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Executive Summary

The level of research and development (R&D) investment in Slovenia has been continuously increasing from 2008 on: from 1.65% of GDP in 2008 (SORS, 2010) to 1.86% of GDP or € 656.9 million in 2009 and, according to the preliminary data, to 2.11% of GDP or € 745.9 million in 2010 (SORS, 2011a). This increase is remarkable in the light of severe economic crisis faced by the country, with a decline of GDP of 8 % in 2009 and a slow recovery in 2010 and 2011. The reasons behind this continuous increase are manifold, yet they can be attributed to the successful increase of business sector R&D: BERD has reached 1.43% of GDP in 2010.

According to the Innovation Union Scoreboard 2010, Slovenia belongs to the group of innovation followers. Looking at the growth rates of individual indicators, there is only one where a substantial decline is detected (non-R&D innovation expenditures), however, the value of the indicator is still above EU average. What does constitute a challenge for Slovenian research and innovation system is the fact that the already identified deficiencies in the area of R&D outputs (ERAWATCH country Report 2009, 2010; TrendChart Reports 2009, 2011) show little, if any improvement, which include, in particular, the rate of patenting, income derived from patenting and licensing from abroad, knowledge-intensive services exports and slow introduction of new products/processes in small and medium sized enterprises (SMEs).

The new strategic document, prepared by the former Ministry of Higher Education, Science and Technology¹ and passed by the Parliament in 2011, named [Research and Innovation Strategy of Slovenia \(RISS\) 2011-2020](#) calls for improved integration of research and innovation, which would increase the socio-economic relevance of research and open new possibilities for SMEs to participate in R&D and innovation processes. RISS defines the R&D priorities for the next decade (2011–2020). These can be summarised as follows:

- a) Better integration of research and innovation;
- b) Publicly funded sciences and scientists shall contribute to economic and social restructuring;
- c) Enhancing/ensuring closer cooperation between PROs and the business sector;
- d) Increasing scientific excellence, partly by increasing competitiveness within S&T stakeholders and partly by providing necessary resources, both human and financial.

RISS calls for changes in the organisational structure, funding system as well as in priority-setting in the research and innovation system. The document indicates the areas where legal and organisational changes are necessary and provides the agenda for their implementation on the part of various government agencies. Nonetheless, Slovenia has traditionally been Slovenia very successful in preparing the strategy papers, but rather yielding in their implementation (Bucar, Jaklic and Udovic, 2010). Furthermore, it seems that the implementation remains one of the most important challenges for R&D and innovation policy in the future as well.

¹ Since February 2012 Slovenia had a re-organisation of the government and the Ministry of Higher Education, Science and Technology (MHEST) has been changed to the Ministry of Education, Culture, Science and Sport (MECSS), with the technology section coming under the Ministry of Economy. In view of the fact that many of the events and policies described in the Report refer to the times prior to this change, we still use the acronym, but refer to the MHEST as the former ministry.

That the implementation of policies and strategies is a challenge for Slovenian R&D and innovation system was voiced also by the experts who had prepared the OECD Innovation survey (OECD, 2010) as well as the by the ERAC team of experts (ERAC, 2010). Coordination and streamlining of the innovation policy, including governance structure and organisational set-up of the support infrastructure was identified in both evaluations as the major challenge for the improvement of policy implementation.

In the near future, one of the important challenges for Slovenia will be to sustain the current level of R&D financing, from the public resources as well as from the business sector. The RISS sets a very ambitious target of 3.6% of GDP to be allocated to R&D by 2020, with 1.5% coming from public sources and the rest from business sector, however, these figures can only be attained if Slovenia emerges from the economic crisis. The current predictions do not support such expectations: the preliminary estimate of 1.5% growth rate of GDP for 2012 and 2.0% for 2013 have been recently revised downwards, in the wake of the lower growth rates in key Slovenian export markets (IMAD, 2011). The current proposal for the 2012 state budget is already significantly lowering the allocation to R&D and innovation.

With regard to human resources, the challenge for Slovenia is to improve the effectiveness of higher education system. In the past years, most of the attention of the policy makers was given to the enrolment rate increase in tertiary education and the Bologna reform implementation. This resulted in high number of students but not quality or efficiency improvement. On average, a three- to four-year programme still requires 7 years to complete, because students take part-time jobs, which the current legislation allows. There is a wide-scope reorganisation of HEI sector planned within the new National Programme for Higher Education and RISS, which would increase institutional funding for research at the university level, open HEI to increased internationalisation by allowing English as a teaching language, introduce regular periodic outside evaluation of academic and research performance, etc., but all these require new legal acts, which were planned to be drafted in the second half of 2011. Due to the political problems it is unclear when the implementation process of RISS will continue. In fact, the expected change in the government's composition is likely to cause the very essence of the reforms to change even prior to the implementation.

Slovenian researchers actively participate in FP as well as in many other EU and international R&D programmes. Also, participation in various mobility programmes both of the students as of the researchers is increasing. International R&D cooperation is systematically supported at the multilateral (EU) as well as at bilateral level.

With a very intense international cooperation, occasionally a question of compatibility/ complementarity of international research projects with the national priorities is raised. Up to now, most of the participation in international projects has been supported on the basis of bottom-up initiatives. RISS, however, intends to combine the bottom-up and top-down approach with the latter one manifesting itself through the participation in larger EU-level research and infrastructure projects/ programmes.

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Introduction

Slovenia is among the smaller EU member countries with its 2 million inhabitants and GDP in current prices amounting to €35,416 million or €17,286 *per capita* in 2010 (SORS, 2011b).² The level of research and development (R&D) investment in Slovenia has been continuously increasing from 2008 on: from 1.65% of GDP in 2008 (SORS, 2010) to 1.86% of GDP or €656.9 million in 2009 and, according to the preliminary data, to 2.11% of GDP or €745.9 million in 2010 (SORS, 2011a). This increase is remarkable in the light of severe economic crisis faced by the country experiencing an 8% decline of GDP in 2009 and a slow recovery in 2010 and 2011: the GDP growth was 1.4% in 2010, while for 2011 it had to be revised downwards to only 0.5%.³

The reasons behind this continuous increase are manifold. In 2008, the increase of R&D investment was the highest in the business enterprise sector; from a share of 59.2% in total R&D funding in 2007 to 63% in 2008 (which represented €387.5 million €). As expected due to the economic slowdown, in 2009 this sector faced a small decrease in R&D funding. The amount spent for R&D in business sector was €380.9 million, representing a share of 58%, comparing to the share of Government funding of 36% (€234.2 million) of total R&D expenses (SORS, 2011a).⁴ The increase of €41 million in government's allocation to R&D proved to be detrimental to maintain the upward trend of R&D investments in 2009. By 2010, the business sector already resumed the growth in R&D investment by as much as 14% over the 2009 level or in nominal terms, by €54.6 million to reach €435.5 million.⁵ The government as well increased slightly its investment to €263 million or 35% of the total R&D funding. The sources from abroad are becoming increasingly important as well: in 2010 it was estimated that they would increase by 30% above 2009 or to €44.8 million. The recipients of the foreign resources are R&D units in business sector (€21.3 million) as well as public R&D institutions (government sector €12.7 and HEI €10.8 million respectively).

The past National Research and Development Programme 2006-2010 focused on increasing the scientific quality of Slovenian science through the evaluation criteria of Slovenian Research Agency applied for competitive financing. Furthermore, the promotion criteria and the universities stressed the publication activity of professors which resulted in significant increase of publication activity, reflected in the following data: in the period 2004-2008, Slovenia produced 5,840 publications per million inhabitants in journals indexed in the ISI bibliographic databases, ranking it 7th regarding publications growth rate in that period in the EU, which accounts for 155% of the EU average growth rate (RISS, 2011). Taking into account the number of citations per million inhabitants in the same period, Slovenia holds the 13th position among the EU countries with 18,062 citations per million inhabitants, or 95% of the

² <http://www.stat.si/eng/indikatorji.asp?id=20>

³ The forecast was at the level of 1.9 % (Eurostat 2011), but IMAD 2012 revised it further.

⁴ SORS database on R&D activities, available at

<http://pxweb.stat.si/pxweb/Database/Economy/Economy.asp>.

⁵ According to the national statistics, the 19% growth of R&D expenditures in business sector can be in 76% attributed to the increased investment and in 24% to the larger number of reporting units. (SORS, Nov. 2011)

EU average. Regarding the impact factor, Slovenia is ranked 22nd among EU countries, with IF 3.09 and 61% of the EU average, which shows that Slovenian authors attract relatively poor attention. With 62 highly cited publications per million inhabitants in the period 1998–2008, Slovenia reached 151% of the EU average and the 13th place in the EU. Less successful is the output in terms of patents, licences, and knowledge transfers, where the number of patent application in EPO is 61.86 compared with EU-27 of 115.8.

In terms of human resources, Slovenia compares relatively well with the EU average, despite the fact that it is lagging behind the top countries like Finland or Sweden. The share of researchers in total employment in Slovenia is 0.71%, with EU-27 average at 0.68 %.

Table 1: Total R&D personnel by sector of employment and occupation, Slovenia, 2009

	Sector - TOTAL		Business enterprise sector		Government sector		Higher education sector	
	Head counts	FTE	Head counts	FTE	Head counts	FTE	Head counts	FTE
Occupation – TOTAL	17,045	12,410	8,054	6,785	3,640	3,252	5,332	2,354
Researchers	10,444	7,446	3,722	3,278	2,472	2,171	4,231	1,978
Technicians	4,904	3,770	3,413	2,839	735	672	756	259
Other	1,697	1,194	919	668	433	409	345	117

Source: SORS (2011a).

