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Abstract

The Analytical Country Reports analyse and assess in a structured manner the evolution of the national policy research and innovation in the perspective of the wider EU strategy and goals, with a particular focus on the performance of the national research and innovation (R&I) system, their broader policy mix and governance. The 2013 edition of the Country Reports highlight national policy and system developments occurring since late 2012 and assess, through dedicated sections:

- national progress in addressing Research and Innovation system challenges;
- national progress in addressing the 5 ERA priorities;
- the progress at Member State level towards achieving the Innovation Union;
- the status and relevant features of Regional and/or National Research and Innovation Strategies on Smart Specialisation (RIS3);
- as far relevant, country Specific Research and Innovation (R&I) Recommendations.

Detailed annexes in tabular form provide access to country information in a concise and synthetic manner.

The reports were originally produced in December 2013, focusing on policy developments occurring over the preceding twelve months.

ACKNOWLEDGMENTS AND FURTHER INFORMATION

This analytical country report is one of a series of annual ERAWATCH reports produced for EU Member States and Countries Associated to the Seventh Framework Programme for Research of the European Union (FP7). [ERAWATCH](#) is a joint initiative of the European Commission's [Directorate General for Research and Innovation](#) and [Joint Research Centre](#).

The Country Report 2013 builds on and updates the 2012 edition. The report identifies the structural challenges of the national research and innovation system and assesses the match between the national priorities and the structural challenges, highlighting the latest developments, their dynamics and impact in the overall national context.

The first draft of this report was produced in December 2013 and was focused on developments taking place in the previous twelve months. In particular, it has benefitted from the comments and suggestions of Aleš Gnamuš from JRC-IPTS. The contributions and comments from DG-RTD and Tomaž Boh (Ministry of Higher Education, Science and Technology) are also gratefully acknowledged.

The report is currently only published in electronic format and is available on the [ERAWATCH website](#). Comments on this report are welcome and should be addressed to jrc-ipts-erawatch-helpdesk@ec.europa.eu.

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EXECUTIVE SUMMARY

Since the adoption of Research and Innovation Strategy (RISS) for the period 2011-2020, Slovenia changed three ministers in charge of science. Also, the of the government organisational set-up had changed with the establishment of the 2012 government, when R&D and innovation were (again) split between two ministries: the Ministry for Education, Science, Culture¹ and Sport, which retained the R&D part, and the Ministry of Economic Development and Technology, which ‘received’ the innovation part of the ex-Ministry of Higher Education, Science and Technology (MHEST). RISS envisaged several changes in the institutional set-up, financial mechanisms as well as priority setting in S&T. Yet due to the political uncertainty and budget constraints, the implementation of this strategy has been relatively slow since almost all of the needed legal acts are still in the process of preparation.

Although Slovene economy was slowing down for the last four years, the R&D expenditure has been increasing, according to the Statistical Office of Republic of Slovenia (SORS). Since 2000 onwards GERD increased step-by-step, from 1.5 % of GDP in 2006, to 1.66 % of GDP in 2008, in 2011 it reached record high of 2.47 % of GDP. Even more surprising is the figure for 2012 with 2.63% of GDP or 928 million €². These figures show that the growth was not only in relative terms, but also in nominal numbers: in 2007 GERD amounted to 500.5 million € to reach 894.2 million € in 2011 ([SORS, 2012](#)) and 928 million € in 2012 ((SORS, 2014).

Increasingly, most of the funds for R&D are provided by the business enterprise sector: in 2012 577.6 million € or 62% of total expenditure. Here it is necessary to add the methodological explanation of SORS³ for 2011 data and the fact that in 2012 the government increased the tax subsidy on R&D expenditure to the level of 100%. This not only resulted in increased investment, but also in more comprehensive reporting of R&D costs. On the other hand, the expenditures of the government sector with estimated 266.2 million € or 29% of total expenditure. Most assets for the implementation of R&D were intended for the business enterprise sector (EUR 703.1 million or 76% of all the assets), followed by the government sector (EUR 121.5 million or 13% of all R&D assets), the higher education sector (EUR 103.3 million or 11%) and the private non-profit sector² (EUR 0.4 million).

In 2013, the GBOARD is still restrained and was planned at the same level as in 2012. With the help of public protest, the Ministry of Education, Science and Sports managed to obtain additional 16 € million for higher education institutions. The 2013 budget of Slovenian Research Agency (SRA), the main agency for financing public research, has suffered only small decline in funds (5% in relation to 2012), with most of the cuts in the activities in the area of international relations and human resources (the allocation to Young researchers programme was 85% of the 2012 level).

The allocation of resources via SRA is much more transparent and stable as it is for innovation support measures, where we not only have more actors (Ministry of Economic Development and Technology, SPIRIT agency, Slovenian Enterprise Fund, Slovenian Development Bank SID), but no clear common platform of the support calls or/and amounts available. Several of “standard” support measures directed towards business, like co-financing of applied projects,

¹ With 2013 restructuring of the government culture received an independent Ministry again.

² More information available at https://www.stat.si/eng/novica_prikazi.aspx?id=5873.

³ See p.6 of this report for details.

Data on R&D performers which refer to 2011 are not comparable with previous years. In 2011, there was a break in the time series. More information available at https://www.stat.si/doc/metod_pojasnila/23-086-ME.pdf)

financing of R&D start-ups, co-financing of university incubators and technology centres/parks, EUREKA projects were not implemented in 2012. Some have been restored in 2013, at least at very modest level.

Summary Innovation Scoreboard⁴ reveals that Slovenia has been improving its innovation performance and catching up with the EU average up until 2011. In 2012 its innovation performance slightly declined while Slovenia maintained the place in the group of innovation followers to which it belongs since 2009. When account is made of different dimensions of innovation performance of Slovenia it becomes evident that its relative strengths are in human resources and in international scientific co-publications whereas main weaknesses relate to intellectual assets and to marketing of innovations. Also, the economic effects of innovation activity in Slovenia are lagging behind its inputs suggesting that similar performance could have been achieved with fewer resources. Weak efficiency of Slovenia's innovation system is reflected in low labour productivity compared to the EU average. Furthermore, it is worrying that the efficiency of investment into innovation system deteriorated since the beginning of the crisis (Bučar & Stare, 2014).

The re-drafted version of Smart Specialisation Strategy (RIS3), taking on board some of the comments has been issued to the public in the end of November and is awaiting the debate within the government. At this point the assessment of the linkages between RIS3 and other policy documents is reflecting poor coordination. Even though the RIS3 has been presented to various stakeholders, the implications of following these priorities have not been made clear, since the implementation part has been elaborated only in a very sketchy way and remains to be laid out in the Operational Programme.

Among the main challenges of Slovenian research and innovation policy the preparation of the valid implementation plan of the strategy for smart specialization should be listed, along with more coordinated policy development. A revived interest in R&D and innovation policy among the government offices as well as among other stakeholders is needed to bring forward the awareness that only increased innovation efforts of both PRO and business research units can produce sustainable solutions for the positive long-term outcome from the economic, political and increasingly social crisis faced by Slovenia since 2010.

With many fronts open on the home "front", the R&D policy makers have also been active in implementation of ERA, even if due to financial constraints not all the planned activities have been implemented so far. The research community is eager to get on board HORIZON 2020, which was reflected in their interest in the EU's launching event of the new programme in Slovenia, when more than 700 participants turned up.

⁴ Innovation Union Scoreboard (2013). More information available at <http://cordis.europa.eu/scoreboard>.

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1 BASIC CHARACTERISATION OF THE RESEARCH AND INNOVATION SYSTEM

Two million of inhabitants and 20,273 km² of geographic surface position Slovenia among smaller members of the European Union (EU27). Since its independence its economy was growing constantly, but the current economic crisis has been seriously hampering its economic development since 2008. Before the crisis (in 2008), the level of economic development of Slovenia approached the average of EU with index of 91 (EU27 = 100), the index dropped to 87 in 2009 and stopped in 2011 at 84. Both, the 2012 and 2013 GDP growth rates were negative,⁵ and Slovenia has only barely avoided external intervention, but had to introduce several more drastic economic and financial measures in 2013, with further reforms expected in 2014.

Although Slovene economy was slowing down for the last four years, the R&D expenditure has been increasing, according to the Statistical Office of Republic of Slovenia (SORS). Since 2000 onwards GERD increased step-by-step, from 1.5 % of GDP in 2006, to 1.66 % of GDP in 2008, in 2011 it reached record high of 2.47 % of GDP. Even more surprising is the figure for 2012 with 2.63% of GDP or 928 million €. These figures show that the growth was not only in relative terms, but also in nominal numbers: in 2007 GERD amounted to 500.5 million € to reach 894.2 million € in 2011 ([SORS, 2012](#)) and 928 million € in 2012 ((SORS, 2014).

Increasingly, most of the funds for R&D are provided by the business enterprise sector: in 2012 577.6 million € or 62% of total expenditure. Here it is necessary to add the methodological explanation of SORS⁷ for 2011 data and the fact that in 2012 the government increased the tax subsidy on R&D expenditure to the level of 100%. This not only resulted in increased investment, but also in more comprehensive reporting of R&D costs. On the other hand, the expenditures of the government sector with estimated 266.2 million € or 29% of total expenditure. Most assets for the implementation of R&D were intended for the business enterprise sector (EUR 703.1 million or 76% of all the assets), followed by the government sector (EUR 121.5 million or 13% of all R&D assets), the higher education sector (EUR 103.3 million or 11%) and the private non-profit sector² (EUR 0.4 million).

