR 6.4 million each. The Competence Centres combine 46 companies highly focused on new technologies and 16 top research institutions, i.e. universities, faculties, national institutes etc. The Centres are also co-financed by the European Structural Funds.

The Research and Innovation Strategy of Slovenia 2011-2020 as well as the National Higher Education Programme 2011-2020 point out the importance of enhancing cooperation between institutions of knowledge and the business sector. The current situation is reflected in the fact that the return on public investment in the economy is relatively low. Improving the flow of knowledge is to be achieved by:

- Creating an environment that favours efficient knowledge transfer;
- Building an efficient system for the protection of intellectual property;
- Fostering the culture of patent acquisition;
- Determining knowledge transfer as a key strategic mission of public research institutions;
- Building a relationship of trust and a good level of integration within the research environment; and
- Promoting research projects carried out by public research institutions in co-operation with the innovation industry.

8. Mobility and international attractiveness

In 2011, the percentage of doctoral candidates (ISCED 6) who were citizens of another EU-27 Member State was 7.2% in Slovenia compared with 18.4% among the Innovation Union reference group and an EU average of 7.7%¹³. In the same year, the percentage of non-EU doctoral candidates as a percentage of all doctoral candidates was 6.4% in Slovenia compared with 16.9% among the Innovation Union reference group and an EU average of 24.2%¹⁴.

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

The Research and Innovation Strategy of Slovenia 2011-2020 includes measures to change the payment model for researchers in an effort to attract and retain national, EU and third-country researchers. With this in mind, an Amendment to Law 2010 allows for foreign researchers to be exempted from the Slovenian civil servant pay system.

The table below summarises key measures aimed at attracting and retaining leading national, EU and third-country researchers.

Table 7: Measures to attract and retain leading national, EU, and third-country researchers

Measure	Description
Ambassador of Science of the Republic of Slovenia,	The award is given for significant achievements in research activities and targets Slovenians who live in neighbouring countries as well as those who are or were active

¹³ See Figure 1 "Key indicators – Slovenia"

¹⁴ Ibid

Measure	Description
Certificate of Recognition (ongoing)	abroad. The award is made by the Ministry of Higher Education, Science and Technology.
Slovenian Science Foundation grants (ongoing)	The foundation offers independent financial support to researchers and young people in education for their personal growth into competent researchers, as well as for their development within the international scientific community. The foundation also aims to connect researchers at home with their compatriots operating abroad and with researchers from other countries. Slovenian researchers receive financial support for their personal growth through advanced scientific study abroad, active co-operation at scientific meetings or within the framework of European Science Foundation projects. Usually, 6-10 fellowships (or grants) are awarded each year.

Source: Deloitte

The Slovenian Research Agency annually runs a public call to co-finance renowned researchers from abroad. It co-finances an uninterrupted three-month working visit by a renowned foreign researcher to a Slovenian research group with the aim of improving the research performance of that group and preparing a joint paper for a top-ranking journal. During these three months, the foreign researcher must give at least two public lectures that are at least one month apart. A foreign researcher for the purposes of this call is a “foreign or Slovenian citizen who has been living and working outside Slovenia for at least 5 years.” The public call is launched yearly for up to eight renowned foreign researchers working in the fields of natural, technical, medical, biotechnical, social or human sciences.

Insecure career prospects and personal reasons (salaries that are not sufficient to support a family) are the main obstacles to inward mobility of Slovenian researchers. For foreign researchers, unattractive pay (pay scales the same as those for civil servants) have been the main obstacle to moving to Slovenia to work.

Public Research Institutes in Slovenia require international experience (a stay abroad of at least three months) for researchers signing an employment contract with them. Moreover, promotion up the academic ladder in Slovenia requires transnational (or international mobility).

Outbound mobility

The table below summarises key measures encouraging researchers to spend some time in another country.

Table 8: Measures supporting researchers' outbound mobility

Measure	Description
CMEPIUS grants (ongoing)	The Centre of the Republic of Slovenia for Mobility and European Educational and Training Programmes (CMEPIUS) funds students to study abroad under the CEEPUS (Central European Exchange Programme for University Studies). The Programme supports scholarships to individuals within an approved network of major higher education institutions from different participating countries, which then exchange students and professors. In 2010-2011, Slovenia hosted around 50 foreign post-graduate students (plus 14 on bilateral basis) and 25 foreign university professors.
Office of the Government of the Republic of Slovenia for Slovenians Abroad (ongoing)	The Office provides financial support for young scientists and experts of Slovenian origin living abroad. The Office has also adopted an Action Plan on ‘cooperation with Slovenian scientists and other top experts abroad’. The Office supports activities that stimulate networking of scientists and establishment of project teams lead by a top-quality scientist (“Satellite groups”), with the objective of stimulating global brain circulation. The Office does not provide special scholarships or grants to researchers.
Slovene Human Resources and Scholarship Fund (ongoing)	The Slovene Human Resources and Scholarship Fund grants scholarships for Slovenian and foreign students to study abroad. In 2010 and 2011, 81 foreign researchers benefited from the grants (AD Futura). Following two public calls for the award of grants to doctoral students for 2010 and 2011, 99 Slovenes were selected.
Young Researchers Programme (ongoing)	The Young Researchers Programme stimulates the international mobility of doctoral candidates.

Source: Deloitte

Co-financing of bilateral international co-operation is provided by the Slovenian Research Agency on the basis of public tenders for co-financing scientific co-operation with individual countries. International scientific co-operation is carried out on the basis of bilateral international agreements on scientific and technological co-operation between the Republic of Slovenia and individual countries. In 2011, 17 bilateral public calls were issued in cooperation with 16 countries. A total of 510 projects with 31 countries were co-financed with national budget funds. The Agency used EUR 729 000 of national budget funds to co-finance bilateral international cooperation projects.

Promotion of 'dual career'

There are as yet no special instruments to support dual careers, but awareness of the benefits and possibilities is rising.

Portability of national grants

Publicly funded grants or fellowships are portable to other EU countries only if a short-term stay in another EU country is part of a research project.

Access to cross-border grants

The Young Researchers and Young Researchers for the Economy programmes are open to foreign candidates.