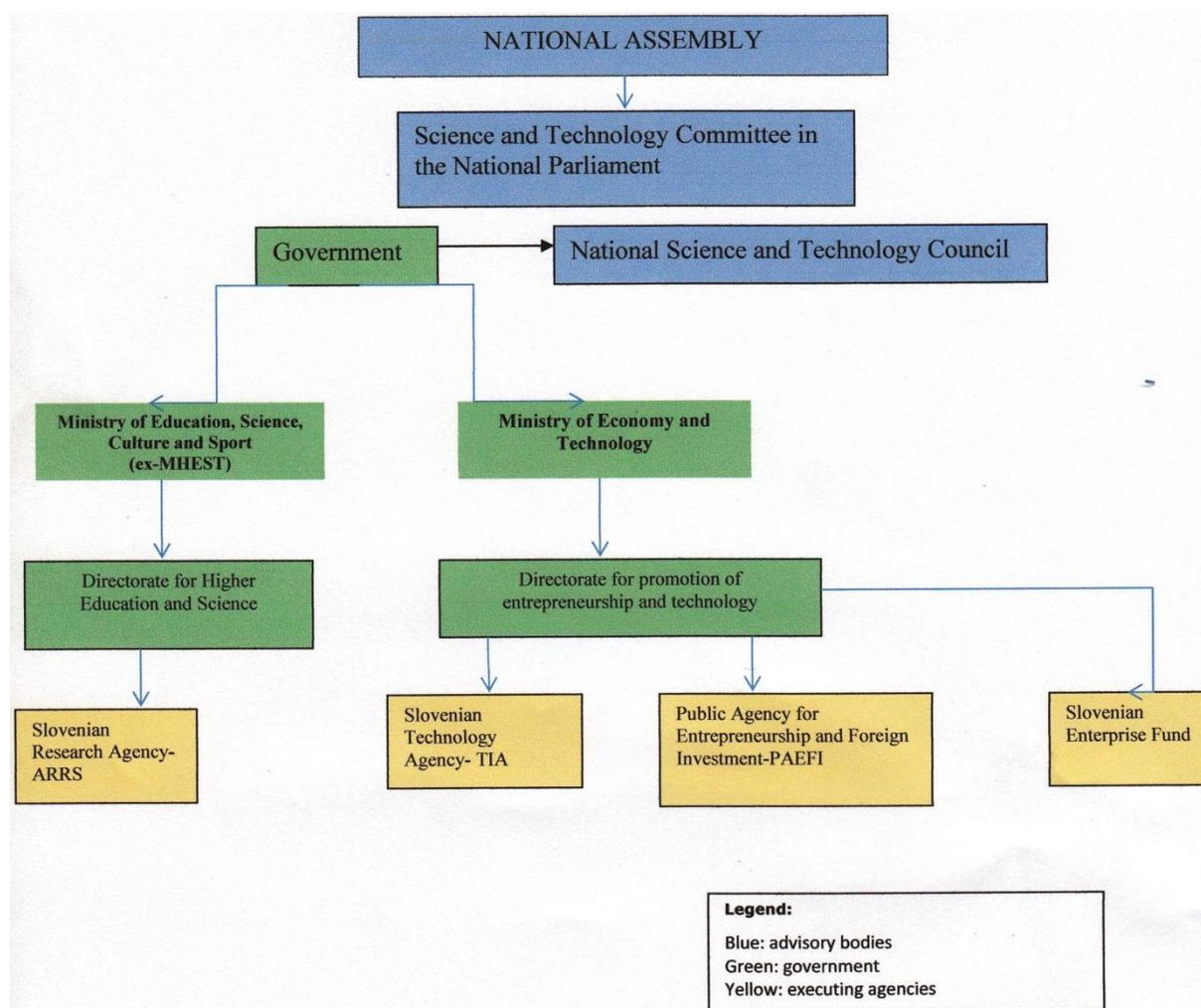
While the business sector invests more in R&D than the Government does, the number of researchers in public research institutions (in 2009) in full time-equivalent (FTE) positions (in the universities 1,978 and in research institutes 2,171) is higher than in business (3,278). The business sector, on the other hand, employs a significantly larger number of technical personnel in R&D (2,839 in FTE comparing to 672 in PROs and 259 in HEIs), suggesting that the activity is more development-focused. Several measures (mobility scheme, young researchers from business sector, improvement of the human resource potential of business R&D units etc.) support the employment of researchers in the business sector, especially those with PhD.

Slovenia has five Universities (University of Ljubljana, University of Maribor, University of Primorska, University of Nova Gorica and Euro-Mediterranean University) and 47 public research institutes. Most of the financial resources for their research work comes from the Government and is channelled through the Slovenian Research Agency. Except for the largest public institute, Jozef Stefan Institute with more than 800 employees, only few research institutes employ more than 50 people. Even smaller research groups exist at the universities, where current regulations

allow regular teaching staff with 100% pedagogical assignment to participate on top of these 100% in the amount of 20% of FTE in publicly funded research⁶.

One of the more discussed topics in Slovenian R&D policy is the issue of specialisation. In the new strategic document Research and Innovation Strategy of Slovenia 2011-2020 (RISS) the idea of smart specialisation is being launched, stressing that “this shall be permanent and bottom-up open process of recognition and selection of priority fields”. (RISS, 2011, p. 24) The priorities are to be identified by individual stakeholders, but substantiated with comparative analyses of their competencies either within the framework of research and innovation policies or industrial policies. Selection and development of the selected priority fields should be the subject of internal and foreign evaluations every second year, which may lead to changes in the earmarked support to the particular priority fields.

Figure 1: Organisational scheme of R&D system as per April 2012



Structural challenges faced by the national system

According to the Innovation Union Scoreboard 2010, Slovenia belongs to the group of innovation followers. Looking at the rates of growth of individual indicators, there is only one where a substantial decline is detected (non-R&D innovation expenditures),

⁶ This explains the difference between the head count of the number of persons employed in R&D in higher education (3,552) and the figure expressed in FTE (1,740).

yet the value of the indicator is still above the EU average. What does constitute a challenge for Slovenian research and innovation system is the fact that the already identified deficiencies in the area of R&D outputs (ERAWATCH country Report 2009, 2010; TrendChart Reports 2009, 2011) show little, if any improvement, which include, in particular, the rate of patenting, income derived from patenting and licensing from abroad, knowledge-intensive services exports and slow introduction of new products/processes in the small and medium sized enterprises (SMEs).

A relatively slow change in these indicators reveals one of the key structural challenges for Slovenian R&D and innovation policy: the issue of **implementation**. Both, the past National Research and Development Programme 2006-2010 (NRDP) and the current Research and Innovation Strategy of Slovenia (RISS) 2011–2020, acknowledged the problems on the output side and proposed several measures to offset them. The previous NRDP was quite successful in raising the number of scientific publications, but less so in increasing the number of patents or innovation output of the SMEs. The planned increase of public resources for R&D in business sector had not been achieved, and neither had been the increase of business-funded research in public R&D institutions⁷: both objectives were set as a goal to increase cooperation between the two groups of researchers, those in the public sector and those in the industry. The belief was that stronger cooperation would lead to R&D in public institutions more in line with the needs of the business sector and eventually result in a higher number of patents and income from technology transfer.

The RISS 2011-2020 (again) calls for improved integration of research and innovation, which would increase the socio-economic relevance of research and open new possibilities for SMEs to participate in R&D and innovation processes. Yet due to unexpected developments in political arena, the implementation documents and specific measures have not been prepared, in spite of the fact that RISS was adopted by the government and the National Parliament in May 2011.⁸ With the December elections and the formation of the government (Feb. 2012), resulting in government reorganisation, it remains to be seen what the focus of the new political option will be in the R&D and innovation area. Slovenia has traditionally been very successful in preparing the strategy papers, but rather yielding in their implementation (Bucar, Jaklic and Udovic, 2010), and it seems that the implementation remains one of the most important challenges for R&D and innovation policy in the future as well.

That the implementation of policies and strategies is a challenge for Slovenian R&D and innovation system was voiced also by the experts who had prepared the OECD Innovation survey⁹ as well as the by the ERAC team of experts¹⁰. Both teams were

⁷ On one hand, the flow of public resources to business sector was to rise to 10% by 2010: according to preliminary R&D figures for 2010 it was 6.8%. On the other hand, business was to finance 20% of the research in public sector: the financing reached 12.5% by 2010 instead of doubling from the level in 2005. (MHEST Report on realisation of NRDP, 2010- internal document)

⁸ Few weeks after the document was accepted in the parliament, the minister for Higher education, Science and Technology stepped down and has been temporarily replaced by the Minister of Education and Sports. The resignation was triggered by the disagreement with the head of the government as to the necessary action by the government in view of failure to pass the pension reform, law on grey economy, etc. - nothing related to the actual work of former MHEST. The political party under his leadership left the coalition, so all the ministers from the same party left.

⁹ Comments are based on unofficial draft, since the final report has not been released officially.

¹⁰ http://www.era.gv.at/attach/Item4.1Slovenia_OMC_Report_FinalDec20.pdf

invited by the Slovenian government – the former Ministry of Higher Education, Science and Technology (MHEST) - during the period RISS preparation and a draft document was submitted to the experts for the evaluation. The OECD team found that the current innovation strategy as well as the proposed RISS put more effort in building a high-performing science system than on the diffusion of existing technologies (domestic as well as foreign) and non-technological innovations. Slovenia faces the challenge of integrating and prioritising those actions that address near-term needs and those that relate to longer term structural and institutional change. Policies and actions directed at both sets of problems are needed. ERAC experts also pointed out the issues of priority setting and coordination. While acknowledging that RISS addresses this issue, they stated that *“The future governance structure will be a key element in delivering an efficient national innovation system with a clear political direction and with stronger connections between the “innovation actors” working towards common and not competing aims”* (ERAC 2010). **Coordination and streamlining of the innovation policy**, including governance structure and organisational set-up of the support infrastructure was identified as the major challenge for improved policy implementation.

OECD team identified the need to better arrange and streamline the public sector activities for supporting and funding private and public research. The challenge, in their view, is to rationalise these arrangements and to **set strategic and funding priorities**. The ERAC experts also felt that Slovenian R&D and innovation policy need to better address funding priorities. There is a need for more focus and critical mass. The government believes it addressed the need for funding priorities by financing a smaller, selected number of the centres of excellence, which were complemented with the centres of competence. These two measures are to form the core areas of research and innovation being also prioritised in the future funding of national research infrastructure. RISS embraces the notion of “smart” specialisation and leaves the priority setting to bottom-up initiatives. Since the operational documents of RISS are still missing, it is not possible to assess neither what kind of funding mechanisms will be put in place to support such orientation nor how will the priority setting develop in practice.