Increasingly, most of the funds for R&D are provided by the business enterprise sector: in 2012 763.5 million € or 77.2% of total expenditure. Here it is necessary to add the methodological explanation of SORS⁸ for 2011 data and the fact that in 2012 the government increased the tax

⁵ The decrease in GDP in 2012 was at the level of 2.3%, while expected decrease for 2013 is at the level of 2.4% (IMAD, 2013).

⁶ More information available at https://www.stat.si/eng/novica_prikazi.aspx?id=5873.

⁷ See p.6 of this report for details.

Data on R&D performers which refer to 2011 are not comparable with previous years. In 2011, there was a break in the time series. More information available at https://www.stat.si/doc/metod_pojasnila/23-086-ME.pdf.

⁸ The survey on R&D activities in the reference year 2011 was based on new administrative sources, which enabled us to further identify R&D companies/organizations to improve the capture of units in the sample. Thus, the higher value of data on total spending on R&D was in addition to investment in this activity also the result of the expanded selection of reporting units, primarily in the business enterprise sector, and moving of some borderline respondents from the government sector to the business enterprise sector. At the same time, with the reference year 2011 we improved the analysis of non-response, which also helped increase the value of all published statistics in all sectors.

Data on R&D performers which refer to 2011 are not comparable with previous years. In 2011, there was a break in the time series. More information available at https://www.stat.si/doc/metod_pojasnila/23-086-ME.pdf.

subsidy on R&D expenditure to the level of 100%. This not only resulted in increased investment, but also in more comprehensive reporting of R&D costs. Slovenia successfully channelled the funds obtained through structural funds (both ERDF as well as ESF) into support measures for R&D and innovation activity, which is also reflected in the growing expenditures. On the other hand, the expenditures of the government sector with estimated 121.5 million € or 12.3% of total expenditure reflect a decrease in the share of total R&D investment- for many years governments' expenditure was relatively stable at the level of 30–35% of the total GERD. This reflects budget deficit difficulties of Slovenia, where the planned gradual growth of R&D expenditures had to be postponed. Higher education sector accounted for 103.3 million € or 10.4% of total expenditure and the private non-profit sector only for 0.4 million €.

With the higher R&D expenditure, also the employment of researchers in business sector has increased. The total number of researchers has grown to slightly over 9000 FTE, with 53% (4827) in business sector, 20% (1850) in government sector and 26.3% (2398) in higher education.⁹ The fact that business R&D units employ also a significant number of technical staff can be observed in even higher share of business sector in total employment in R&D, where as many as 64% of all employed in R&D sector are in business sector.

⁹ This represents a significant increase over the years: in 2008, business employed 3058 researchers, government sector 2157 and higher education sector 1795- or total 7033 researchers in FTE (full time equivalent) (SORS,2009).

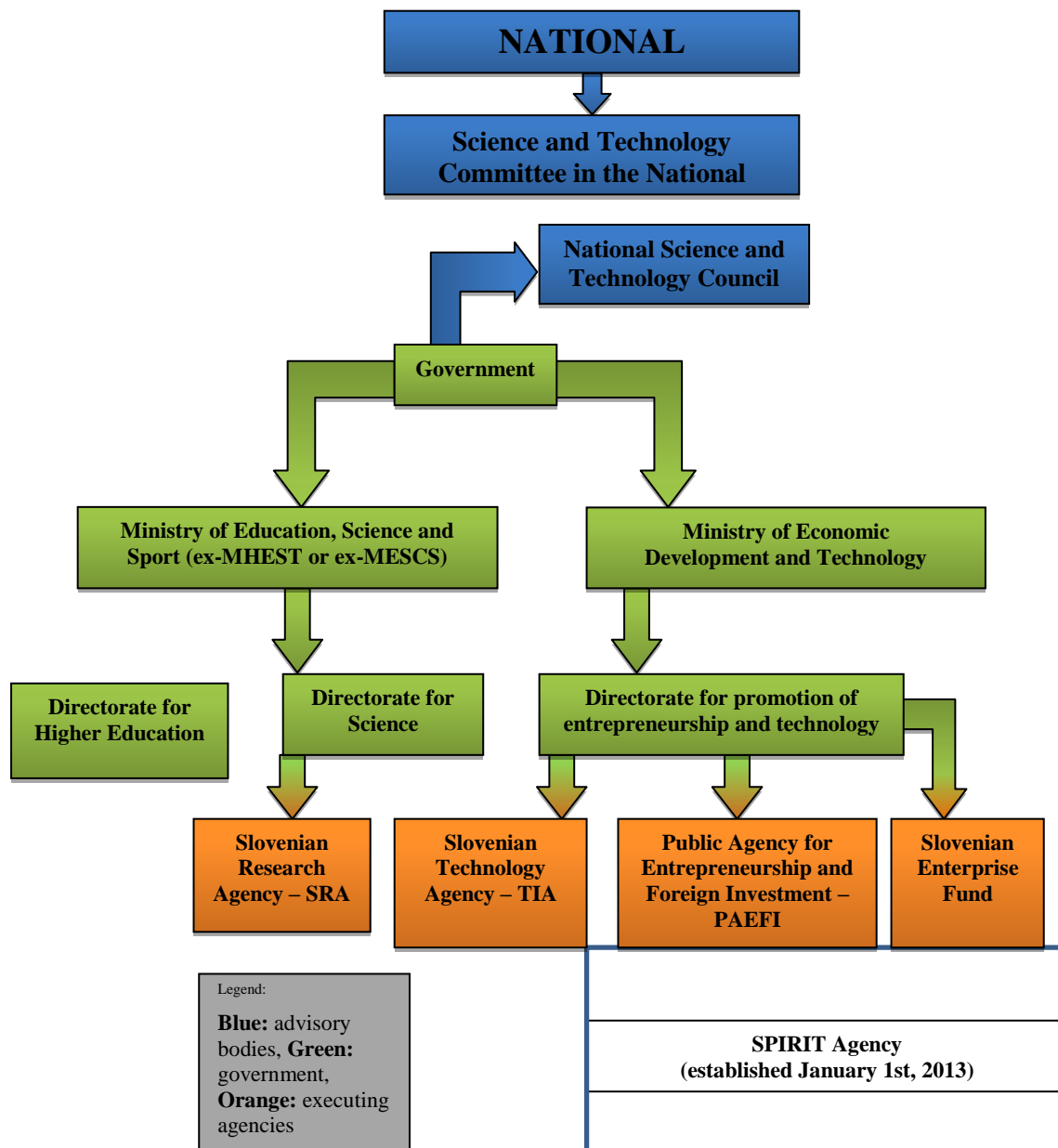


Figure 1: Organisational structure of national R&D system (end 2013)

2 RECENT DEVELOPMENTS OF THE RESEARCH AND INNOVATION POLICY AND SYSTEM

2.1 National economic and political context

The financial and economic crisis, coupled with the political developments, has hit Slovenia hard. Since 2010, Slovenia changed the government three times, each change causing certain governmental restructuring and personnel changes, which affect country's economic and political climate. These events have no doubt important impact also on the development of the national innovation system. In fact, with the government changes also the ministers change and their approach to different issues varies. Thus, Slovenia in the period 2011–2013 changed the Minister in charge of Science three times; next to the changes of ministers also the of the Ministry (entitled for Science) structure changed. This biggest shift occurred with the establishment of the 2012 Government, when R&D and innovation were (again) split between two ministries: the Ministry for Education, Science, Culture¹⁰ and Sport, which retained the R&D part, and the Ministry of Economic Development and Technology, which 'received' the innovation part of the ex-Ministry of Higher Education, Science and Technology (MHEST). It is clear that such reshuffling in a short-term period often leaves dire consequences, and in this case Slovenia is not an exception.

Only months prior to first government change, Slovenia adopted its long term strategy in the area of R&D and innovation, called the "Research and Innovation Strategy" (RISS), which envisaged several changes in the institutional set-up, financial mechanisms as well as priority setting. Yet due to the political uncertainty and budget constraints, the implementation of this strategy has slowed down, since almost all of the needed legal acts are still in the process of preparation.

2.2 Funding trends

The 8% decline of GDP in 2009, followed by a slow recovery in 2010 and 2011 (the GDP growth was 1.4 % in 2010, while for 2011 only 0.4 %), had limited impact on R&D investment, since the business sector as well as government sector managed to maintain the upward trend of R&D investments, with increased importance of the sources from abroad. The 2011 in fact resulted in the highest share of R&D expenditures in GDP: 2.47 %. Due to the changed methodology this figure is not fully compatible with the earlier years, but even so, we see no decline of investment either by business sector or by the government. The final figures for 2012, released in Feb. 2014 show further growth of business sector's R&D investment which along with decline in GDP resulted in GERD reaching 2.63 % of GDP.

Yet, if initially Slovenia managed to maintain its public funding of R&D intact (2009-2010), in the following years we witness decline in GBAORD with little possibility for recovery any time soon. The fact that GDP per capita fell by 7% since 2009, with continued negative growth in 2012–2013 (in 2012 -2.3 %, forecast for 2013 -2.4 %) has resulted also in lower government

¹⁰ With 2013 restructuring of the government culture received an independent Ministry again.

allocations to R&D, and especially to innovation support measures in 2012. According to preliminary (non-official) data, the business investment in R&D, still quite strong in 2012, is not expected to maintain its level in 2013.¹¹

The 2012 budget allocation to the Ministry of Education, Science, Culture and Sports (2012 was also the only year of such a ministry) was revised downwards, so instead of approximately 200 € million, expected in the budget proposal for R&D, only 175.9 € million were disbursed. This meant that several activities could not be financed (especially in the area of R&D investment and internationalisation) or were financed in lower amounts. The Fiscal Balance Act had most serious consequences for the higher education institutions, since their financial allocations were cut by almost 10 %. At the same time, the already selected basic and applied projects of the 2011 call were not started in 2012 and only received first financing in August 2013. The GBOARD, which includes allocation for research of other government bodies, was 190 € million or 0.54 % of GDP (SORS, 2013)¹².

