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Faculty of Social Sciences

"SLOVENIAN ERA ROADMAP"

ASSESSMENT OF SLOVENIAN STRATEGY FOR STRENGTHENING THE EUROPEAN RESEARCH AREA

Progress report 2018

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Prepared by: dr. Boštjan Udovič, dr. Maja Bučar and dr. Matija Rojec
Cooperating: Jana Arbeiter, mag., junior researcher

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1 INTRODUCTION

Like other members of the EU-28, Slovenia had prepared its strategy for the strengthening of European Research Area (ERA).[1] The Strategy is to be evaluated twice during its implementation: mid-term evaluation in 2018 and final one in 2020. The progress report for 2018 should include:

- assessment of the suitability of the planned objectives & measures;
- assessment of the relevance of the measures with regard to ERA Roadmap at European Union (EU) level;
- impact assessment of the measures with regard to Research and Innovation Strategy of Slovenia (RISS) and ERA Roadmap at EU level.

The evaluation of the progress is organised in the following parts. In the first part, the overview of the priorities is given. Within each priority, assessment of the planned measures is prepared with specific attention to their suitability with regard to the objectives, set forth in the Strategy. Within each priority, the relevance of the measures with regard to ERA Roadmap (EU, 2015) is commented. The central part of the Progress report is the impact assessment of the measures within each priority, achieved during the first two years of the implementation of the Strategy. According to the Progress worksheet, the implementation varies significantly in different priorities. Specifically, most important is the impact assessment in the priorities where some of the planned measures have been cancelled or where the progress is very slow.

The priority areas and mechanisms to achieve planned objectives in the Slovenian Strategy to Strengthen the ERA are following the ERA Roadmap at the European level. Each of the eight priorities, following six priority areas identified by the European Commission and Member states in 2014 has a set of objectives oriented into strengthening of the national research, development and innovation (RDI) system, followed by measures to achieve them and indicators to show progress. Since at the time of preparation of the Progress Report not all quantitative data was available, the assessment of the progress was made on the basis of the interviews and other available reports as well as some indirect indicators. Each specific measure and the progress in its implementation is presented in the Annex 1.

[1] See more at: http://www.mizs.gov.si/fileadmin/mizs.gov.si/pageuploads/Znanost/doc/Zakonodaja/Strategije/SI_ERA_Roadmap.pdf, 23 August 2018

2 PRIORITIES OF THE SLOVENIAN ERA ROADMAP

2.1 Priority area 1: EFFECTIVE NATIONAL RESEARCH AND INNOVATION SYSTEM

Research and Innovation Strategy of Slovenia 2011-2020 (RISS) was to be the cornerstone of the implementation of the Priority 1. The three main objectives within the Priority 1 are based on the wording set forth in RISS:

- improved RDI management aiming at the establishment of an effective and uniform national RDI system;
- a successful and internationalised public research sector;
- successful, sustainable and active RDI performance of the private sector.

The achievement of the objectives rests on ten measures (see Annex 3), carefully selected to support the priority area. The measures were comprehensive, **suitable** and sufficiently coherent in their design to support the Priority 1. Assessment of their suitability with regard to the current state of affairs is more problematic, since the change of circumstances in 2018 may seriously impact their implementation.

The **relevance** of the proposed measures in the original document is **high**, primarily with regard to the strengthening the national RDI system, since the measures address the weaknesses at the national level. But without strong national system, the contribution of Slovenia to the ERA Roadmap at the EU level can only be sub-optimal. So, indirectly the planned measures were relevant for strengthening of ERA as well.

However, a proper **impact assessment** of the measures within Priority 1 requires some background information. RISS (on which several measures were based) was designed with clear objective to not only strengthen the national research and innovation system, but to align it fully with the objectives of ERA. This means that the delay in the implementation of RISS is clearly reflected on the progress made in implementation of ERA Roadmap. Several measures strongly depend on the legal and policy changes proposed/planned in RISS. For various reasons they have not been implemented and, realistically, are highly unlikely to ever see their implementation. Since 2011, when RISS was adopted, the policy-setting has changed significantly and issues like establishment of uniform advisory body (measure 2) or common legal RDI platform are topics, which no longer appear on the policy agenda. As long as the policy setting in the field of science on one hand and policy-setting in the field of technology are separated and remain un-coordinated, the progress in most of the measures will remain slow, many goals postponed or even cancelled. Therefore, some of the measures, planned for the implementation of the Priority 1, need to be revised and maybe even removed from the Strategy to increase the credibility of the document. The discussion of their relevance or suitability is thus purely academic, since first the assessment of how realistic they still are, is needed. Since RISS ends with 2020, the policy makers are advised to start with the early preparation of new Strategy, which

will redefine the cornerstones of the national RDI system and thus redefine also the measures to implement Priority 1.