In the near future, one of the important challenges for Slovenia will be to **sustain the level of R&D financing**, both from the public resources as well as from the business sector. The past years were characterised by continuous growth of R&D funds. In 2010, the R&D expenditures increased by nearly 14% to €745.9 million. The biggest increase was achieved within the business sector. The government was still able to provide increased allocation of resources, which, in view of the growing public deficit, will be very difficult to guarantee in the coming years. Already in 2011 we have seen fewer public calls for the support measures for R&D and innovation in business sector. The support measures, where funding was received through EU Structural funds have increased the expectations in R&D community, both in public and business sector. Yet for one of such more important measures, the RIPs (research and investment) projects’ support ended in 2010. Also, most of the allocations of funding to other measures have already been made. The RISS sets a very ambitious target: 3.6% GDP is to be allocated to R&D by 2020, with 1.5% coming from the public sources and the rest from the business sector, however, these figures can only be attained if Slovenia pulls out of the economic crisis. The current predictions do not support such expectations: the preliminary estimate of 1.5% growth rate of GDP for 2012 and 2% for 2013 have been recently revised downwards, in view of the lower growth rates in the key Slovenian export markets (IMAD, 2011). The proposed

budget for 2012 is significantly lowering the allocation to R&D and innovation as well as to higher education. The exact details have not been released yet, but it seems like the government's reduction in R&D investment may have serious consequences especially for the PROs and HEIs.

With regard to human resources, the challenge for Slovenia is to improve **the effectiveness of higher education system** (ERAWATCH Country Report Slovenia 2010). In the academic year 2008/2009, the share of repeat students enrolled in full-time undergraduate study programmes and long non-structured master's study programmes stayed at about 10%.¹¹ The average duration of studies of full-time university graduates is among the highest in Europe. In 2008, the average duration was 6.7 years (2007: 6.8 years).¹² The low efficiency of studies is also seen by comparing the data on the students in tertiary education as a percentage of population aged 20–29, where Slovenia is well above the EU average,¹³ whereas the data on the graduates of tertiary education as a percentage of the same age segment of population shows that Slovenia lags behind the EU average.¹⁴ A thorough reform of the university was suggested in ERAC evaluation as well. They proposed “a complete overhaul of the legal, financial and operational aspects of the university sector, where the main objective should be to establish a climate of trust and a shared vision between the government and universities” (ERAC, 2010). An improved framework to allow universities to fully deploy their autonomy should be matched by a much stronger emphasis on the quality of management and on accountability. In the spring of 2011, the government prepared a new National Programme on Higher Education, which addresses many of these issues, yet its implementation is faced with the same problems as RISS, since higher education is under the same new ministry along with all the other levels of education, culture, science, and sports.

Assessment of the national innovation strategy

National research and innovation priorities

The Law on Research and Development, 2002, requires the government to regularly prepare a multi-annual research and development programme as the key policy document in the area of R&D. With the National Research and Development Programme 2006-2010 expiring in 2010, the government launched the preparation of a new programme back in 2009. It is the task of the National Science and Technology Council to prepare the basic guidelines for the government where the framework for the future strategy is suggested. These guidelines were prepared by the Council in the middle of 2010 with a proposal that the new strategic document endorses the linkage between the research and innovation. Consequently, the former Ministry of Higher Education, Science and Technology prepared a draft Research and Innovation Strategy of Slovenia from 2010 to 2020 (RISS). After a prolonged

¹¹ The share of repeat students enrolled in the first year is slightly higher.

¹² Data from EUROSTUDENT III (2005–2008), available for 2006 or 2007

¹³ In 2009, the value for students in tertiary education as percentage of population aged 20-29 was 40.1% in Slovenia and 28.6% in EU as a whole (IMAD, 2010).

¹⁴ In 2009, the value for graduates in tertiary education as percentage of population aged 20-29 was 6.3% in Slovenia and 6.5% for EU as a whole

public consultation, the [RISS](#) was adopted by the National Assembly on the 24th May 2011 with more than absolute majority. The implementation of [RISS](#), however, requires the preparation of several legal documents within 2011–2012, in particular a new (or significantly amended) Law on research and development.

The new [Research and Innovation Strategy of Slovenia \(RISS\)](#) defines the R&D priorities for the next decade (2011–2020). These can be summarised as follows:

- a) Better integration of research and innovation,
- b) Publicly funded sciences and scientists shall contribute to economic and social restructuring,
- c) Enhancing closer cooperation between PROs and the business sector,
- d) Increasing scientific excellence, partly by increasing competitiveness within S&T stakeholders and partly by providing necessary resources, both human and financial.

RISS calls for changes in the organisational structure, funding system as well as in priority setting in the research and innovation system. The document mentions/discusses the situation in which Slovenian NIS was at the time of the strategy preparation and sets the objectives and goals for the future. It indicates the areas where legal and organisational changes are necessary and provides the agenda for their implementation on the part of various government agencies. These objectives can be achieved only by making several changes in the structure of R&D system, methods of funding, and with the introduction of new instruments and evaluation criteria. Furthermore, better integration of R&D activities at higher education institutions (HEI) should go hand in hand with the reform of the Higher Education System, which is the main topic of the new [National Programme for Development of Higher Education 2011–2020](#). Both documents follow the EU2020 strategy.

The two new strategies, however, need a set of supporting legal documents, which were to be drafted in the second half of 2011 to enable their implementation. Due to the prolonged government crisis, the on-going preparations of the legal texts have remained closed behind the door of the former ministry, waiting for the new government to be appointed. So far, the new government has endorsed RISS in principle, yet announced that certain revisions may be needed. While RISS was adopted by all political parties, many of which reaffirmed their commitment to the RISS's guidelines during their election campaign, it is precisely the implementation of the strategy where specific legal, organisational and, of course, funding solutions need to be agreed upon. Without a firm political leadership relatively profound changes envisaged in RISS are unlikely to be implemented.

The RISS commits Slovenia to the increase of public resources for R&D of 1% by 2012 and 1.5% by 2020. Within subcategories, the larger increase is proposed for the research infrastructure (increase of 240% from the level in 2011) and for the growth in human resources at the level of 0.15% of GDP (in current prices). It is debatable how realistic this is especially in view of the budget cuts required in 2011/2012. The requirement to continue with the increase of the budget resources allocation to R&D is at the same time one of the few areas where all the stakeholders (business, universities, and PRO) agree. Many other issues have already shown that a consensus in the implementation will be difficult to find: the RISS calls for a new financial arrangement in public R&D, but since it does not operationalize the funding mechanisms in detail, the debate of potentially one such change, i.e. moving from

programme groups funding towards institutional funding, is already being met by resistance of some actors. Since the basic funding modalities are to be proposed within a new Law on research, the R&D community is eagerly awaiting the draft by the policy maker. What will make any significant change really difficult is also the fact that we see a decrease in the amount of public money available.

As already mentioned, Slovenia asked for two assessments of its R&D and innovation system to prepare the complex reforms well; one was carried out by the EU peer review (ERAC, 2010) and another one by OECD¹⁵. The draft results were obtained in the last months of 2010, giving the government sufficient time to integrate the recommendations in the final wording of the strategic documents for R&D and innovation.¹⁶

OECD Innovation survey¹⁷ took a broader look at the Slovenian innovation system and assessed its current relevance from the viewpoint of its contribution to the Slovenian economy and competitiveness. The experts recommend that the new strategy combine near-term improvements through innovation, based on existing technologies of both domestic and foreign origin, with the long-term improvements in the capability of Slovenian innovation system in order to generate and apply new knowledge. OECD team considered it important for Slovenia to better arrange and streamline the public sector activities for supporting and funding private and public research. The challenge is to rationalise these arrangements and to set strategic and funding priorities. Slovenia should thoroughly reform the university and PRO sectors, the major recipients of national R&D funding.

A team of experts, appointed by ERAC, carried out the second external evaluation¹⁸. Their findings also point out the issues of priority setting and coordination. While acknowledging that RISS addresses this issue, they state that *“the future governance structure will be a key element in delivering an efficient national innovation system with a clear political direction and with stronger connections between the “innovation actors” working towards common and not competing aims.”*

To achieve improved cooperation between the public and private R&D sector, they recommend that incentive policies are developed in cooperation with the Slovenian Research Agency (SRA), which would stimulate researchers to work with companies. In their opinion, a clear system of quality-scrutiny in several dimensions, not only papers and citations, is lacking. The current system creates a bias against researchers trying to engage in fundamental research or education and creates disincentives for cooperation with industry.

The experts also felt that Slovenian R&D and innovation policy needs to better address funding priorities. There is a need for more focus and critical mass. That is only conceivable, if a limited number of well-defined research areas, preferably related to existing R&D-strengths and economic strengths of the country, are selected.

¹⁵ Official OECD Survey has not been released yet at the time of writing (April 2012) and no date has been set for its official publication. In view of the new structure for R&D and innovation (with technology/ innovation now separated from science) it could happen that it will not be released at all.

¹⁶ See detailed presentation of the two evaluation reports in Chapter 1.5.

¹⁷ Comments are based on unofficial draft, since the final report has not been published yet.

¹⁸ http://www.era.gv.at/attach/Item4.1Slovenia_OMC_Report_FinalDec20.pdf

Trends in R&D funding

The public R&D funding is currently still following the former institutional scheme of R&D system: Slovenian Research Agency is in charge of financing basics and applied research primarily in public research sector, while [Technology and Innovation Agency](#) should be financing the R&D activity in business sector or in projects where both public and private R&D institutions are involved. In addition, resources of the [Ministry of Economy and Technology](#) are provided through [Public Agency for Entrepreneurship and Foreign Investment](#) for measures supporting the mobility of researchers and the running of intermediary institutions (technology parks, university incubators, etc.) and through [Slovenian Enterprise Fund](#) for start-ups in innovation environment and bank guarantees for SMEs engaged in R&D projects and technological restructuring. The [RISS](#) proposes several changes in the R&D financing, especially with regard to HEI, but the exact financing schemes have not been proposed yet. The main argument for change is to give more independence and autonomy to universities and institutes allowing them to allocate the funds internally.