In 2013, the GBOARD is still restrained and was planned at the same level as in 2012. With the help of public protest, the Ministry of Education, Science and Sports managed to obtain additional 16 € million for higher education institutions. The 2013 budget of Slovenian Research Agency (SRA), the main agency for financing public research, has suffered only small decline in funds (5 % in relation to 2012), with most of the cuts in the activities in the area of international relations and human resources (the allocation to Young researchers programme was 85 % of the 2012 level). On the other hand, the support provided to the business R&D units suffered more serious cuts, since the new agency SPIRIT had not replaced the activities of Technology Agency and PAEFI and only a few programmes survived.

Table 1: Basic R&D indicators

	2009	2010	2011	2012	EU27 average
GERD (% of GDP)	1.85	2.1	2.47	2.63	2.06
BERD (€ million)	381	435	547.5	577.6	168.041 (2011)
BERD as % of GDP	1.08	1.23	1.51	1.6	1.12 (2011)
GERD financed by abroad as % of total GERD	6.0	6.0	7	8.5	9.2 (2011)
R&D performed by HEIs (% of GERD)	14.6	13.9	11.8	11	24
R&D performed by PROs (% of GERD)	20.8	18.2	14.3	13	12
R&D performed by Business Enterprise sector	64.6	67.8	73.9	75.7	63
New doctorate graduates (ISCED 6) per 1000 population aged 25-34	1.1	1.3	1.5	1.5	1.5
Percentage population aged 30-34 having completed tertiary education (Eurostat)	22.6	31.6	34.8	37.9	33.6
International scientific co-publications per million population	n.a.*	750	827	955	301
Scientific publications among the top 10% most cited publications worldwide as % of total scientific publications of the country	n.a.*	7	7.62	7.39	10.73
PCT patents applications per billion GDP (in PPS€)	n.a.*	2.56	2.97	3.01	3.78
PCT patents applications in societal challenges per billion GDP (in PPS€) (climate change)	n.a.*	0.65	0.63	1.46	0.64

¹¹ The government tried to offset this trend by introducing an increase in R&D tax subsidy to a 100% level, yet it seems that many Slovenian enterprises simply cannot afford to invest in R&D in view of credit crunch prevailing in the country.

¹² http://www.stat.si/novica_prikazi.aspx?ID=5761

mitigation; health					
Public-private co-publications per million population	42.6	51	51	85.4	36.2
Medium and high-tech product exports as % total product exports	56.5	58.45	56.84	n.a.*	48.23
Knowledge-intensive services exports as % total service exports	21.2	27.23	27.11	20.91	48.13
License and patent revenues from abroad as % of GDP	n.a.*	0.08	0.08	0.17	0.51

Source: Eurostat (2013).

2.2.1 Funding mechanism

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 the newly formed SPIRIT, the agency combining the former [Technology and Innovation Agency](#), the [Public Agency for Entrepreneurship and Foreign Investment](#) and the Slovenian Tourism organisation should be in charge of entrepreneurial support and financing of the R&D activity in business sector. Yet, only some of the calls have been entrusted to the new agency and some have been performed directly by the [Ministry of Economic Development and Technology](#). Support for business sector R&D is partially provided also through [Slovenian Enterprise Fund](#), especially for the start-ups in innovation environment and bank guarantees for SMEs engaged in R&D projects and technological restructuring.

The [RISS](#) proposed 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 at the time of discussions on RISS was to give more independence and autonomy to universities and institutes allowing them to allocate the funds internally on one hand and on the other to increase the competitive funding as suggested by the OECD and ERAC evaluations. Such a change requires a new or at least significantly amended Law on R&D (2002). In October 2013, the Ministry appointed an expert group with a task of drafting the new law. A draft of the new law is being prepared within the group, but has not yet been presented to the government or the public. The mandate of the group has been extended to include also the views of the Ministry of Economic Development and Technology.

The budget and annual work programme of Slovenia Research Agency was not approved until the summer, causing delays in financing of some measures. Yet, no changes in the funding mechanisms, evaluation or the structure in terms of competitive versus institutional funding have occurred. The research programmes remain the backbone of the SRA relatively stable funding, which the Agency classifies as competitive, yet many analysts see this as closer to semi-institutional funding: instead of directly linking the funds to the institutions, the research programmes are directed to the research groups for four to six years, based on a public call. What makes this type of funding relatively stable is the fact that over the years there has been very little fluctuation in terms of drop-outs or new entrants¹³. In 2012, the funding for research programmes was slightly lower- most of the research groups adjusted by lowering the salaries- a requirement the PRO had to implement anyway due to the Act on Consolidation of Public Finance.

¹³ See details on the research programmes in ERAWATCH Inventory web page.

As mentioned, the basic and applied projects, selected at the 2011 call finally received funding in August 2013 – their start had been postponed several times in 2012 due to the lack of funds. Also, a new call was published by SRA in the beginning of August 2013 for basic, applied and post-doctoral projects, expected to be financed in 2014. In the first round only about 10% of applications were successful, due also to an exceptionally high application rate. It is expected that about 10 € million on the whole is to be available for the projects, selected in the second round.

The allocation of resources via SRA is much more transparent and stable as it is for innovation support measures, where we not only have more actors (Ministry of Economic Development and Technology, SPIRIT agency, Slovenian Enterprise Fund, Slovenian Development Bank SID), but no clear common platform of the support calls or/and amounts available. Several of “standard” support measures directed towards business, like co-financing of applied projects, financing of R&D start-ups, co-financing of university incubators and technology centres/parks, EUREKA projects were not implemented in 2012. Some have been restored in 2013, at least at very modest level (EUREKA, for example, was allotted a budget of 0.4 € million. According to the unofficial data from the MEDT, the Ministry and SPIRIT’s 2013 budget for various measures, including some more entrepreneurial than innovation ones, is in the vicinity of 15-20 € million, with additional 35 € million from SEF and 474 € million of loans to business sector for R&D investments by SID. All of the financing is strictly on competitive basis, even for the innovation support infrastructure, such as technology parks, centres or university/ business incubators.

The government increased significantly the R&D tax subsidy, which from 2012 onward is at the level of 100% (Official Gazette 30/2012). In 2011, a thousand companies benefitted from this measure. The measure is especially welcomed by the larger enterprises which invest significantly in R&D (like, for example, pharmaceutical companies). The planned change of offering more subsidised credit instead of subsidies for R&D projects that the government wanted to implement in 2012 proved not to be the measure Slovenian, especially small enterprises would favour: while the allocation of resources for loans/ guarantees was not fully spent, the demand for subsidies was voiced at several for a of SMEs.

In recent years the inflow of the EU structural funds has been significant for the R&D field. According to the data of Statistical Office, 131.8 € million was received in 2012 (SORS, 2013).

2.2.2 Thematic versus generic funding

In the current scheme of financing one could hardly talk about thematic funding. The SRA calls are always opened to all scientific disciplines, even though there is more or less stable relationship between different disciplines in terms of allocation of funds. Within the given percentage per discipline, certain priorities are usually given in accordance with the valid national research programme.

Lack of thematic funding has been pointed out as a weakness in several evaluations of the national innovation system. RISS 2011-2020 also does not specify the thematic priorities, but suggests that they are to be determined according to the smart specialisation strategy.

2.3 Research and Innovation system changes

In March 20th Slovenia got a new government, led by centre-left coalition. The coalition agreement addressed R&D very briefly, by re-instating the commitment to RISS. The most notable change with the new government was the re-establishment of a separate Ministry of Culture, which meant that the Ministry responsible for science is now in charge of Education, Science and Sports. The technology department remained with the Ministry of Economy – now Ministry of Economic Development and Technology.

This minor organisational shift had no further consequences for the structure of the research and innovation system. The proposed change of the advisory body – the merger of the National council for Science and Technology with the Competitiveness council has not been implemented yet. Also, technology agency remains a component of SPIRIT – a new agency created by the previous government by merger of TIA – Slovenian technology agency with PAEFI- Public agency for entrepreneurship and foreign investment and Slovenian tourist agency. The joint agency has not really proved more effective, but partly the reason for this is also lack of financial resources for the measures usually implemented by these agencies (voucher schemes, R&D financing for business enterprises). The MEDT already proposed to the government the reorganisation of SPIRIT, where one of the proposals was to close the agency down and re-establish an independent Tourist Agency. The tasks of entrepreneurship and innovation promotion were to be distributed among the ministry's staff. This was stopped when the minister for economic development and technology resigned. It is expected that any reorganisation will have to wait for the appointment of the new minister. However, the directorate for entrepreneurship promotion and technology suffered serious staff changes, which suggests further complications in the RISS implementation.

2.4 Recent Policy developments

The changes in the government and current difficult financial situation in Slovenia have slowed down the introduction of new policy initiatives. The new government revised the implementation programme of RISS and is gradually putting in place the necessary legal acts which need to be changed and adjusted to the RISS implementation. With a need to prepare several documents and policies at the same time, there seems to be a problem of coordination and common strategic focus.