Priority area 1: Effective national research and innovation system			
	Situation in 2012	**Situation in 2018**	**Situation in 2020**
Research excellence indicator:	28.8 (EU-28: 47.8) *data for 2012*	26.3 (EU-28: 44.4) *data for 2016* ↓	
(1) highly cited publications	45.6 (EU-28: 55.4)	80.1 (EU:103.8) *data for 2017* ↑	
(2) PCT patents	27.3 (EU-28: 37.9)	44.7 (EU: 95.8) *data for 2017* ↑	
(3) ERC grants	55.2 (EU-28: 81.8)	No data	
(4) MSCA grants	No data available	56 *(CORDIS- cumulative figure)*	
Share of gross domestic expenditure for R&D in GDP (of which the share of budget appropriations for R&D)	2.39% (0.43%) *data for 2014*	2.01% (0.40%) *data for 2016* ↓	
Innovation Union Scoreboard composite indicator (IUS)	0.5339 (EU: 0.5551)	0.465 (EU: 0.504) *data for 2017* ↓	

2.2 Priority 2a: JOINTLY ADDRESSING GRAND SOCIETAL CHALLENGES

Four objectives, set forth within the priority 2a, are supported with six measures, of which four of them are on track, one has been postponed and one is in the process of redesign. Looking at the objectives, the planned measures were **suitable** and **relevant** for the implementation of ERA.

However, taking into consideration the problems already described under Priority 1 with the implementation of RISS and delayed planned changes in the legal and institutional set-up of R&D system, the expected impact of the measures is below the target. RISS proposed a change of financial mechanisms for supporting RDI by design of a specific support line for grand societal challenges. Due to austerity measures, following the 2008 financial crisis, Slovenia was not in the position to expand the financial mechanism. However, the progress was achieved at least in opening up the existing mechanisms to interdisciplinary project proposals, based on JPIs themes. Impressive results have been achieved by tapping into EU H2020 funds within Priority 2a, where Slovenian institutions have increased their involvement both in a number of projects as well as the resources obtained. Thus, the implementation of the measures is on track.

Priority area 2a: Jointly addressing grand societal challenges			
	Situation in 2012	**Situation in 2018**	**Situation in 2020**
The share of national GBAORD funds intended for transnational public RDI programmes	6,486	5,173 *data for 2016* ↓	
The number of cross-border ownership of patents of the Slovenian (considering the place of residence) innovator with one or more EU MS and one or several non-EU countries	0.25 (EU-28: 9.89)	0.14 (EU: 277.97)[2] *data for 2013* ↓	
The number of projects and the amount of acquired funds from Horizon 2020 – 3rd pillar (societal challenges)	2016: (2014-2015)[3] 146 projects/ € 39 million	2018: (2014-2017)[4] ↑ 751 project participation/ €195 million	2020: (2018-2019)

[2] See more at: Eurostat (2017): https://ec.europa.eu/eurostat/search?p_auth=mR4ayFR9&p_p_id=estatsearchportlet_WAR_estatsearchportlet&p_p_lifecycle=1&p_p_state=maximized&p_p_mode=view&_estatsearchportlet_WAR_estatsearchportlet_action=search&text=CO-PATENTING , 23 August 2018.

[3] Data from the eCORDA database until 23 February 2016. The eCORDA is an external COmmon Research DAtawarehouse, a reporting tool used by the EC to report on the implementation of framework programmes for research and innovation generating data three times a year (February, June, and October).

[4] See more at: https://webgate.ec.europa.eu/dashboard/sense/app/e8a41234-20b4-4e7e-80ef-335dd9e6ae36/sheet/941d3afe-da24-4c2e-99eb-b7fcbd8529ee/state/analysis, 23 August 2018.

2.2 Priority 2b: Optimal use of public investments in research infrastructures

Four objectives under this priority are supported by four measures. The availability of excellent research infrastructure and active participation in ESFRI is of utmost importance for the researchers and research institutions, also in their endeavour to increase cooperation with business sector. In the past (2007-2013) Slovenia was able to channel some of the ESIF to support research infrastructure through the financing of Centres of Excellence. The upgrade of infrastructure for RDI is one of the investment fields identified in the Partnership Agreement between Slovenia and the European Commission for the use of European Structural and Investment Funds (ESIF) for the period 2014-2020.