Table 2: Basic indicators for R&D investments in Slovenia

	2008	2009	2010	EU average 2010
GDP growth rate	3.6	-8.0	1.4	2.0
GERD as % of GDP	1.65	1.86	2.11	2.0
GERD per capita	307	323	364	490
GBAORD (€ million)	190	245	218	92,729
GBAORD as % of GDP	0.51	0.69	0.62	0.76
GERD financed by the Business Enterprise Sector (€ million)	387	381	435	127,939 *
as % of GDP	1.04	1.08	1.23	1.09 *
GERD financed by abroad as % of total GERD	5.6	6.0	6.0	8.4 *
R&D performed by HEIs – HERD (% of GERD)	13.4	14.6	13.9	24.2
R&D performed by Government Sector – GOVERD (% of GERD)	21.9	20.8	18.2	13.3
R&D performed by Business Enterprise sector – BERD (as % of GERD)	64.5	64.6	67.8	61.5

Source: Eurostat, 2011.

*data for 2009

If, for the past few years, the funding trends have been very positive especially for business R&D, it is difficult to predict the same trends for 2012. The public R&D budget is facing, according to the current budget proposal for 2012, a decline where especially the measures which are announced annually (various voucher schemes, EUREKA projects' co-financing, business sector R&D subsidies, etc.) are facing severe cuts. Most of the available resources have already been committed under the approved projects from previous years: centres of excellence and centres of competence, for example, have all been awarded five-year financing. Adding these commitments to the regular financing of research programme groups, young

researchers' programme and on-going basic/ applied projects by the Slovenian Research Agency, not much is left of public R&D resources for other measures.

Since a significant number of measures for the promotion of R&D has been incorporated in the Operational Programme for Strengthening Regional Development Potentials and in the Operational Programme for Human Resources Development these measures need to be steadily supported by the national resources as well, which in turn suggests that too drastic cuts are not expected. In fact, in 2010 and again 2011 some of the structural funds were re-located to the R&D sphere as the one where drawing on EU funds has been most efficient so far. According to the MHEST 2011 report to ERAC, increased share of GBAORD is financed with the use of structural funds.

Table 3: The use of structural funds in support of R&D by years (2009-2010 executed, 2011-2012 planned government budgets)

	2009	2010	2011	2012
% of GBAORD financed through the structural funds scheme	2.1	7.2	10.3	10.5
% of R&D in the total funds allocated through the structural funds scheme	15.2	28.9	28.1	34.0

Source: former MHEST mimeo, Jan. 2012.

An important policy question will be how to plan the next financial perspective and the allocation of structural funds in the period 2014-2020. Slovenia is treated as a single region in the current financial perspective, yet if the current amount of inflow of resources through EU structural funds is to be maintained, it would be more opportune to "split" the country (as it already is for the purposes of the structural funds allocation) into East and West region, with the western part being the more developed one. From the viewpoint of research potential development, this raises the issue of fragmentation as well as of absorption capacity: most of the existing public research infrastructure is located in the central region, including Slovenian largest university and public research institutes like Jozef Stefan Institute and the National Institute of Chemistry. If strict regional criteria were applied to the allocation of R&D support, it might lead to duplication of physical infrastructure on one hand, and difficulties in maintaining the institutions and research capacities developed within current financial perspective on the other.

One of the resource mobilisation strong points/advantages in Slovenia has been the growth of business R&D investment. Further growth depends on the enterprises currently inactive in R&D and innovation: their involvement in R&D needs to be promoted along with sufficient increase of the absorption capacity for new knowledge/technology. This is a much more complex task which the government is trying to achieve by different mobility measures¹⁹, by supporting development & investment projects (where resources were available for research part of the project as well as its developmental and investment component in initial production capacities), with measures supporting intermediary institutions (technology parks, business incubators, university incubators), and by special calls, focusing on start-up

¹⁹

See:

[http://cordis.europa.eu/erawatch/index.cfm?fuseaction=prog.document&UUID=F1AC7932-543A-4150-993362D290CA95F2&hwd=.](http://cordis.europa.eu/erawatch/index.cfm?fuseaction=prog.document&UUID=F1AC7932-543A-4150-993362D290CA95F2&hwd=)

companies. These measures, along with raising the awareness and promoting R&D and innovation, have as their objective the increase of business R&D investment to the level of 2% of GDP by 2013. The Slovene Enterprise Fund (SEF)²⁰ continues the support for the start-ups in technology parks and university incubators through direct subsidies²¹. SEF also provides supplementary guarantees which help SMEs in obtaining bank loans and supports venture capital firms by co-financing their projects. The subsidies for new technology, which was a very popular measure in the past, have ceased in favour of guarantees where the government believes money is better spent. The question, however, remains: is the switch from subsidies to favourable loans appropriate at the time of economic hardship on one hand, and equally appropriate for the small innovation-inactive enterprises which need special encouragement to change their entrepreneurial culture.

Evolution and analysis of the policy mixes

Due to the preparation of the Research and Innovation Strategy of Slovenia for 2011-2020, the policy discussions over the last three years have been quite dynamic, at least within the R&D sector and its main stakeholders. The results of the past policies have been assessed both nationally and through a couple of international assessments and several novelties have been suggested for the future policy mix.

The internal evaluation at the ministry focused especially on the achievement of the objectives of previous National Research and Development Programme (2006-2010). Several objectives in the area of scientific results were achieved (increase in publications and citations, growing number of patents, increased R&D investment by business sector, new PhDs, etc.). Less successful was Slovenia in meeting the goals in technological restructuring, i.e., the increase in value added, high-tech exports, employment in high tech manufacturing, and services. This, as well as the growth of the R&D in business sector (both as an investor and performer), led to the policy conclusion to integrate the future innovation strategy and the R&D strategy into a single policy document called RISS. At the same time, this policy document was prepared in close cooperation with the ministry's sector for higher education where a new strategy paper was also elaborated for their area of coordination. The coordination of the National Programme for Higher Education and RISS is especially important in view of the research potential of Slovenian HEI.

The elaboration of RISS is in fact the culmination of policy mixes in R&D area, which received an increased attention ever since the Slovenian Development Strategy (2005-2013) had placed so much emphasis on R&D and its potential contribution to the economic growth and business sector restructuring. The Strategy was the backbone for the National Strategic Reference Framework and derived Operational Programmes, where the OP for Strengthening Regional Development Potentials (OP SRDP) receiving funding from the European Regional Development Fund (ERDF) and the OP for Human Resources Development funded by European Social Fund (ESF), have included several measures related to R&D and innovation. After the initial problems with the complex administrative structure for the drawing of the EU funds, both the public and the business R&D units welcomed significant increase in

²⁰ See: <http://www.podjetniskisklad.si/index.php?id=86>

²¹ See: <http://cordis.europa.eu/erawatch/index.cfm?fuseaction=prog.document&UUID=913B7879-1A84-46F3-A8F94E6E348BCB40&hwd=>

the amounts available for specific R&D and innovation measures, co-financed by the EU structural funds.

The preparation and the implementation of the new measures, e.g., centres of excellence, competence centres, and most recently development centres, required an increased cooperation between different ministries and their agencies, which proved to be at times a lengthy process. The support provided for the establishment of competence and development centres (the first financed by the former MHEST and the second by the former Ministry of Economy) compliments the establishment of the centres of excellence, a measure introduced in 2009. The centres of excellence (CO) have focused on basic research and were initiated primarily by PROs in cooperation with those business R&D units which, in the long run, see the benefits of basic research in a particular area. The competence centres, on the other hand, are consortiums led by businesses combining both basic and applied research with clear focus on their future market opportunities. To complete the set-up, the former Ministry of the Economy introduced measures to support formation of the development centres. The support of the development centres also provides co-financing for R&D projects, but specifically for the so-called close-to-the-market research and, in particular, for the development of new products, processes, and services. The three measures together represent a significant proportion of public research funding which is now more focused on selected priorities. The set-up and the focus of the measures could be assessed as an effective policy mix, since in this way support is provided to all stages of innovation process as well as to all the major stakeholders: PROs, business R&D units, and the network organisations such as technology platforms, clusters, or technology centres.²² In addition, the Research Infrastructure Roadmap, passed in April 2011 by MHEST, follows the same priorities as the centres of excellence and competence centres, which suggests potential positive synergies in specific scientific fields.

What is surprising is that both line ministries have decided to directly run the calls for these measures and not entrust their implementation to their respective agencies, Technology agency (TIA) on one side, and PAEFI on the other. Part of the reason is the fact that these are one-time-only measures, which were receiving a lot of attention already in the conceptualisation stage both at the Ministries as well as among the potential recipients. Dealing with such a complex measure requires close monitoring of the implementation process and achievement of the expected results. One could also speculate that since RISS envisages restructuring of the support agencies, new sizeable tasks extending over a longer period were purposefully not transferred. On the other hand, one fears that a big part of the problem is the coordination issue, which is simply avoided if the measure stays "in-house".

A set of new/reformulated measures in recent period has addressed the issue of human resources in business sector R&D units. The idea behind this policy was that improved human resources (i.e. more PhD researchers) in business sector are important not only for the increase of research intensity in business R&D, but also for the establishment of better circumstances for public-private cooperation in R&D. On top of the "old" measure supporting the young researchers in business sector (which received significant financial boost from the European Social Fund), several new measures were introduced such as supporting mobility from the public R&D to business R&D units, or from bigger enterprises to small ones, and the formation of

²² The latter cannot be the initiators of the competence/development centres, but can act as institutional support providers.

interdisciplinary teams to enable pooling of human resources for R&D in business sector. While the measure “Young researchers from the business sector” was assessed as one of the good practices, none of the other measures had been so far evaluated beyond the standard monitoring of the correct use of the financial resources. Yet in the middle of 2011, a new measure was announced by the former MHEST. A relatively large amount of money was directed to the appeal to support the formation of research units within business enterprises where financing of study and employment of young researchers, i.e., researchers from public research units and even established researchers from abroad, is provided to business sector to form new R&D units or to strengthen the existing ones. No doubt such a measure is welcome in view of the build-up of human resources in business R&D, but it resembles the previous measures, having been financed up to now through PAEFI (mobility scheme+ formation of interdisciplinary teams) and TIA (Young researchers from business sector). The fact that this policy shift has been unexpected by the implementation agency, is reflected in the fact that the old measures were announced by their previous implementation agency in the spring 2011.²³

Assessment of the policy mix

As mentioned in previous ERAWATCH reports (Slovenia 2009, 2010), the major problem Slovenia is facing is not the lack of appropriate policy mix or the lack of measures addressing specific R&D challenges. The key issue is the implementation of the policies and their coordination which is why the implementation deficit has been singled out as the most important policy challenge.