A draft Law on Higher Education (replacing that from 2002 and harmonising the new law with the NPHE 2011 – 2020) is being prepared, discussing also issues like public concessions to private higher education institutions, special fund for the research at public universities (a kind of institutional research funding) etc. Also, within the Ministry's responsibilities is the new Law on Research and Development, which will address some of the unresolved issues of RISS¹⁴: relationship between research institutes and universities; the issue of programme funding vs. competitive funding, setting the priorities, principles of institutional vs. project evaluation, etc.

¹⁴ RISS gave general direction of change, but not the practical manner how to achieve this.

On the other hand, Slovenia is trying to prepare all the required documents for the next financial perspective, including also RIS3. This is in the hands of the Ministry of Economic Development and Technology. And even here it seems that some of the documents were prepared within one office of the Ministry and some in another, with limited coordination. Therefore there is no mentioning of RIS3 in the Slovenian Industrial Policy, which to a certain extent disregards the R&D and innovation as the important elements of Slovenian development, as specified in RISS. The first draft of the Partnership agreement was a patchwork of different ideas presented by people responsible for individual areas, but reflected clearly how poor the coordination efforts were at the time. The second version, published in Dec., is more concise. Due to the delays in the preparation of the documentation and also poor disbursement of funds within the current financial perspective, certain re-organisation of staff in the Office responsible for structural funds took place, yet this is not necessarily the optimal solution. The complex system of structural funds and the programming, including also the coordination of RIS3 requires experienced people with sufficiently high political authority and clear understanding of priorities and time required for careful planning.

In the beginning of March 2014 the government established a special Office for Development and European Cohesion Policy with primary task to speed up the preparation of the necessary national documentation for the structural and cohesion funds. This also means that a new team has been assembled to work on the RIS3 and address the deficiencies in the draft document as submitted to the Commission in Nov. 2013. First public presentations of the concept are being planned for mid- April, with revised proposal to be submitted in June.

2.5 Recent evaluations, consultations, foresight exercises

No further analysis or evaluations of the R&D system were carried out since the ERAC and the OECD one in 2010 (see Erawatch Country Report 2012 for details). Monitoring of the implementation of RIS3 has been provided by the DG Regio and DG Research and Innovation, but these reports are not yet publicly available. Also, internal report of the implementation of the RISS has been prepared by the MESS for the government and was presented on the December 2013 session of the Science and Technology Council. The SRA was evaluated as the institution by European Science Foundation.

2.6 Regional and/or National Research and Innovation Strategies on Smart Specialisation (RIS3)

After a very slow start, Slovenia has decided by the end of 2012 on the preparation of the RIS3. The coordination has been entrusted to the Ministry of Economic Development and Technology (MEDT), yet the initial approach was not following the EU guidelines, in particular not as an overarching strategy of the country. The working group, established by the previous government (2012-2013) at the MEDT and MESCS (Ministry of Education, Science, Culture and Sports) had very limited task of the preparation of a draft document on RIS3 as a sort of innovation strategy where closer attention is paid to the research priorities which could contribute to increased industrial competitiveness. The working group claimed that in the drafting of RIS3 they were taking under the consideration the RISS 2011–2020, as well as all different other consultations (Technology platforms, preliminary foresight), existing experience

of the centres of excellence, competence centres and centres of development, co-financed under the current financial perspective from The European Regional Development Fund.

With the help of former Technology Agency, a research paper had been commissioned on overlapping/ matching of research and industrial capacity as they can be identified according to standard indicators (value added and export share for industry, patents/ publications for scientific output. Since their effort was assessed as insufficient the Chamber of Industry and Commerce got actively involved and helped organize a set of panels where the ideas on how the RIS3 should look like were discussed. This led to certain duplication of efforts, with the RIS3 prepared under the umbrella of Chamber “winning”. But the introduction of RIS3 in relevant policy documents and Operational Programme (OP) remain the task of a team (changed) at the MEDT, which organised the public debate during the summer (!) and only partially extended the time for comments till end of September. The re-drafted version taking on board some of the comments has been issued to the public in the end of November 2013.

At this point the assessment of the linkages between RIS3 and other policy documents is reflecting already mentioned poor coordination. The priorities identified in the Slovenian Industrial Policy (SIP) are not the same as those in RIS3. Even though the RIS3 has now been presented to various stakeholders, the implications of following these priorities have not been made clear, since the implementation part has been elaborated only in a very sketchy way and remains to be operationalized in OP. Most of the issues like coordination mechanism between the national and regional level, specific measures to be put in place to lead towards the implementation of the priorities identified are still missing. It seems that the importance of the document had not been understood fully by the policy makers at the beginning of the preparation and it is expected that with the establishment of the special Government Office directly responsible for the cohesion policy, this will be overcome. It is expected that the new group will engage more actively with key stakeholders to attract sufficient attention and engagement.

3 PERFORMANCE OF THE NATIONAL RESEARCH AND INNOVATION SYSTEM

3.1 National Research and Innovation policy

Summary Innovation Scoreboard¹⁵ reveals that Slovenia has been improving its innovation performance and catching up with the EU average up until 2011. In 2012 its innovation performance slightly declined while Slovenia maintained the place in the group of innovation followers to which it belongs since 2009. When account is made of different dimensions of innovation performance of Slovenia it becomes evident that its relative strengths are in human resources and in international scientific co-publications whereas main weaknesses relate to intellectual assets and to marketing of innovations. Also, the economic effects of innovation activity in Slovenia are lagging behind its inputs suggesting that similar performance could have been achieved with fewer resources. Weak efficiency of Slovenia's innovation system is reflected in low labour productivity compared to the EU average. Furthermore, it is worrying that the efficiency of investment into innovation system deteriorated since the beginning of the crisis (Bučar & Stare, 2014).

Table 2: Selected indicators of National Innovation System

HUMAN RESOURCES	
New doctorate graduates (ISCED 6) per 1000 population aged 25-34	1.7
Percentage population aged 25-64 having completed tertiary education	39.2
Open, excellent and attractive research systems	
International scientific co-publications per million population	1042
Scientific publications among the top 10% most cited publications worldwide as % of total scientific publications of the country	7.0
Finance and support	
R&D expenditure in the public sector as % of GDP	0.63
Public Funding for innovation (innovation vouchers, venture/seed capital, access to finance granted by the public sector to innovative companies)	n.a.
FIRM ACTIVITIES	
R&D expenditure in the business sector as % of GDP	2.16
Venture capital and seed capital as % of GDP	n.a.
Linkages & entrepreneurship	
Public-private co-publications	9.2
Intellectual assets	
PCT patents applications per billion GDP (in PPS€)	1.75
PCT patents applications in societal challenges per billion GDP (in PPS€) (climate change mitigation; health)	0.97
OUTPUTS	
Economic effects	
Medium and high-tech product exports as % total product exports	n.a.
Knowledge-intensive services exports as % total service exports	21.04
License and patent revenues from abroad as % of GDP	0.44

Source: Innovation Union Scoreboard (2014).

¹⁵ Innovation Union Scoreboard (2014). More available at [novation/files/ius/ius-2014_en.pdf](http://innovation/files/ius/ius-2014_en.pdf)

3.2 Structural challenges of the national R&I system

In identifying the structural challenges of the R&I system, we can agree with the already cited observation in the Commission's Working paper where it is stated that “*the main challenge will consist in preparation of an innovation strategy for smart specialization to harness the potential for smart growth and the knowledge economy*” (EC, 2013). The MEDT has published the revised version of the RIS3 on its web page in the end of November 2013. The text has been edited upon a rather short public debate during August, taking on board some of the comments by various commentators, yet the revised version was not submitted to the Science and Technology council or to any other forum: the text is simply published on the ministry's web page. The practically ***non-existent public policy debate*** has so far been the principle with regard to many of the open issues in R&I area. The preparation of the Partnership Agreement and the Operative programme for 2014-2020, the planned revision of the Law on R&D, revised RIS3 are only some of major documents being prepared in rather closed circles, where apparently intensive debates are on-going. In spite of high expectations with the adoption of RISS, it is now observed that the innovation policy has receded from the top of the policy agenda. In a situation of high economic and political uncertainty, with serious financial problems and unavailability of bank loans, both the government and business community are much more short-term focused on survival, so growth, and with it research and innovation, do not figure in the on-going policy discussion.

A new and much more dramatic challenge for Slovenian R&D system is therefore ***how to revive the interest in R&D and innovation*** and convince the major government players that the exit strategy without investing in new knowledge and technology is a short-sighted and very likely unsustainable.

The issue of ***coordination and streamlining of the R&D and innovation policy***, including governance structure and organisational set-up of the support infrastructure was identified by the national as well as international evaluations of the Slovenian NIS as the major challenge already in earlier periods. With the separation of the science and technology, each being the responsibility of a different ministry and consequent staff changes in MEDT, the lack of coordination seems to reach a new level. The absence of the representatives of the Ministry of Economic Development and Technology from various events and meetings has been noticed in particular in the second half of 2013: none of the sessions of the National Council for Science and Technology was attended by them- in spite of the fact that the minister is the member by the position. Also noted was their absence from the presentation of the HORIZON 2020, where more than 700 researchers from all sectors were present.