While the objectives in this priority are in line with regard to ERA Roadmap, the measures designed to achieve them are not convincing. Availability of RIDP is an important starting point, but is insufficient as a measure – much more ambitious goal in terms of increase of financial support is recommended. Thus, the **suitability of the measure is limited**, as well as its relevance. Same assessment can be given for the other two measures, where no goal is given – in what dynamics will Slovenia increase its partnerships in ESFRI and what is its final objective: full participation, observer status or …? The three measures are insufficiently defined and therefore of **limited relevance** for the achievement of the set objectives.

Since the measures lack ambition, their **impact is also limited**, even though their implementation is on track. Only for one, a delay in implementation is indicated. Public investment in research infrastructure should receive more attention by the policy makers and a provision of adequate financial resources both from ESIF as well as national funds implemented. Some effort was made in 2017 in channelling small increase of budget resources for R&D towards existing research infrastructures to help at least in part maintain the equipment, but considering how important the excellence of infrastructure is for building a competitive national innovation system, more attention should be devoted to this priority.

Priority area 2b: Optimal use of public investments in research infrastructures			
	Situation In 2012	Situation In 2018	Situation In 2020
Availability of RIDP with detailed investments in research infrastructure	✓	✓	✓
Number of research infrastructures from the list of ESFRI active projects where Slovenia is participating	14/48	12/50 ⟷	
The number of ESFRI projects in the implementation phase where Slovenia is participating	5/14	12/50 ⟷	

2.3 Priority area 3: OPEN LABOUR MARKET FOR RESEARCHERS

The priority area 3 has five objectives, focusing both on internal and external mobility of researchers. The issues, hampering the mobility, are correctly identified and the three measures **suitable** to achieve the objectives. Again, the lack of progress in the implementation of RISS is limiting the possible impact of the policy activities in this area, especially since the implementation of the measures requires coordinated action of several ministries: Ministry of Education, Science and Sports, Ministry of Economic Development and Technology, Ministry of Finance, Ministry of Labour, Family, Social Affairs and Equal opportunities, Ministry of the Interior etc. Because of the complexity of the priority area, the measures, while **suitable and relevant**, could be further elaborated and their relevance additionally explained in the ERA Roadmap. This is the priority area where without comprehensive and coordinated effort of all mentioned parties, the progress will be slow and sporadic at best, which is already reflected in the current implementation of the measures. No matter how significant the efforts are by one of the responsible parties, lack of clear understanding of the importance of the topic by all involved will **limit the impact** of the measures. The administrative/legal/financial barriers already identified can only be resolved jointly.

Priority area 3: Open labour market for researchers			
	Situation in 2015	**Situation in 2018**	**Situation in 2020**
Research posts advertised through EURAXESS jobs portal in the public sector per year	91	110 *data for 2017* ↑	

The indicator selected here is only a partial indicator of mobility, since posting the research posts does not show how many researchers from abroad were actually employed by the R&D sector in the country. Especially for Higher Education Institutions the publishing of posts on EURAXESS is compulsory, yet Slovenian system remains rather closed to foreign researchers and academics. It is suggested that additional indicators should be added to measure more precisely the internal and external mobility.

2.4 Priority area 4: Gender equality and Gender mainstreaming in research

The five objectives in priority area 4 comprehensively address the topic of gender equality in research in Slovenia. The existing vertical and horizontal gender differentiation is **suitably** addressed through as many as eight measures, which range from design of action plans to continuous support to the Commission for Equal Opportunities (ex-commission on *Women in Science*) and data gathering. The measures are quite detailed, especially compared with measures designed in other priorities. They are **relevant** at the national level for achieving not only ERA objectives, but also the objectives declared in RISS. Their implementation however differs: three measures are on track, three have been postponed, one is being implemented with delay and one needs to be modified (see details in Annex 1). The impact of the measures at this stage is below planned, especially due to the fact that the key measures are being postponed, since they too depend on legal and institutional changes of RDI system. However, the very fact that gender equality is among the ERA Roadmap priorities stipulates discussion on the issue and especially publicly funded research institutions pay more attention to gender mainstreaming. Additional effort in this priority should be put forward by the Slovenian Research Agency, which could stimulate more actively gender balance through eligibility criteria for research projects and Junior researchers' programme.