²³ At the event called »Entrepreneurial and innovative Slovenia« jointly organised by all the government stakeholders in entrepreneurial policies, the presentation of PAEFI announced the continuation of both measures, with the public calls to be expected by end of spring.

Table 4: Assessment of policies addressing structural challenges

Challenges	Policy measures/actions ²⁴	Assessment in terms of appropriateness, efficiency, and effectiveness
Implementation deficit	<p>Introducing a set of indicators used for continuous evaluation of the policy documents.</p>	<p>The introduction of the regular monitoring and assessment of the policy implementation was first done with the Slovenian Development Strategy- government's think tank- the Institute for Macroeconomic Analysis and Development- prepares annually a Development Report where the implementation of Slovenian Development Strategy (SDS) is presented. Also, the implementation of the Operational Programmes was assessed ex-ante²⁵. The implementation of the old National Research and Development Programme was carried out by the ministry prior to the preparation of the RISS and several non-implemented targets were incorporated into RISS.</p> <p>However, only the evaluation and the assessment prove insufficient to stimulate better implementation of the accepted policies. The fact that quality policy papers and strategies remain implemented only half-way remains Slovenia's main challenge.</p>
Coordination and streamlining of the innovation policy	<p>Introduction of joint coordination committee by former MHEST and ME.</p> <p>Planned merger of the advisory councils such as the National Council for Science and Technology and the Competitiveness Council.</p>	<p>While the government officials claim that they have reached a better level of policy and programme coordination, other stakeholders still find the horizontality of the innovation policy a problem. One such example of the current coordination failure is the issue of scholarships for foreign students. Both RISS and the new National Programme on Higher Education talk about the importance of internationalisation of HEI. Yet the new law on state scholarships, which stepped in force on Jan.1st, 2012, eliminates the right to grant scholarships to non-Slovenian citizens, thus cutting scholarships to over 1000 students from foreign countries studying in Slovenia. The law was prepared by the Ministry of Labour, Family and Social Affairs with insufficient coordination with former MHEST.</p> <p>The coordination is most difficult at the implementation level and it seems that while the policy coordination at the level of strategy documents has significantly improved, the current mechanisms at the operational level are still insufficient.</p>

²⁴ Changes in the legislation and other initiatives not necessarily related to funding are also included.

²⁵ It is a common practice that all actions are financed from EU structural funds.

Challenges	Policy measures/actions ²⁴	Assessment in terms of appropriateness, efficiency, and effectiveness
Strategic and funding priorities	<p>Observation of topical priorities in funding of the centres of excellence and competence.</p> <p>Introduction of “smart” specialisation in RISS.</p> <p>Planned changes in funding mechanisms in RISS.</p>	<p>Some of the major allocations of new resources for R&D and innovation, especially resources channelled to centres of excellence and centres of competence, followed closely the selected priorities with the help of semi-foresight exercise and technology platforms. RISS proposes “smart” specialisation even though it is still unclear how this will be applied in practice. ERAC expert group called upon the policy-makers to specify the priorities more clearly and to do so in close connection with the priority sectors in national economy. This remains an open task.</p>
Sustaining the level of financing of R&D and innovation	<p>Special measures in 2009/2010 to maintain the level of public R&D financing.</p> <p>Additional tax incentive to stimulate further business investments in R&D.</p> <p>Increased allocation of EU structural funds to R&D.</p> <p>RISS appeals to the government to increase the level of R&D financing from budget to 1.5% and sets the overall target at 3.6% of BDP.</p>	<p>As demonstrated, up until the year 2011, Slovenia was able to maintain the growth of resources allocated to R&D- Especially favourable was the increase of R&D expenditures in business sector as well as allocation of public resources to R&D measures, which equally support private and public R&D performers.</p> <p>In spite of the initial difficulties in drawing on structural funds, the R&D area became so efficient that additional resources were allocated to these measures.</p> <p>Existing budget for 2012, however, envisages more than 10% cut in government’s spending on R&D, which reflects the overall need to cut down public spending which could, in turn, have serious consequences for public R&D performers.</p>
Improved HEI efficiency and quality	<p>Planned reorganisation of HE sector within the new National Programme for Higher Education and RISS which would:</p> <ul style="list-style-type: none"> • increase institutional funding for research at the university level, • open HEI to the increased internationalisation by allowing English as a teaching language, • introduce regular periodic outside the evaluation of academic and research performance, etc. 	<p>In the past years, most of the attention of the policy makers was given to the increase of the enrolment rate in tertiary education and the implementation of the Bologna reform. Although this resulted in a high number of students it did not improve the quality or efficiency. On average, the three- to four-year programmes still require 7 years to complete, because students take part-time jobs, which the current legislation allows.²⁶</p> <p>Research at the HEI is currently highly fragmented with small groups limiting the potential for collaboration with industrial partners, whereas the academic promotion system nearly exclusively stimulates publications as the key merit. In spite of the envisaged changes in the strategic documents, the policy-makers have yet to prepare specific policy measures suitable for implementation. However, the notion of change itself is met with high level of resistance in many HEI.</p>

²⁶ See details in ERAWATCH 2010 report on Slovenia.

National policy and the European perspective

The national policy in the domain of research and innovation can also be characterised with reference to the objectives set forth for the development of the European Research Area (ERA). The Table below identifies the main short and medium-term challenges at the national level and recent policy changes in Slovenia along the lines of the seven ERA dimensions that can be derived from the analysis provided both in the preceding sections and the Annex on the national policies alignment with ERA pillars.

Table 5: Assessment of the national policies/measures supporting the strategic ERA objectives (derived from ERA 2020 Vision)

	ERA dimension	Main challenges at national level	Recent policy changes
1	Labour Market for Researchers	<p>Relatively closed and unfriendly (due to the internal restrictions) labour market, compensation limitations due to the classification of researchers in public sector (HEI and PRO) as public employees, where salaries have to follow Public Sector Wage System Act and a collective agreement for all public sector employees.</p> <p>With new measures, some mobility in the direction of private sector R&D is experienced.</p>	<p>RISS plans to change the regulation qualifying employees in public R&D as public employees and will allow for more variations in compensation based on internal decisions of the employer (University, PRO). Furthermore, more systematic public calls for new job openings are envisaged (University of Ljubljana already requires international job opening announcement).</p>
2	Cross-border cooperation	<p>Slovenian researchers actively participate in cross-border cooperation.</p>	<p>No recent policy changes; continued and successful support is provided and growth in cooperation is steadily experienced.</p>
3	World class research infrastructures	<p>Significant improvement in many areas is on-going due to the impact of instruments such as centres of excellence and centres of competence. New RISS provides for continuous efforts in this area and plans to open the use of all R&D infrastructures, financed by public resources in order to attract the interested researchers.</p>	<p>National R&D Infrastructure Roadmap accepted in spring 2011, which also includes a list of areas where Slovenia plans to participate at EU level.</p>

	ERA dimension	Main challenges at national level	Recent policy changes
4	Research institutions	<p>Some fragmentation of human resources within HEI and certain PRO, where programme groups as the current financing modality gives the heads of these groups considerable level of autonomy, is still being noticed.</p> <p>The issue of inadequate institutional financing of research at universities is debated with unclear position of HEI employees in view of the allocation criteria, which would need to be developed and agreed upon.</p>	<p>RISS proposes increase in institutional funding based on the regular evaluation of research institutes and universities. This would also call for less financial resources available for distribution on "individual" competitive basis.</p>
5	Public-private partnerships	<p>This has significantly increased over the last four-to-five years, despite the fact that the lack of collaboration between private and public sector is still seen as a challenge by some policy makers. If the on-going cooperation schemes produce the expected results, their experience will provide a significant stimulus for future partnerships.</p>	<p>Support provided for various PP partnerships such as centres of excellence, centres of competence, and development centres as well as build-up of innovation infrastructure (Technology parks, university incubators, business incubators).</p>
6	Knowledge circulation across Europe	<p>Slovenian researchers actively participate in FP as well as in many other EU and international R&D programmes. There is also an increase in participation, both for students and researchers, in various mobility programmes.</p>	<p>Slovenian Research Agency promotes and co-finances participation in FP and other programmes through various support schemes and stimulates the circulation indirectly by emphasising the importance of the participation in EU projects in its own evaluation of research groups and/ or individuals.</p>
7	International Cooperation	<p>With very intense international cooperation, occasionally a question/ questions of compatibility/ complementarity of international research projects with the national priorities are/is raised. Up to now, most of the participation in international projects has been supported on the basis of bottom-up initiatives.</p>	<p>RISS continues to place international cooperation as one of the important priorities for Slovenian R&D and does not propose any changes in this field, but rather continuous providing promotion and support.</p>

Annex: Alignment of national policies with ERA pillars / objectives

1. Ensure an adequate supply of human resources for research and an open, attractive and competitive single European labour market for male and female researchers

1.1 Supply of human resources for research

In spite of the impression that there is little growth of employment in R&D in public sector, the statistical figures show growth in a number of researchers in all three sectors from 2006 onward. The most significant has been the increase in business sector where in a period from 2006 to 2009 the number of researchers (in FTE) grew from 2,277 to 3,278. This can be explained in terms of increased business investment in R&D in recent years, which was further stimulated by tax subsidy (where cost of salaries for researchers is treated as deductible expenses).