Already the 2011 Erawatch Report (Bučar, 2012) identified as one of the potentially important challenges facing the national R&D system the issue of sustainability of the level of R&D financing, especially from the public resources. The EU Report on 2020 R&D targets however still saw Slovenia as one of the countries which are on track to reach their targets by 2020, but this expectation is based on the average rates of growth of investment in R&D in the period 2000-2011 (European Union, 2012). Looking at the events in 2012 and 2013, the reduced availability of public budget for research, development and innovation is becoming the key factor driving the future development of public research: the PROs will need to redefine their research priorities and look for funding abroad (there are optimistic expectations of many larger research institutes on account of HORIZON 2020) and from business sector. How realistic is the later, is difficult to say: on one hand the business entities which maintain their competitive position are increasing investments in R&D, yet on the other, most of the increased investment is internal. Decreased public resources might hurt especially areas of research which are not so closely related to business sector: basic research in social sciences and humanities, for example.

The need to increase the effectiveness of higher education system has been identified as a challenge for several years now by various evaluations (Bučar, 2011; ERAC, 2010; IMAD, 2011, 2012; OECD, 2011, National Programme of Higher Education 2011-2020). In 2013, a draft was prepared of the new law on higher education by the MESS. Even though the draft proposal doesn't introduce tuitions, the very fact that it proposes slightly more restrictive study regime already triggered student protests, yet also support of some of the main student organisations. The most important novelty that the draft law proposes is that each citizen has the right to once in his/her lifetime studies free of charge and the student status is granted for the duration of the study programme plus additional study year, in accordance with the NPHE 2011-2020. If the person fails to complete the study programme within this time frame, he/she may continue but only against payment of the tuition. The option of introducing study programmes against tuition was criticised especially by some student organisations, which saw this as a step towards commercialisation of higher education. Especially critical towards the draft proposal were the private higher education institutions since the draft law introduced much more complex criteria for their establishment and concessionary funding. Since the closing of the public discussion in October 2013, the draft law is being redrafted by the Ministry, with no publicly available information on the schedule for its completion. In view of the financial difficulties of most of the Universities, the adoption of the new law which should stipulate new methodology for the distribution of the resources to the universities, is urgently needed, so final proposal is eagerly awaited.

3.3 Meeting structural challenges

Table 3 List of challenges

Challenges	Policy measures/actions addressing the challenge ¹⁶	Assessment in terms of appropriateness, efficiency and effectiveness
<i>Challenge 1.</i> Preparation of an strategy for smart specialization	The preparation of a new version of the Strategy of smart specialisation in November 2013 on the basis of inputs from public discussion, text waiting for governmental debate.	The key problem with the document is its low visibility and lack of ownership. It is still primarily the document of the Ministry of Economic Development and Technology., Business sector or/and research sector are hardly aware of its potential impact.
<i>Challenge 2.</i> Revive the interest in R&D and innovation policy	Very little appropriate action undertaken - almost all policy discussion is restricted to internal discussions and planning at the ministry levels. MESS is preparing a draft law of R&D	
<i>Challenge 3.</i> coordination and streamlining of the R&D and innovation policy	Formally, a coordination body between the ministries is established. Also, the Council on Science and Technology had a role of mediator through a membership of all stakeholders: public sector researchers, business sector representatives, rectors, three ministries.	In practice, the coordination is lacking, especially at the higher level. The meetings of the Council had been attended only occasionally by the Minister of Education, Science and Sports.
<i>Challenge 4.</i> Increase the effectiveness of higher education system	Draft Law on Higher education prepared and launched in public discussion.	Draft Law was not well received by the stakeholders, especially by the student body. Some of the solutions could increase the effectiveness but need to be better communicated by the government.

¹⁶ Changes in the legislation and other initiatives not necessarily related with funding are also included.

4 NATIONAL PROGRESS IN INNOVATION UNION KEY POLICY ACTIONS

4.1 Strengthening the knowledge base and reducing fragmentation

4.1.1 Promoting excellence in education and skills development

Up to 2011, the employment in R&D had been increasing, especially so in the business sector. This has been the consequence of increased investment in R&D and no doubt reflects also the fact that R&D tax subsidy allows for the deduction of total R&D investment, including cost of internal R&D staff. If by 2007, total employment in R&D in FTE was 10,369; by 2011 the number increased to 15,269. The employment growth in public sector has been very limited, so at least for public research institutes and public universities, the only growth which occurred is strictly project based. In fact we could say that the austerity measures have caused certain deterioration of employment conditions in the public sector research organisations, since for researchers only time-based employment is possible. In Slovenian labour market, such contracts are stigmatised by relative insecurity and several disadvantages.

Slovenian labour market for researchers remains relatively closed, especially at the public sector research institutions due to the internal restrictions, compensation limitations due to the classification of researchers in public sector (HEIs and PROs) as public employees, where salaries have to follow Public Sector Wage System Act and a collective agreement for all public sector employees.

With new measures supporting the strengthening of R&D capabilities in business sector, some mobility in the direction of private sector R&D is experienced (special measure KROP, co-financing the cost of mobility). Also, with regard to education and skills development, both types of support for young researchers is still available¹⁷, and special national scheme of scholarship fund for PhD students Innovative Doctoral Training Scheme was available through the universities. The call to which the higher education institutions apply is run by the MESS with the financial assistance of ESF. Although there are some minor differences on who is eligible for such PhD co-financing among universities, the idea of the introduced measure is to increase the number of enrolled in PhD training/education through the co-financing of their study. Two types of scholarships were offered: a more competitive one where the tuition and the scholarship was provided for three and a half years and a more “open” one where students could receive the reimbursement of the tuition. Since the programme is co-financed by ESF, it was not offered for the school year 2013/14. It remains to be seen what form it will have in the new financial perspective.

The In August 2013 the MESS published a call “Researchers at the initial stage of their careers”, which has as an aim to develop and to foster the career path of the researchers, which have already obtained their PhD. Part of the rationale of this measure had been that the SRA has not published the Call for basic, applied and post-doc projects in 2012 and therefore one generation of PhD had no possibility to be employed after the end of their education. Parallel with this fact in 2013 two measures KROP and mobility grants were coming to an end and it was expected

¹⁷ See details in Erawatch Country Fiche and Erawatch Support measures.

that they are not going to be prolonged. Thus, the MESS decided to bridge the gap between 2012 and 2014 with such measure. The whole amount was 6 million €, disbursed among 77 researchers out of 169 applications for a period of up to 1.5 year. The Ministry is considering a modification of such instrument for the next financial period which would not be focusing solely on bridging the gap but would offer the young researchers various support options for employment in the country; be it start their own company, find the position in business sector or stay at the PRO.

4.1.2 Research Infrastructures

The key objectives (in the period 2011–2020) within the field of Research Infrastructure (RISS 2011) are:

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

To support the above orientation, a new national strategy on Research Infrastructure was 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: 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, PHARE; CERIC; SHARE etc.) are mentioned, complemented with data on what Slovenia already made and what will make in the future (See ERAWATCH Country Fiche Slovenia). Many of the planned activities however depend on the ability to secure funding, where due to the serious financial constraints still priority is given to financing national research infrastructure.

According to the statements of the MESS, the Facility for Antiproton and Ion Research in Europe (FAIR)¹⁸ project (physics and engineering field) is the main priority ESFRI project for Slovenia. In addition to FAIR, Slovenia is participating with funding commitments for the implementation phase to four out five of the ESFRI projects in the field of social science and humanities: CESSDA, DARIAH, ESS Survey and SHARE. Other projects in which Slovenia participated to the preparatory phase were LIFEWATCH in the environment field; and EATRIS and ELIXIR in the biomedical field.

4.2 Getting good ideas to market

4.2.1 Improving access to finance

While the National Reform Programme (NRP 2013–2014) is numbering a set of activities, which will be put in place to support access to finance, business sector often finds the support measures inadequate. Most important in this field is the Slovene Enterprise Fund (SEF), which implements financial engineering instruments for SMEs. The Slovene Enterprise Fund continues to provide its products through three financial lines, i.e. a guarantee/credit line for SMEs, a subsidy line for SMEs and a line for equity financing. The NRP plans that the financial assets within these lines will be divided into two programming sets with respect to technology intensity,

¹⁸ More available at <http://www.fair-center.eu>.

innovation and potential for growth: into innovative companies with the potential for fast growth and companies developing less intensively.

SEF is providing internal evaluation of all its calls for several years, gathering first the data on the recipients of the support and after the end of the period, the recipients report on the implementation of the project for which they received the support. External evaluation of SEF specifically had not been implemented, but within the overall evaluation of the support measures, commissioned by the Ministry of Economy and completed in 2012, SEF's portfolio and the management of the measures (transparency, clear selection criteria, stability and for Slovenian circumstance, relatively low red tape) were assessed as outstanding (Jaklič et al., 2012).

In 2013 and 2014, SID Bank is to continue to provide the financial market with supplementary financial services in the form of i) SID Bank's long-term specific credit lines through commercial banks, ii) loans with the status of state aid as part of the measure of financial engineering for the promotion of technological and developmental projects 2011–2013. Little information is provided by SID on the recipients of its support, since the Bank maintains its policy of non-disclosure of data.

4.2.2 Protect and enhance the value of intellectual property and boosting creativity

In Slovenia the intellectual property framework is well-developed. In mid-2000 Slovenia adopted a lot of regulations defining, determining and protecting the intellectual property. In 2006 a new Law on industrial property was adopted (OG 51/2006), followed in 2007 by the Law on authorship (OG 16/2007, revised in 68/2008). Under the umbrella of the Public Agency for Entrepreneurship and Foreign Investments (PAEFI) two vouchers schemes were published in 2008 and 2009 for fostering the protection of intellectual property (see EW Country Fiche). The newly-established agency SPIRIT (which became institutionalised as a merger between the technology agency – TIA and PAEFI) at the end of October published a call for enhancing the protection of intellectual property in SMEs.