Priority area 4: Gender equality and Gender mainstreaming in research			
	Situation in 2014	**Situation in 2018**	**Situation in 2020**
Proportion of "A grade" women in higher education	22.5	22.5 (*last data from She Figures Report 2015*)	
Share of women with PhD per year	50	47.9 (2017) 	
The share of PRO with an action plan for equal opportunities	16 (3/19)	16 (3/19) (*last data from She Figures Report 2015*)	

2.5 Priority area 5a: Scientific knowledge transfer

Supporting technology transfer is one of strategic priorities set in RISS, which states that the Technology transfer office system (TTO) will be established by 2020 together with a metrics for assessing its efficiency. Slovenian ERA Roadmap follows this and sets five objectives in this priority area, closely related to identified issues in the field of science-industry collaboration and technology transfer. For the achievement of the objectives, eight measures are planned, addressing institutional set-up for technology transfer (national protocol), promotion of collaboration among business and public sector's researchers, legal scheme for transfer of technology from public sector, organisational set-up of TTOs and their network, etc. The measures are **suitable and relevant**, but rather complex and cover the topic comprehensively, so the decision to entrust the implementation of seven out of eight to the most successful bidder through a public call may be double-edged: on one hand it makes sense that the bidding consortium prepares the whole set-up for TT instead of having to synchronise more actors. On the other hand, should the bidder fail in delivering the expected comprehensive solution, a considerable set back could occur in the implementation of this very important priority area.

Since the implementation of the measures is entrusted to the external partner, assessment of the impact of these measures is impossible at this stage. What makes it additionally difficult to measure progress is limited number of insufficiently well-defined indicators, which should be expanded to focus on the implementation of each individual measure.

Priority area 5a: Scientific knowledge transfer			
	Situation in 2012	**Situation in 2018**	**Situation in 2020**
Share of innovative companies that cooperate with universities, higher education institutions and/or public research institutes	25.4	13.2 (*EIS, data for 2017*) 	
Share of public research funded by the entrepreneurial sector	12.64 / 9.6%	8.4% (*SORS, data for 2016*) 	

2.5 Priority area 5b: Open access to scientific publications and research data

The European Commission initiatives on modern scientific communication, including open access to research results, are the backbone of the objectives in this priority area. Slovenia aims to implement the recommendations of the Budapest Open Access Initiative and the Hague Declaration on Knowledge Discovery in the Digital Age. While it is true that the objectives in this priority area are complementary to each other, it is still questionable if a single measure, while suitable, is sufficient for the ambitious objectives. The preparation of an Action plan is a precondition for the beginning of the implementation of a new type of scientific communication, but while it is a comprehensive document, listing who is responsible for what, it seems that additional measures would be needed to achieve the ERA Roadmap objectives as well as implement the Action Plan. One such measure would definitely need to address the scientific community and their prejudice with regard to quality control in the cases of open access publishing.

The impact of the measure is at this stage due to the lack of selected indicators difficult to assess, except by observation of the reluctance of the SRA as well as major research institutions in accepting open-access publications as a daily routine in scientific communication.

Priority area 5b: Open access to scientific publications and research data			
	Situation in 2016	**Situation in 2018**	**Situation in 2020**
Share of open-access publications available in the country from 2008 to 2013	53.2 (EU: 52.2)[5]	n.a.	
Action plan for open access to scientific publications and research data in Slovenia 2016-2020	NO	YES	

[5] See in European Research Area: Progress Report Slovenia (2016). Available at http://ec.europa.eu/research/era/eraprogress_en.htm, 28 August 2018.

2.6. Priority area 6: International cooperation

For a small country, international cooperation in research is even more important, since it obviously cannot fund all relevant fields to the extent which would guarantee scientific excellence and relevance. Close cooperation within ERA and broader in international science is one of the top priorities of RISS and Slovenian ERA Roadmap, where three key objectives are defined and their implementation envisaged through three measures. The measures are **suitable and relevant** for the priority area, with additional request on not only preparation of the strategies for international cooperation and bilateral cooperation, but an action plan for their implementation, including planning of the financial inputs necessary. This additional effort would significantly increase the expected impact of the documents/ measures.