Table 6: Employment of researchers, by sector, in FTE

	2006	2007	2008	2009
Total	5,856	6,250	7,032	7,446
Business	2,262	2,571	3,058	3,278
Government	1,804	1,998	2,156	2,171
HEI	1,762	1,657	1,795	1,978
Non-profit	28	24	23	19

Source: SORS R&D data base²⁷,

The traditional measure of Young researchers has no doubt contributed to the supply of researchers on a steady basis. The programme of Young researchers²⁸ has been one of the most successful Slovenian instruments in stimulating young people to pursue scientific careers. Launched in 1985, it provides funds for post-graduate studies and PhD work. Young researchers participate in research work during their postgraduate studies on basic research or R&D applied research projects, they have regular fixed-term employment contracts along with the Slovenian Research Agency financing their salary, social contributions, as well as material and non-material costs for research and postdoctoral study. Funds for the training of junior researchers are allocated for a fixed-term, the maximum being four years and six months for a science PhD programme (doctorate). Between 200 and 250 new researchers complete the training programme every year with the same number of new young researchers being included in the programme. In cooperation with the former Ministry of Economy, a new sub-programme was opened in 2001 specifically to young researchers from business sector that pursue graduate studies, initially attracting around 30 students per annual call. In 2008, the financing was supplemented by the European Social Fund and planned resources increased to the level of 5.96 million €. This made it possible to annually add 80 new young researchers to the scheme. That was also one of the few calls which were opened to the applications from abroad and therefore attracting interest from foreign applicants.

The enrolment in higher education has increased significantly in Slovenia in the last decade (according to Eurostat data, from 83,816 students or 28.4% of population in age segment 20-29 in 2000 to 114,391 or 40.1% of the same population segment in 2010). This increase had negative consequences on the

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http://pxweb.stat.si/pxweb/Database/Economy/23_research_develop/02_research_develop/02_23641_p_ersonnel/02_23641_personnel.asp; accessed Jan. 5th, 2012

²⁸

See: <http://cordis.europa.eu/erawatch/index.cfm?fuseaction=prog.document&UUID=60F03F40-9287-2F04-D84A300B8F3D44A5&hwd=>

quality of education, where the professor-student ration is already higher for the tertiary education (18) compared to the primary education (16). However, the professor-student ratio in tertiary education fell from 20 in 2009 to 18 in 2010. In 2009, 29% of total resources for formal education or 1.38% of GDP were allocated to tertiary education (SORS) while the National Programme on Higher Education 2011-2020 proposes an increase to 2.00% of GDP by 2020. Increased allocation of resources to tertiary education and therefore also to doctoral programmes has been identified as a necessary strategy in discussions on RISS as well. In terms of enrolment in doctoral programmes, there has also been significant growth, especially with the introduction of new doctoral programmes under Bologna reform: the number increased from 964 doctoral students under the old programmes in 2001 to 1057 doctoral candidates under the old programmes, and continued increasing to as many as 2,928 students under Bologna doctoral programmes by 2010. This increase in enrolment has so far not been reflected on the output side where annually approximately 450 to 460 students obtain a PhD degree.

1.2 Ensure that researchers across the EU benefit from open recruitment, adequate training, attractive career prospects and working conditions and barriers to cross-border mobility are removed

While in principle most of the employees in public sector enjoy a significantly higher level of job stability, there have been some changes in the public research institutions as well. Increasingly, new job openings are available only as temporary positions for the duration of the project. This change affects especially the younger researchers both at HEI and at research institutes.

The government actively supports the participation in various mobility programmes through the Centre of the Republic of Slovenia for Mobility and European Educational and Training Programmes (CMEPIUS). CMEPIUS pursues national programmes of mobility (bilateral and multilateral scholarships of the Republic of Slovenia and scholarships for Slovenes living abroad) and activities of some other European programmes in the area of education and training including Erasmus Mundus, the eTwinning National Support Centre, and the European Language Label initiative. Within the activities of the European Research Area (ERA) the Centre also acts as a Bridgehead Organisation for the EURAXESS networking project and performs the function of the National Mobility Centre.

An interesting insight into career prospects and international mobility was provided by the survey carried out by Statistical Office of the Republic of Slovenia (SORS)²⁹ in 2010. Among all the doctorate holders, one tenth has been over the past ten years temporarily residing abroad. Most of them have returned due to family or personal reasons and factors associated with employment. 6% of all doctorate holders intend to move temporarily from Slovenia within the next 12 months, mostly due to academic reasons and reasons related to employment. So far, Slovenia has not been overly concerned with brain drain, but there are some indices (not sufficiently systematically documented, though), that especially younger generation is much more internationally mobile (Flander, 2011).

While the outside mobility has expanded significantly, the inward mobility is still restrained. One of the barriers still existing in Slovenian higher education is legal binding to teach and provide teaching material in Slovenian language. Gradual introduction of joint PhD programmes at different universities allows for greater flexibility in the use of language which in turn opens doors to students from abroad. The proposal of the new National Programme for Higher Education includes the change of the current legal requirement and further encouragement to prepare 2nd and 3rd level of university programmes in foreign languages and in cooperation with foreign higher education institutions.

SRA is maintaining a special measure where financing is provided to a visiting renowned researcher from abroad³⁰ who joins for up to three months to one of the research programme groups and helps to increase the international publication output of the Slovenian team. This measure was introduced to help Slovenian researchers increase the quality of their work and not primarily to promote mobility, for which there are several bilateral cooperation agreements as well as EU programmes (e.g., Marie Curie) available.

²⁹ In 2010, SORS conducted an international statistical survey on the careers of doctorate holders for the first time. With the statistical survey it observed people with doctorate degrees (regardless of whether the doctorate was obtained in Slovenia or abroad) aged up to 69 years, who have a permanent or temporary residence in Slovenia, on 31 December 2009.

³⁰ <http://www.arrs.gov.si/en/progproj/rproj/razpisi/11/razp-tuji-razisk-12.asp>

As a host country to foreign researchers, Slovene research institutions experienced some problems in structuring adequate monthly incomes for the hosted researchers due to the discrepancies between the national regulation (treating researchers as civil servants) and the awarded funds from the European Community which had an impact on the attractiveness of Slovene host institutions. In July 2010, an amendment to the national legislation was adopted which released the payment of European funds (or funds from other international – multilateral resources) to foreign researchers.

While there is little systematic research on inward mobility, R&D institutes report on complicated legal procedures to obtain working / residence permit for non-EU researchers. Slovenia duly adopted the European Directive on Scientific Visa from 2005 into its legislation by amending the acts on foreigners and on the employment of foreign workers in 2008. Due to the progress in the field of facilitating the migration of highly skilled workers in Europe, further changes in the Slovene legislation for the field are in preparation.

1.3 Improve young people's scientific education and increase interest in research careers

Various activities are being undertaken within line ministries for the promotion of scientific education and increased interest in pursuing careers as researchers.

Without a doubt, the measure Young researchers',³¹ run since 1985, has been the most influential in stimulating young people in pursuing first doctoral studies and second, research careers. Yet, several more recent actions reflect the variety of activities with the ambition to promote science studies and research activity among young people. A few are presented below.

Under the co-financing from European Social Fund, the former Ministry of Education and Sport was running a series of projects to promote science and scientific education for young people. One such project was, e.g., "*The network for development of scientific values in young people*"³², where 22 partners cooperated in organising various events to promote science and research careers among young people. Former MHEST also had bi-annual calls for activities in the area of science and research career promotion, where most media attraction was devoted to the Researchers' Days with various events being organised throughout Slovenia. Another project, coordinated by the University of Maribor, is devoted to the development of science competences, focusing on teaching of science in high schools.³³ To promote the interest in research and innovation among students and assistants at the HEI, the University of Ljubljana introduced in 2010 "The chancellor's award for most innovative project" which in two years time attracted a growing number of submissions from students and their mentors, thus promoting research careers.

Still, the promotion of studying science and technology is only slowly reflected in the increase of enrolment in Science, Mathematics and Computing (S&M&C, category 4 according to ISCED 1997) and Engineering, Manufacturing and Construction (E&M&C, category 5). If in 2004 the share of tertiary students in S&M&C-4 in total student body was 7%, it increased to 8% by 2010. Similarly, the share of tertiary students in E&M&C-5 increased from 19.6% in 2004 to 21.6% by 2010³⁴.

The importance of science promotion is recognised in RISS where an increase of resources for promotion from 1 million € in 2010 to 2 million € in 2014 is planned (RISS, 2011).

1.4 Promote equal treatment for women and men in research

The current share of women among the researchers amounts to 34% for Slovenia and exceeds the EU-27 average (30%). While in principle equal treatment as well as equal pay is guaranteed, what can be

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http://erawatch.jrc.ec.europa.eu/erawatch/opencms/information/country_pages/si/supportmeasure/support_mig_0001?search_Type=simple&sort=&action=search&matchesPerPage=5&orden=LastUpdate&query=&displayPages=10&reverse=true&country=si&searchPage=2&index=Erawatch+Online+EN&tab=template

³² <http://www.smr.si/pages/slovensko/domov.php?lang=DE>

³³ http://kompetence.uni-mb.si/oprojektu_en.html#cilji

³⁴ Calculated from SORS data on enrolment in tertiary education (SORS, 2011: http://pxweb.stat.si/pxweb/Database/Demographics/09_education/08_terciar_education/01_09550_participation_general/01_09550_participation_general.asp).

observed in Slovenia is a rather similar situation to the international one: the higher ranking positions are still predominantly held by men. For example, of 5,898 professors employed in tertiary level, 2,276 or 38.5% are women, yet within the rank of full professors, their share drops below 20% (SORS, 2012). Furthermore, among research programme group leaders or heads of research project proposals approved by SRA, there is a clear gender discrepancy.

In 2001, the former MHEST established a professional body, called the Commission on Women in Science³⁵, with the main task of promoting the position of women in science by gathering relevant statistical data and evidence on the science careers. The Commission has been quite successful in adding specific legal interpretations to several legal acts. Specific arrangements exist for young researchers in case of maternity leave³⁶ where their status can be extended for the period of their absence from work. The same applies for women working in higher education: their status is maintained and the leave is not included in the re-election time frame.

The new RISS, in the chapter on human resources in research, declares support for the promotion activities with regard to the equal treatment of women. The support is based on the principle of balanced representation of both genders when appointing working bodies within the competence of the line ministry, and when preparing legal acts and other strategic documents. The areas and activities for improving career opportunities for researchers in all the career periods and for ensuring the gender equality principle will be defined in Action Plan for Improving Career Opportunities for Researchers in all the Career Periods, and for ensuring the Gender Equality Principle (RISS, 2011: 23).