4.2.3 Public procurement

The current public procurement policy in Slovenia is subject to a lot of discussion, but seldom the issues of innovative goods and services are the main topics of discussion. In the past, there were several initiatives from MESS to adjust the procurement policy to stimulate innovation, but the prime concern of the Ministry of finance was given to transparency of the process and other legal stipulations.

A debate regarding the public procurement is now going on within the health sector, where there are some discussants that argue that the cost efficiency cannot be the only criterion taken into consideration when the public procurement is on the table. But similar debates were opened also in the past and no changes are expected in the near future.

4.3 Working in partnership to address societal challenges

So far Slovenia did not have a special research programme to address societal challenges, but in some of the research programmes and targeted research projects have touched upon various issues of sustainable development, climate change, knowledge society, elderly citizens, youth, etc. Several research groups participated in EU funded projects in this area. What was lacking was a

platform which would pool together all these different research projects under a common framework.

The draft Smart Specialisation Strategy was expanded after the public discussion to include a dedicated chapter to the societal challenges, suggesting that in the future we can expect a more systematic attention to the integration of global societal challenges in the planned research through so called dynamic vertical areas. Specifically the following issues are mentioned: environmental and energy challenge, sustainable mobility, health issues related to ageing population.

4.4 Maximising social and territorial cohesion

The current draft of RIS3 is addressing the issue of territorial cohesion in highly formal manner and does not elaborate much. As it is at this moment focusing primarily on the identification of the priorities and not on the implementation and specific measures, the authors claim that this shall be added/ discussed later on.

4.5 International Scientific Cooperation

The internationalisation of R&D cooperation has been systematically encouraged from the early development of Science and Technology policy of the country. The responsible Ministry for science has systematically promoted and supported the participation of Slovenian R&D organisations in projects financed or co-financed by the European Commission, agencies of the United Nations, and other international and intergovernmental organisations.

In the Research and Innovation Strategy of Slovenia RISS 2011–2020 (May/June 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 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.).

A special document was to be prepared specifying the support measures in the area of internationalisation, with more specific focus on opening up the Slovenian research labour market. Yet to date such policy has not been prepared and the employment of foreign researchers is still individual policy of research institutes. The internationalisation of higher education has been supported by the call of MESS in August 2013, which offers co-financing of either employment of foreign professors or their guest lecturing, but no similar measure is available for guest researchers.

5 NATIONAL PROGRESS TOWARDS REALISATION OF ERA

5.1 More effective national research systems

While RISS announced several changes in the national research system to make it more effective, nearly all of the legal changes needed for its implementation are still pending. Two major laws which will have important effect on the R&D system are in drafting stages. The Law on Research and Development, which defines the research organisations, financing system and evaluation procedures had been drafted since October 2013 by a group of experts, appointed by the Minister of Education, Science and Sports. The draft will have to be approved by the Ministry first, then go into public discussion and only afterwards into the legal procedure within the government and National Assembly.

Since in 2014, nearly 85% of the research programmes, currently financed by SRA, end, a new call for their extension/ renewal is expected in the spring 2014. The long-term research programmes represent more than half of the research budget of SRA and commit the funding for the next 5-7 years. With no new Law in place, the allocation will be implemented according to the existing rules, seriously limiting the room for new financing methodology, suggested by RISS. Also, setting research priorities in junction with RIS3 and Operational Programme for 2014- 2020, is likely to be difficult, since the existing system of content determination is based on bottom-up principle, by which the submitters of the proposals select their research topics.

5.2 Optimal transnational co-operation and competition

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 (ERAWATCH 2013).

Slovenia concluded bilateral agreements with more than 70 countries (Slovenian Research Agency 2013), either related to cooperation in R&D sphere only or the cooperation in S&T, higher education and culture. In terms of multilateral initiatives one can mention that Slovenia is participating in the 7th Framework Programme and in COST (European Cooperation in Science and Technology) initiatives (Slovenian Research Agency 2013). However SRA has only one undersigned Memorandum of Understanding on the unilateral administration and mutual recognition of evaluation procedures with the Austrian Science Fund (FWF) (Slovenian Research Agency 2013).

Slovenia is participating in 45¹⁹ joint research agendas: in 36 ERA-NETs, in 6 ERA-NET plus networks as well as in three article 169/185 networks. At the end of 2013, Slovenia is participating in two Joint Programming Initiatives (JPI Climate and JPI Cultural Heritage).

When it comes to Joint research agendas with other countries on grand challenges, Slovenia is participating in 5 of them, namely the ECO-INNOVERA, ERA-ARD, HY-CO, NET-HERITAGE, SAFEFOODERA networks (NETWATCH 2013).

The Research and Innovation Strategy of Slovenia RISS 2011–2020 is having a special section which 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. At the same time Slovenia is going to improve its R&D cooperation with the most advanced countries, e.g. USA, Korea and Japan. RISS also declares that Slovenia “must become an attractive hosting country” for excellent researchers and enterprises from the region (ERAWATCH 2013b).

More and more research programmes are open to foreign participation, both from EU member countries as well as from third countries. Often however this participation does not include financial support, which is available only to the research organisations/ individuals registered with SRA. An exception is the Young Researchers Programme (which is a national programme), which has attracted applications from abroad, since it offers financing to candidates irrespective of the applicant’s home country.

5.3 An open labour market for researchers

Slovenian labour market for researchers remains relatively closed due to the internal restrictions, compensation limitations due to the classification of researchers in public sector (HEIs and PROs) as public employees, where salaries have to follow Public Sector Wage System Act and a collective agreement for all public sector employees as well as language requirement in HEIs²⁰. The higher education and public research institutions apply open recruitment methods and publish job vacancies on relevant national online platforms, on relevant Europe-wide online platforms, including the EURAXESS portal. Yet, for the past two years (since 2012) the employment in public sector is highly restricted and research posts are available for the duration of the research projects.

Vacancy announcements of public research and higher education institutions include the job profile, skills and competencies required, and eligibility criteria, however not all of the job vacancies are published in English. Together with job advert the relevant institutions publish the selection criteria. They regulate a minimum time period between vacancy publication and the deadline for applying and offer institutions the right to receive adequate feedback and the right to appeal. (Deloitte 2012).

As already mentioned, in principle, the cooperation of foreign researchers or research organisations is allowed for research programmes and projects, financed by SRA. Yet the foreign participants are eligible for funding only under the measure Young Researchers Programme. The measure provides for salaries and some materials costs for a young researcher who is employed in PRO while pursuing a PhD at the university.

¹⁹ Twelve of them are active.

²⁰ By Law, teaching of compulsory courses can only be in Slovenian language.

The Slovenian Research Agency signed the EUROHORCs' 'Money Follows Researcher' Agreement (EUROHORCs 2009) and is following its general principles. Publicly funded grants or fellowships are portable to other EU countries only if a short-term stay in another EU country is part of a research project (Breitfuss, 2013).

Slovenia is in the process of establishing the first EURAXESS Service Centre, services for mobile researchers are offered currently by the contact points and the 'Centre of the Republic of Slovenia for Mobility and European Educational and Training Programmes' (CMEPIUS)²¹. The Slovenian Euraxess is part of the European network Euraxess and provides information and assistance to mobile researchers by means of the internet portal and with the support of seven national EURAXESS Contact Points. Six organisations have endorsed the Charter & Code (EURAXESS 2013b), two have received the Commission acknowledgement for their progress in the context of Human Resource Strategy (EURAXESS 2013c).

With regard to career development, in 2010, all universities have established career counselling centres. Also, some of the other higher education institutions have followed the example. The establishment was supported under the special public call of ex-Ministry for Higher Education, Science and Technology (today's MESS) with the co-financing from ESF.²² The career centres organise various workshops for the students, contacts with potential employees and advisory service.

5.4 Gender equality and gender mainstreaming in research

The new Research and Innovation Strategy of Slovenia 2011-2020 (Republic of Slovenia 2011), 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 the Action Plan for Improving Career Opportunities for Researchers in all the Career Periods, and for ensuring the Gender Equality Principle (ERAWATCH 2013). However there are no relevant positive action measures including quotas (European Network of Legal Experts in the Field of Gender Equality 2012).

With regard to the composition of the scientific expert bodies within the Slovenian Research Agency SRA, there is a Regulation on the operation of permanent and temporary expert bodies for research, stating that such bodies should be composed of at least one third of each gender – and one fifth in technical sciences²³. But the rules are followed in an informal way, according to the context of each call. Traditionally, the Agency makes proposals for new committee members but it is the Scientific Council of the Agency who decides on the final nominations (Deloitte 2012, European Network of Legal Experts in the Field of Gender Equality 2012).

The research commissioned by the Group for the promotion of women in science at the MESS in 2011, however, revealed that of the women scientists included in the survey, 84% responded

²¹ More available at <http://www.euraxess.si/index.aspx>

²² More available at

http://www.mizs.gov.si/fileadmin/mizs.gov.si/pageuploads/razpisi/Visoko_solstvo/Karierni_centri/Predstavitev_KC.pdf.