2. Facilitate cross-border cooperation, enhance merit-based competition and increase European coordination and integration of research funding³⁷

Traditionally, Slovenian Research Agency (SRA) supports internationalisation of Slovenian research. Besides smaller measures such as the co-financing of participation at the international conferences or work of Slovenian representatives in the international research associations, SRA supports participation in the Framework Programmes. One such measure is a direct way, i.e., paying out a small “reward” fee to the applicants, which is at least as important as the indirect way, i.e., additional resources paid to the research programme group, if the latter proves its international engagement.

While extensive programme support exists for the participation of Slovenian researchers in international programmes, there is still a very limited number of national research programmes being opened where the foreign researchers could participate. The Young researchers programme is open to applicants from other EU countries. According to an internal source at the ministry, close to 6% of all young researchers accepted during the last two years are foreign nationals. For several other programmes the opening of the programmes is more superficial: in principle, most of the calls allow for the participation of foreign partners, but with no financial support. RISS addresses this and calls for a change of policy and more flexibility in research funding.

3. Develop world-class research infrastructures (including e-infrastructures) and ensure access to them

Existing fragmentation of the research infrastructure in Slovenia is partly the result of past financing where each institute applied independently for co-financing of the infrastructure and partly the reflection of a relatively small size of average research unit. The changes in policy, with the introduction of centres of excellence and centres of competence, are deeply affecting this area as well, since much more significant funding can/could be provided to a particular centre for research infrastructure.

³⁵ http://www.mvzt.gov.si/en/areas_of_work/science_and_technology/activity/zenske_v_znanosti/introduction/

³⁶ Slovenia provides for relatively favourable maternity/ parental leave of nearly a full year.

³⁷ Promote more critical mass and more strategic, focussed, efficient, and effective European research via improved cooperation and coordination between public research funding authorities across Europe including joint programming, jointly funded activities, and common foresight.

- Ensure the development of research systems and programmes across the Union in a more simple and coherent manner.
- Promote increased European-wide competition and access of cross-border projects to national projects funding.

Within the RISS, a special section is devoted to the issue of research infrastructure, stipulating the need for a special Slovenian roadmap (chapter 4.3). The RISS states that the current fragmentation often causes duplications and lack of efficiency in the exploitation of the resources. The key objectives (in the period 2011–2020) within the field of Research Infrastructure are:

- a) Better exploitation of the existing national research infrastructure;
- b) Upgrade and construction of new research infrastructure in priority areas;
- c) International integration upon accessing large research infrastructures.

In view of this, the ministry prepared a new national strategy on Research Infrastructure, published at the end of April 2011. According to the document itself, its primary role is to complement the RISS 2011–2020 and to be a “guideline and point of reference for the state administration bodies” in the area of Research Infrastructure ([Research Infrastructure Roadmap](#), p. 3). The document is divided into four parts; (i) objectives of the document, (ii) state-of-the-art within the field of Research Infrastructures (hereafter RI), (iii) priority international projects, and (iv) national priority areas within the Research Infrastructure. In the group of international projects, several activities (CERN, FAIR; CERIC; SHARE etc.) are mentioned and complemented with data on what Slovenia has already made/achieved and what will make/achieve in the future.

The most important part of the document is the part devoted to research infrastructure national priority areas. The [document](#) lists ten priority areas in which RI has to be developed ([Research Infrastructure Roadmap](#), p. 28):

- Advanced materials and nanotechnology;
- Energy efficiency and sustainable construction, and geo-information sources;
- Sustainable energy resources and environmental technologies;
- Biotechnology, biomedicine, and biological sources;
- High-performance computing and grids;
- Analytical capabilities;
- Digital national sources;
- RI for Social Sciences and Humanities;
- RI for Space applications;
- Safe and healthy food.

These priority areas follow the science fields where Slovenia supports the centres of excellence and centres of competence.

Slovenia participates in the **European Strategy Forum on Research Infrastructures** (ESFRI) and is currently working on the selection of priorities for the participation in the new transnational infrastructures proposed by ESFRI roadmap. As a small country with limited resources Slovenia needs to decide on the principles of selecting where to actively participate with financial input. Meanwhile, it already participates in the project of establishment and operation of the Facility for Antiproton and Ion Research in Europe (FAIR).

4. Strengthen research institutions, including notably universities

Slovenia has five Universities (University of Ljubljana, University of Maribor, University of Primorska, University of Nova Gorica and Euro-Mediterranean University³⁸). The first three are public universities with their academic tasks founded mostly by the Government, while the University of Nova Gorica presents a public-private partnership. Within the four universities there are 60 different HEIs in all academic fields.

³⁸ The Euro-Mediterranean University (EMUNI University) based and registered in Slovenia was established by the Union for the Mediterranean. It was established as international network of universities (142 members from 37 countries).

Currently prevailing funding system for higher education separates the educational funding (which follows the number of students enrolled, the number of staff employed, and the number of programmes) from the research one. When it comes to research, HEIs are treated as any other public research unit and apply for research funds through public calls for research programmes/projects at the Slovenian Research Agency, so it could be inferred that the competitive funding prevails. The HEIs can also raise support for the research activity from business sector. Due to the relative independence of the research units (often called institutes), it is difficult to clearly establish the amount of financing coming to HEI from different sectors. The national statistics show that in 2010 the financing for R&D at HEI sector comes mainly from the Government (75.4%), from abroad (10.4%), the business sector (12.0%), and HEI sector itself (2.0%). HEI performs 13.9% of total R&D in Slovenia (SORS, 2011). The shares have not changed significantly over the last three years.

One of the characteristics of the research at the universities are very small research groups. It is quite customary that each department/chair is involved in research around the topic of its own interest, but some faculties/universities have their own research institutes as well. For example, Faculty of Economics at the University of Ljubljana has its own Research centre with 137 researchers, most of them also giving lectures (but not all of them); many similar specialised research centres exist in faculties in the fields of natural sciences and medicine.

An important way of assuring the quality of research at HEI is through the promotion criteria which is becoming more and more rigorous at all four universities and emphasises the importance of the quality of the research work carried out by the candidates. In particular, the overall publication record is considered as well as the number of papers in top ranking journals and number of citations. Still, this is the assessment at the individual level and not at the institutional one, since the research funding is at the level of research programme groups or research projects.

Slovenian higher education system is currently engaged in the implementation of the Bologna reform. The regulator allowed different dynamics in introduction of the Bologna system depending on the individual programme of each faculty. In practice this means that even within each university some faculties may already be fully adjusted to the new system, while some have only started with Bologna process in the school year 2009/10. The reform, as well as 2008 Resolution on Higher Education³⁹, had the increase of quality of research work as well as of teaching high on their agendas. In 2011, a new National Programme on Higher Education was adopted in collaboration with the RISS. The major change it brings is clearer regulations in terms of Bologna programmes, the accreditation process is specified, and certain changes in funding are proposed. Especially the funding for the research should, in accordance with RISS, contribute more towards the autonomy of HEI. Increased share of resources should come to the universities as block funding, based on the research results of each university as a whole and not only each individual programme. As with many other provisions of RISS, this needs to be specified in implementation documents such as the Law on Research, which are/is still in the drafting stages.

Current set-up of HEI research was criticised by ERAC experts as well as by OECD team. They both suggested a thorough reform of HEI, both from academic as well as research angle. While both teams of experts were presented with the proposed solutions in draft RISS and National Programme for Higher Education, they still felt that more complex reform would be needed if Slovenian HEI was to achieve academic and research excellence of international relevance. Especially critical was the ERAC report on the internationalisation of HEI: "Slovenian higher education is far from being truly internationalised: the numbers of foreign students, researchers and academics at Universities are far below the European average. The key mechanisms to achieve this lie firstly in incorporating an international dimension in what is being taught – as part of modernising the curricula, and in attracting foreign students, researchers and academics for short or longer term study and work in Slovenia." (ERAC, 2011:26)⁴⁰ Here, one of the important obstacles is the already mentioned, namely the requirement of compulsory teaching in Slovenian.

³⁹ More at: <http://www.uradni-list.si/1/content?id=82672>.

⁴⁰ http://www.era.gv.at/attach/Item4.1Slovenia_OMC_Report_FinalDec20.pdf

In closing, the ERAC evaluation recommended “a complete overhaul of the legal, financial and operational aspects of the university sector”.

The OECD team also found many problems in HEI: “There are clear and present risks to the academic research sector arising from the overly decentralised structure, project-based model of funding, and reported separation from both industry and PRO. In terms of research, current funding and organisational arrangements limit the scale and scope of the research that faculty can propose to undertake. These limits include both formation of interdisciplinary research teams and access to expensive, specialised facilities and instrumentation – both increasingly important variables in international competitions for research funds.” (OECD, 2010: 35)

While many researchers at the HEI and the policy makers share the concern, the change would be possible only if the new system mobilized sufficiently wide support. In fact, some of the ideas debated when preparing RISS were moving in this direction, but public discussion also revealed a significant resistance to any major change. It would be very important to first establish a climate of trust and a shared vision between the government and universities and propose changes which are progressive, yet take into the account the current specifics, especially the existing level of decentralisation of research which, with all its faults, also allow a significant level of freedom and independence of top professors in academia.

5. Facilitate partnerships and productive interactions between research institutions and the private sector

Supporting the cooperation between public and private R&D has been the focus of several measures by the government. Still, current legislation makes it very difficult for PROs or HEIs to establish spin-offs, since this requires a special permission to be issued by the Government. Up to now, the spin-offs have been more of an exception and have been required to cut ties with their “mother” institution completely to avoid legal problems. With the establishment of [Centres of Excellence](#) and Centres of Competence certain changes have been made to relax these restrictions, since it is envisaged that by the end of public co-financing, these entities will have functioned as independent public-private partnerships with stakeholders from both, the public research institutes and business sector.

The Government has introduced some measures to promote inter-sectoral mobility (e. g. [Young Researchers from business](#), mobility programme, interdisciplinary teams etc.), which is still highly limited. The objectives of R&D in public and business sector are often so far apart that it is very difficult to cooperate and/or move between sectors. New forms of cooperation like [Centres of Excellence](#) or the more recent one, Centres of Competence, have opened new possibilities for increased cooperation and thus also mobility. Proposed changes in the promotion criteria in the [RISS](#) with higher recognition of research relevant to business could also stimulate mobility and cooperation.