²³ More available at <http://www.arrs.gov.si/sl/akti/prav-telesa-RD-maj13.asp>.

that they have never in their scientific careers taken part in any evaluation processes of the SRA or any other government body (MHEST, 2011). Even more problematic is the reply of the participants (both men and women!) in the above survey that they believe that the gender discrimination in science is not accidental, but intentional, with the highest presence of discrimination of women in awarding the projects (men: 63%; women 57%) and in career advancement (55%- equal for men and women).²⁴

5.5 Optimal circulation, access to and transfer of scientific knowledge including via digital ERA

Data on Slovenian researchers, organisations, research groups, projects and programmes are available via Slovenian Current Research Information System SICRIS. The Institute of Information Science (IZUM) is according to the Research and Development Act (2002), defined as a public infrastructural institution and registered as a research organisation as well and is in charge of compiling SICRIS data. According to the Librarianship Act, IZUM is also defined as a library information service in the COBISS.SI national bibliographic system²⁵. Personal bibliographies of researchers (gathered in COBISS) as well as integrated ranking of each individual (SICRIS data) are used for research programmes/ projects evaluation as well as for the establishment of the qualifications for research programme/ project head.

Social Science Data Archives (SSDA), a member of CESSDA, maintained by the Faculty of Social Sciences of the University of Ljubljana, is collecting raw research data from social sciences research. National repositories for scientific publications and for raw research data are planned and are to be connected to the SICRIS. Deposit of research publications and raw data is to be made mandatory when the infrastructure is established. Building of an open social sciences and humanities research infrastructure is also anticipated.

More than 35 Slovenian scientific journals are indexed in Directory of Open Access Journals (DOAJ) out of approximately 120 published. Researchers are still reluctant to publish in OA journals - because of the evaluation metrics they prefer hybrid journals of traditional publishers. The electronic versions of all publicly co-financed Slovenian subscription journals (approximately 65 titles) and final reports of research projects, financed by the Slovenian Research Agency, must be deposited into the Digital Library of Slovenia. There are five active interoperable repositories following the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH): Digital Library of Slovenia, Digital Library of the University of Maribor, ePrints.FRI, PeFprints and Digital Repository of University of Ljubljana at Faculty of Construction and Geology. Some of the research institutions publish Open Access monographs (e.g., Digital Library of the Educational Research Institute). The country does not have a national portal for Open Access monographs (OpenAIRE 2013). SSDA prepared the Action plan on establishment of Open Access system for research data generated through public resources in 2013²⁶ for the MESS and SRA, where they highlighted the benefits and the costs of such a system.

²⁴ More available at http://www.mizs.gov.si/fileadmin/mvzt.gov.si/pageuploads/pdf/znanost/Zenske_v_znanosti/Delovni-pogojji-znanost-spol.pdf.

²⁵ More available at http://home.izum.si/izum/o_IZUMu/about_IZUM.asp.

²⁶ More available at http://www.adp.fdv.uni-lj.si/o_arhivu/publikacije/odpp10_akcijski_nacrt.

Annex 1. PERFORMANCE THE NATIONAL AND REGIONAL RESEARCH AND INNOVATION SYSTEM

Feature	Assessment	Latest developments
1. Importance of the research and innovation policy	(+) Preparation of the Smart Specialisation Strategy (RIS3) (-) Insufficient implementation of RISS through the preparation of the required legal documents	Draft RIS3 to be discussed by the government (scheduled for December 2013, but postponed).
2. Design and implementation of research and innovation policies	In spite of RISS, no major changes have been introduced in the research policy up to the end of 2013. The research funding remains to be primarily channelled via SRA through the standard set of programmes and projects, only at slightly lower scale due to the budgetary restrictions. Innovation policy measures have suffered a more drastic cut-down with the move of technology dep. to the Ministry of economic development and technology and the merger of PAEFI and TIA into SPIRIT.	Draft Law on R&D is being prepared by the special group of experts appointed by the MESS. Reorganisation of SPIRIT is under way at the MEDT.
3. Innovation policy	RISS 2011-2020 is the main document setting the basic orientation of innovation policy. Since its acceptance by the Parliament, its implementation is sporadic and slow.	Assessment of the RISS implementation was prepared by MESS in November 2013.
4. Intensity and predictability of the public investment in research and innovation	The national budget is laid out for two consecutive years, with basic indication of the resources allocated to MESS and its programmes as well as to MEDT. Yet the exact brake-down of finances according to specific areas/ measures depends on the annual plan of each Ministry.	Budget approved for 2014 predicts gradual increase of allocation of government resources for R&D from 0.55% of GDP in 2014 to 0.70% by 2016. ²⁷
5. Excellence as a key criterion for research and education policy	SRA claims that excellence is the key criteria in first, setting the eligibility standards for the applicants for research projects and programmes as well as in selection process. An elaborated system of measuring the scientific output is enforced by SRA for evaluation of individuals as well as programmes/ projects..	SRA is continuously adopting the guidelines for the financing, evaluation and monitoring of the research activities, with most recent changes in December 2013.
6. Education and training systems	The need to increase the effectiveness of higher education system has been identified as a challenge for several years now by various evaluations (Bučar, 2010, 2011; ERAC, 2010; IMAD, 2011, 2012a; OECD, 2011, NPHE 2011-2020).	The National Programme on Higher Education was accepted in 2011. A draft law on higher education was prepared in September

²⁷More available at

http://www.mf.gov.si/fileadmin/mf.gov.si/pageuploads/Prora%C4%8Dun/Sprejeti_prora%C4%8Dun/2014/PO_L05_2014.pdf.

		2013 and is being amended by the MESS, following multiple comments received during public discussion.
7. Partnerships between higher education institutes, research centres and businesses, at regional, national and international level	With the measures introduced under the Operational Programme 1: Strengthening of the regional development potentials 2007-2013, like centres of excellence, competence centres and development centres the partnerships between HEI, PRO and business have increased significantly. The evaluation of the results will reflect the full extent of the impact of these measures.	MESS is planning the evaluation of the measures supporting the centres of excellence and competence centres to assess their contribution to the promotion of partnerships.
8. Framework conditions promote business investment in R&D, entrepreneurship and innovation	The merger of PAEFI and TIA into SPIRIT was expected to bring greater transparency and coordination in the area of innovation policy measures, yet the budget allocations along with the policy of the ministry to execute several measures directly significantly worsened the framework conditions for businesses. The positive policy measure is the continued tax subsidy of 100% for R&D investment.	Issuing of a new programme via SPIRIT on October 25th to support R&D projects in business sector. The support is for the development of new or improved products, including the experimental development. Total value of the measure is 30 million, which is single most important measure in 2013, yet financing will begin in 2014.
9. Public support to research and innovation in businesses is simple, easy to access, and high quality	The system of R&D and innovation support measures has never been sufficiently transparent and easy to access. There were several attempts to synchronise the public calls as well as the administrative procedures, but with limited success. The new agency SPIRIT failed to meet the expectations. Stable functioning can be noted only with regard to Slovene Enterprise Fund, which maintains its standard measures and procedures for years.	Reorganisation of SPIRIT is planned, according to the first draft diminishing the role of support agencies and giving most of the tasks to the MEDT directly.
10. The public sector itself is a driver of innovation	Due to the economic crisis, public sector had been under scrutiny for the past years with budget cuts, freeze on new employment opportunities and constant threat of rationalisation. This environment did not stimulate innovation.	

Annex 2. NATIONAL PROGRESS ON INNOVATION UNION COMMITMENTS

		Main changes	Brief assessment of progress / achievements
1	Member State Strategies for Researchers' Training and Employment Conditions	Lowering of the salaries for public employees in 2012, which consequently affected the PROs no funds allocated for the so called "variable" segment of salaries which should award the quality Change of employment regulations for fixed term contracts, aimed to encourage permanent employment excludes researchers	(+) signing of the Charter by the Rectors' Conference and major PRO (-) Slow implementation in practice and low awareness of the Code among the researchers (-) no evaluation of employment policies for researchers is in place
4	ERA Framework		(+) internationalisation, gender, open access, (-) rationalisation of R&D system
5	Priority European Research Infrastructures	Adoption of the Research Infrastructure Programme in 2011	(+) Commitments in line with current Slovenian capability, (+) enhanced cooperation in cross-border RI programmes, (-) Lack of funds for fostering national RI
7	SME Involvement		(-) Certain policy development, but rather slow progress
11	Venture Capital Funds	SEF support measures	(+) SEF measures on venture capital, (-) not established a single framework for obtaining the critical mass for venture capital, (-) no discussion on taxation regime or measures supporting business angels networks.
13	Review of the State Aid Framework		(+) Start of discussion, but slow progress.
14	EU Patent		(-) Lack of funds in the SMEs for patenting of innovations.
15	Screening of Regulatory Framework		(-) Some evaluations/ screenings have been implemented, yet far from systematic and coordinated approach.
17	Public Procurement	Continuous revision of the Public procurement Act, but so far no inclusion of national target on public procurement of innovative goods and services	(-) divergent approaches on how public procurement should be conducted; innovativeness vs. efficiency?
20	Open Access		(+) At policy level, there is discussion to introduce open access for all the research results derived from public funding (-) Lack of funds – slow progress.