The technology transfer offices have been established by all four universities, as well as university incubators. Their role and impact is still developing, since they too had to resolve several practical legal issues. The decentralisation of research at HEI makes the role of technology transfer offices especially challenging, since researchers often prefer to enter contracts independently, not through the office (unless they need extensive legal advice). In this area, public research institutes enjoy an advantage over HEI: they are much better organised to respond to the market and promote themselves. A good example of such technology transfer office is the one initiated within Jozef Stefan Institute (IJS), which is now a separate unit, called Center of technology transfer and innovation at IJS⁴¹, professionally facilitating knowledge transfer for the entire institute as well as for the National Institute of Chemistry. They assist in organizing and carrying out contract research and other collaborations with industry, licensing and spin-offing, and in individual technology projects of the two institutes.

6. Enhance knowledge circulation across Europe and beyond

Increased participation of Slovenian researchers in international R&D cooperation was one of the objectives of the [NRDP](#) and of [RISS 2011–2020](#) (described in chapter 3.3 and 4.1 of [RISS](#)) and has been actively promoted through various measures. Co-financing is provided for participation of Slovenian

⁴¹ <http://tehnologije.ijs.si/twiki/en/>

researchers at the international conferences and for their membership fees in international research associations. Preparations of project proposals for EU Framework Programmes are encouraged not only via providing technical and information assistance, but are also financially stimulated.

Slovenia established central specialised research centres (CSICs) for all scientific disciplines in 2003. The CSICs process, store, and communicate specialised information to all the users in their respective scientific fields. They also monitor and supervise the compliance of the bibliographic units' classification with the valid typology of documents/works for bibliography handling in the COBISS system (Collaborative On-line Bibliographic System and Service⁴²).

The Slovenian Current Research Information System (SICRIS)⁴³ has been developed and maintained by the Institute of Information Science ([IZUM](#)) in Maribor and the Slovenian Research Agency ([SRA](#)). Since the system is used by SRA for the evaluation of individual researchers as well as research organisations, it is their task to assure that the database is as accurate as possible. It contains the following entities:

- 905 research organisations ([list of all organisations](#));
- 1,428 research groups ([list of all groups](#));
- 14,196 researchers ([list of all researchers](#));
- 5,652 research projects ([list of all projects](#));
- 438 research programs ([list of all programs](#)).

SICRIS also allows viewing of presentation pages of more than 500 European projects of the EU Framework Programmes directly from the Projects database within the CORDIS system.

The SICRIS and COBISS systems provide detailed information on science production in Slovenia and are regularly used for funding procedures: on the one hand, the eligibility criteria to apply for research programme/ project/ mentorship, etc., is based on meeting certain criteria, whereas on the other, the evaluation of the quality of the team is based on the scores in SICRIS/ COBISS. This use, however, was not the original intent of its designers: the system was initiated to support knowledge circulation by providing information on the on-going research.

The preparation of RISS opened the discussion on open access to research outputs generated by public money. The result is that the strategy includes the recommendation to the policy makers to prepare a guideline by 2012 on the open access for the research publications and data.

7. Strengthen international cooperation in science and technology, and the role and attractiveness of European research in the world

International scientific and technological cooperation is conducted in accordance with the "[Policy and Strategy for the Development of Scientific and Technological co-operation between the Republic of Slovenia and Other Countries](#)" which was adopted by the Government of the Republic of Slovenia on 14th July 1994. At the time, the Ministry of Science and Technology was responsible for monitoring, coordination, and implementation of this policy.

In line with the Government decisions the priority countries for bilateral cooperation include:

- The European Union Member States (including [6th](#) and [7th](#) FP),
- Neighbouring countries, and
- Developed overseas countries and regionally important countries.

The former [Ministry of Higher Education, Science and Technology](#) has transferred the bilateral and some of the multilateral science cooperation to the [SRA](#). According to the data of the [Slovenian Agency for Research \(SRA\)](#), Slovenia has established scientific and technological co-operations with 70 countries (134 bilateral agreements).

⁴² http://www.cobiss.net/cobiss_platform.htm

⁴³ <http://sicris.izum.si/default.aspx?lang=eng>

In the recently adopted Research and Innovation Strategy of Slovenia [RISS 2011–2020](#) (May 2011), a special section (3.3) is devoted to the international cooperation in R&D within the EU (ERA) and worldwide. According to the document, Slovenia is going to strengthen and increase its international multilateral and bilateral cooperation. The focus is on four groups of states: (a) neighbouring countries and regions, (b) Western Balkans countries, (c) BRIC countries (Brazil, Russia, India, and China), and (d) other complementary countries in the R&D ([RISS, p. 14](#)). At the same time Slovenia is going to improve its R&D cooperation with the most advanced countries, e.g., USA, Korea and Japan. Cooperation in R&D with the other countries will be in line with the interests of the scientific sphere and foreign policy orientations of the Republic of Slovenia (RISS, p. 14). Among all listed possible partners, a special emphasis in the [RISS 2011–2020](#) is put on the South-Eastern Europe and Western Balkan countries. [RISS 2011–2020](#) declares that Slovenia “must become an attractive hosting country” for excellent researchers and enterprises from the region (ibid.).

More detailed guidelines on international R&D cooperation are to be prepared in the *Development Plan for Bilateral International Cooperation*. It was expected that the document would be completed by the end of 2011, but the preparation of the document has been temporarily postponed in view of several re-organisational changes taking place in the spring of 2012.

The internationalisation of the R&D cooperation has so far not prioritised specific research fields. The initiative for cooperation was mostly coming directly from the researchers and research organisations themselves. Indirectly, however, the national funding for certain areas, especially through some of the more recent financially stronger measures, such as the centres of excellence and centres of competence, stimulated and enabled the participation of Slovenian partners in international research projects of Grand Challenge type.

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List of Abbreviations

BERD	Business Expenditures for Research and Development
BRIC	Brazil, Russia, India and China
CERIC	Central-European Research Infrastructures Consortium
CERN	European Organisation for Nuclear Research
CIS	Community Innovation System
CMEPIUS	Centre for Mobility and European Educational and Training Programmes
CO	Centre of Excellence
COBISS	Collaborative On-line Bibliographic System and Services
CORDIS	Community Research and Development Information Service
CSIC	Central specialised research centres
EMUNI	EURO Mediterranean University
EPO	European Patent Office
ERA	European Research Area
ERAC	European Research Area Committee
ERA-NET	European Research Area Network
ERDF	European Regional Development Fund
ESF	European Social Fund
ESFRI	European Strategy Forum on Research Infrastructures
EU	European Union
EURAXESS	EU Jobs Portal
EUREKA	European-wide Network for Market-Oriented Industrial Research
FAIR	Fa Facility for Antiproton and Ion Research
FP	European Framework Programme for Research and Technology Development
FTE	Full-time equivalent
GBAORD	Government Budget Appropriations or Outlays on R&D
GDP	Gross Domestic Product
GERD	Gross Domestic Expenditure on R&D
GOVERD	Government intramural expenditure on R&D
HEI	Higher education institutions
ibid	Latin, short for ibidem, meaning the same place
IJS	Institute Jozef Stefan
IMAD	Institute for Macroeconomic Analysis and Development
ISCED	International Standard Classification of Education
ISI	International Science Index
IZUM	Institut informacijskih znanosti
ME	Ministry of Economy
MECSS	Ministry of Education, Culture, Science and Sport
MHEST	Ministry of Higher Education, Science and Technology
NRDP	National Research and Development Programme
NRP	National Reform Programme
NSRF	National Strategic Reference Framework
NUTS	Nomenclature of Territorial Units for Statistics
OECD	Organisation for Economic Development and Cooperation
OP	Operational Programme
OP SRDP	Operational Programme for Strengthening Regional Development Potential
PAEFI	Public Agency for Enterprises and Foreign Direct Investments
PhD	Doctorate
PRO	Public Research Organisations
R&D	Research and development

RIR	Research Infrastructure Roadmap
RISS	Research and Innovation Strategy of Slovenia
RS	Republic of Slovenia
SDS	Slovenian Development Strategy
SEF	Slovene Enterprise Fund
SHARE	Survey of Health, Ageing and Retirement in Europe
SICRIS	Informacijski sistem o raziskovalni dejavnosti v Sloveniji (Slovenian information system on research)
SME	Small and Medium Sized Enterprise
SORS	Statistical Office of Republic of Slovenia
SRA	Slovenian Research Agency
SVLR	Služba vlade za lokalno samoupravo in regionalni razvoj (Government Office for Local Self-Government and Regional Policy)
TIA	Slovenian Technology Agency
USA	United States of America

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Abstract

The main objective of the ERAWATCH Annual Country Reports is to characterise and assess the performance of national research systems and related policies in a structured manner that is comparable across countries. EW Country Reports 2011 identify the structural challenges faced by national innovation systems. They further analyse and assess the ability of the policy mix in place to consistently and efficiently tackle these challenges. The annex of the reports gives an overview of the latest national policy efforts towards the enhancement of European Research Area and further assess their efficiency to achieve the targets.

These reports were originally produced in November - December 2011, focusing on policy developments over the previous twelve months. The reports were produced by the ERAWATCH Network under contract to JRC-IPTS. The analytical framework and the structure of the reports have been developed by the Institute for Prospective Technological Studies of the Joint Research Centre (JRC-IPTS) and Directorate General for Research and Innovation with contributions from ERAWATCH Network Asbl.

As the Commission's in-house science service, the Joint Research Centre's mission is to provide EU policies with independent, evidence-based scientific and technical support throughout the whole policy cycle.

Working in close cooperation with policy Directorates-General, the JRC addresses key societal challenges while stimulating innovation through developing new standards, methods and tools, and sharing and transferring its know-how to the Member States and international community.

Key policy areas include: environment and climate change; energy and transport; agriculture and food security; health and consumer protection; information society and digital agenda; safety and security including nuclear; all supported through a cross-cutting and multi-disciplinary approach.