21	Knowledge Transfer	Changes in the Law on R&D and HEI.	(+) RISS suggests several activities in the area of knowledge transfer, following the policies suggested (+) Some measures adopted in favour of knowledge transfer (KROP 2012/13, Researchers at the initial stage) (-) Just few support measures. There is not a sustainable environment, but these measures are sporadic.
22	European Knowledge Market for Patents and Licensing		Nothing extremely important has happened in the last two years in this field.
23	Safeguarding Intellectual Property Rights		(+) Adopted Laws on Authorship (OG 16/2007, 68/2008) and on Intellectual Property (OG 51/2006); different regulations and provisions, (-) Implementing the practice – lack of funds
24	Structural Funds and Smart Specialisation	Draft RIS3 prepared by the MEDT	(-) Poor coordination of stakeholders and low visibility of the process, (-) Lack of sufficient political commitment to RIS3 (-) Incoherence of RIS3 with other policy documents
25	Post 2013 Structural Fund Programmes	Draft Partnership Agreement submitted in July 2013	(-) Significant delays, mostly because of the political situation and economic crisis/reforms
26	European Social Innovation pilot		(-) no specific measures in place, but some discussion at policy level
27	Public Sector Innovation		(-) no specific measures in place, but some discussion at policy level to follow examples from rewards in business sector; (-) the austerity measures tackling especially the public sector lower the efficiency and the innovation potential
29	European Innovation Partnerships		
30	Integrated Policies to Attract the Best Researchers		(-) no systematic policy in place, there are also some factors that hinder such policies; (+) there are some cases where institutes have attracted the best researchers, because they were able to pay them by “market funds”.
31	Scientific Cooperation with Third Countries	SRA regularly publishes calls for bilateral cooperation with Third Countries, supporting the mobility	(-) funding available only for the mobility and not for the actual research, which needs to be covered from other sources; (-) the requirements for becoming a project holder are quite demanding and young researchers were often not able to compete. Now several calls give young researchers special priority in mobility schemes.
32	Global Research Infrastructures	National Research Infrastructure Programme 2011	(+/-) RI 2011 has prepared the platform for the development of global RI, but there is slow progress in the field (lack of funds).
33	National Reform Programmes	RISS 2011-2020	NRP reiterates the commitment to RISS (except that it lowers the R&D target of 3.6 to 3 % of GDP).

Annex 3. NATIONAL PROGRESS TOWARDS REALISATION OF ERA

ERA Priority	ERA Action	Recent changes	Assessment of progress in delivering ERA
1. More effective national research systems	Action 1: Introduce or enhance competitive funding through calls for proposals and institutional assessments	No changes in the funding mechanisms so far, a new law on R&D is under drafting.	(-) No significant progress.
	Action 2: Ensure that all public bodies responsible for allocating research funds apply the core principles of international peer review	All of the research programmes and many of the research projects, which receive funding through SRA, are evaluated by foreign experts.	(+) Important progress.
2. Optimal transnational co-operation and competition	Action 1: Step up efforts to implement joint research agendas addressing grand challenges, sharing information about activities in agreed priority areas, ensuring that adequate national funding is committed and strategically aligned at European level in these areas	Due to austerity measures and budget cuts in R&D area no extra funding, except for research infrastructure has been provided for joint research agendas.	(-) No progress.
	Action 2: Ensure mutual recognition of evaluations that conform to international peer-review standards as a basis for national funding decisions	SRA has signed an agreement on mutual recognition of evaluations with Austrian Research Agency.	(+) limited progress.
	Action 3: Remove legal and other barriers to the cross-border interoperability of national programmes to permit joint financing of actions including cooperation with non-	No specific action was undertaken in this area.	(-) no action.

	EU countries where relevant		
	Action 4: Confirm financial commitments for the construction and operation of ESFRI, global, national and regional RIs of pan-European interest, particularly when developing national roadmaps and the next SF programmes	Financial commitment to ESFRI has been reconfirmed, but some delays in joining specific programmes due to financial constraints observed.	(+) Commitment reaffirmed.
	Action 5: Remove legal and other barriers to cross-border access to RIs		
ERA priority 3: An open labour market for researchers	Action 1: Remove legal and other barriers to the application of open, transparent and merit based recruitment of researchers	Formally, there are no barriers to recruitment of researchers. However, the posting (in English as well as in Slovenian) is usually done only on web pages of the institutions.	(+) A requirement that higher education institutions publish openings in English. (-) Compulsory courses at HEI need to be taught in Slovenian.
	Action 2: Remove legal and other barriers which hamper cross-border access to and portability of national grants	No change here: portability is allowed with research projects within the country.	(-) No change.
	Action 3: Support implementation of the Declaration of Commitment to provide coordinated personalised information and services to researchers through the pan-European EURAXESS3 network	CMEPIUS is still in the process to establish this support.	(-) Slow progress – same was planned a year ago as is by end 2013.
	Action 4: Support the setting up and running of structured innovative doctoral training programmes applying the Principles for Innovative Doctoral Training.	Innovative doctoral scheme was offered for the last time in 2013 (co-financed by ESF). It has not been decided yet if national funding will be provided to run the scheme for 2014.	(-) Possibility to lose the Innovative Doctoral Scheme.

	Action 5: Create an enabling framework for the implementation of the HR Strategy for Researchers incorporating the Charter & Code	No active promotion of the HR Strategy for Researchers incorporating the Charter & Code, so no new signatories in 2013.	(-) No progress.
ERA priority 4: Gender equality and gender mainstreaming in research	Action 1: Create a legal and policy environment and provide incentives	No attention devoted to this issue and no incentives introduced.	(-) No change.
	Action 2: Engage in partnerships with funding agencies, research organisations and universities to foster cultural and institutional change on gender	In spite of recently published research pointing to relatively high gender discrimination in science, no action has so far been undertaken.	(-) No change.
	Action 3: Ensure that at least 40% of the under-represented sex participate in committees involved in recruitment/career progression and in establishing and evaluating	No regulation was introduced in this regard.	(-) No change.
ERA priority 5: Optimal circulation, access to and transfer of scientific knowledge including via digital ERA	Action 1: Define and coordinate their policies on access to and preservation of scientific information	All of the results of SRA funded research programmes and projects need to be accessible in electronic form to the public.	(+) A requirement to publish the results of publically-funded research.
	Action 2: Ensure that public research contributes to Open Innovation and foster knowledge transfer between public and private sectors through national knowledge transfer strategies	No active national knowledge transfer strategy, except for the overall framework given in RISS.	(-) Still needs to be developed.
	Action 3: Harmonise access and usage policies for research and education-related public e-infrastructures and for associated digital	All of the public libraries, including those at higher education institutions have on-line data base and exchange system in place. Joint repository is being developed at university-level as well.	(+) Continuous development of usage policies and e-infrastructure in public sector.

	<p>research services enabling consortia of different types of public and private partners</p>		
	<p>Action 4: Adopt and implement national strategies for electronic identity for researchers giving them transnational access to digital research services</p>	<p>Electronic identity for researchers at public research institutions is established through SICRIS/COBISS and access to digital services provided.</p>	<p>(+) Functioning system in place.</p>

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LIST OF ABBREVIATIONS

MESS	Ministry of Education, Science and Sports
BERD	Business Expenditures on R&D
BRIC	BRIC acronym referring to Brazil , Russia , India and China
CC	Competence Centres
CESSDA	Council of European Social Science Data Archives
CERIC	Central European Research Infrastructure Consortium
CERN	European Organization for Nuclear Research
CMEPIUS	Center Republike Slovenije za mobilnost in evropske programe izobraževanja in usposabljanja (Center of RS for Mobility and European Educational and training Programmes)
CO	Centre of Excellence
COBISS	Cooperative On-line Bibliographic System & Services
COST	European Cooperation in Science and Technology
DARIAH	Digital Research Infrastructure for the Arts and Humanities
ERA	European Research Area
ERA-NET	EU scheme for networking of research activities conducted at national or regional level
ERAC	European Research Area and Innovation Committee
ESF	European Social Fund
ESFRI	European Strategy Forum on Research Infrastructures
EU	European Union
EUREKA	Intergovernmental organisation for market-driven industrial R&D
FAIR	Facility for Antiproton and Ion Research
FP	Framework Programme
FTE	Full time equivalent
FWF	Austrian Science Fund
GBAORD	Government Budget Appropriations or Outlays for R&D
GDP	Gross Domestic Product
GERD	Gross Expenditures on R&D
HE(I)s	Higher Education (Institutions)
HORIZON2020	EU R&D programme for 2014-2020
IMAD	Institute for Macroeconomic Analysis and Development
ISCED	International standard classification of education
IZUM	Institute of Information Sciences
KROP	Krepitev Razvojnih Potencialov – support measure to strengthen R&D capacities in business R&D units
MEDT	Ministry of Economic Development and Technology
MESCS	Ministry of Education, Science, Culture and Sport
MHEST	Ministry of Higher Education, Science and Technology (until 2012)
NAKVIS	National Accreditation Agency
NIS	National Innovation System
NPHE	National Programme of Higher Education
NRP	National reform programme
OP	Operational Programme
PAEFI	Public Agency for Entrepreneurship and Foreign Investments
PCT	Patent Cooperation Treaty
PROs	Public Research Organisation(s)

R&D	Research and Development
RI	Research Infrastructure
RISS	Research and Innovation Strategy of Slovenia
RIS3	Smart Specialisation Strategy
SEF	Slovenian Enterprise Fund
SHARE	Survey of Health, Ageing and Retirement in Europe
SICRIS	Information System on Research Activity in Slovenia
S&T	Science and Technology
SRA	Slovenian Research Agency
SID	Slovenian Export and Development Bank
SIP	Slovenian Industrial Policy
SDS	Slovenian Development Strategy
SORS	Statistical Office of the Republic of Slovenia
SMEs	Small and Medium-sized Enterprises
SPIRIT	Public Agency of the Republic of Slovenia for the Promotion of Entrepreneurship, Innovation, Development, Investment and Tourism
SSDA	Social Science Data Archives
TIA	Technological Agency of Slovenia

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