In view of the number of measures and their specifics it would be recommended that additional indicators are introduced for this priority. Measure calling for increased funding of the internationalisation could be supported by data on the funds allocated to internationalisation, for example. Indicator on number/ value of H2020 projects is regularly gathered already and could be added here. Also, an appropriate indicator should be introduced to monitor bilateral cooperation.

Priority area 6: International Cooperation			
	Situation in 2014	**Situation in 2018**	**Situation in 2020**
Number of international scientific co-publications per million citizens	1042	1,134.6 *data for 2017* 	

3 CONCLUSION AND RECOMMENDATIONS

The assessment of Slovenian strategy to implement ERA revealed several important facts. Many of the planned measures were closely related to the successful implementation of the RISS and, following the targets set in RISS, increased funds available for RDI. Neither had occurred during the two years under observation. This of course has significant impact on the results of the implementation.

As shown in the analysis of priority by priority, in spite of these significant drawbacks, several measures have been implemented or are in the process of being so, even if their implementation is delayed. The assessment of the individual measures concludes that the measures selected in the Roadmap are suitable and almost all relevant for the achievement of set objectives within each priority. This suggests that with proper implementation the impact of the measures could also be significant. A more valid assessment could be made if more data would be available, but with several figures not available at the time of assessment, qualitative assessment as presented in Annex 1, provides essential information on the progress as well as the reasons for the delays.

The priorities set in the Slovenian ERA Roadmap are not only important for the implementation of ERA, but are crucial for a more effective and efficient national RDI system. This needs to be fully understood by the policy makers in several segments of the Ministry and the government as a whole. ERA Roadmap should not be treated as yet another obligation towards EU, but as a key national strategy, deserving careful planning and monitoring with appropriate indicators and most importantly, sufficient human and financial resources to support full implementation of the measures. With such an attitude, one can expect significant impact and contribution to national RDI as well as to ERA.

ANNEX 1: LIST OF MEASURES WITH ASSESSMENT OF THE IMPLEMENTATION LEVEL

	Priority area 1 EFFECTIVE NATIONAL RESEARCH AND INNOVATION SYSTEM	Progress	Assessment
1	Changing RDI legislation in accordance with RISS as the framework of the national RDI system and the base for successful implementation of RDI policies and strategies and achieving alignment between national and European RDI policy.	POSTPONED	The delays in the implementation of Research and Innovation Strategy of Slovenia 2011-2020 (RISS) influenced also the lack of change in legislation in the field of RRI. In the last two years a draft law on RDI was prepared, but because of the resignation of the government in February 2018, text never entered parliamentary process. Since current RISS will expire in 2020, the political decision-makers should start with the preparation of the new strategic document as well as with the required supporting legislation, especially the new Law on RDI as soon as possible.
2	Forming a uniform advisory body of the Government of the Republic of Slovenia – the Research and Innovation Council, that will bring together all participants of the national RDI system and will actively cooperate with the S4 national innovation platform. The Council will play a key role in establishing synergies among various strategies and policies in RDI (RISS, SIP, S4, Strategic Framework for the Development of Slovenia by 2050 (in preparation)) and put RDI policy to the forefront of development policies of the Slovenian Government.	POSTPONED	The formation of a single/central body entitled for RDI is essential. However the postponement in its establishment can be attributed to the fact that the relevant laws and regulations were not adopted. It is recommended to accelerate the pace for forming such a body, because a more coherent approach among different players in the Slovenian RDI system is essential for the implementation of ERA Roadmap, among other issues to be tackled by such a body.
3	Introducing stable institutional funding based on external evaluation of institutions and thematic areas which shall, in addition to scientific excellence, take into account social relevance, collaboration with innovative industry and the integration in ERA.	POSTPONED	The idea on institutional financing was introduced in the draft Law on RDI, which because of early elections did not enter into the legislation procedure. It is imperative that the new Government starts to work on the draft law as soon as possible and considers appropriate forms of the institutional financing based on international/foreign evaluations.

	Priority area 1 EFFECTIVE NATIONAL RESEARCH AND INNOVATION SYSTEM	Progress	Assessment
4	Strengthening the innovation and technological development section in the Public Agency of the Republic of Slovenia for Entrepreneurship, Internationalisation, Foreign Investments and Technology.	CANCELLED	As pointed out by several RIO reports (cf. also Udovič, Bučar and Hristov, 2016; Bučar, Jaklič and Verdesoto, 2018) there is a significant lack of cooperation and coordination in the field of science, technology and innovation. After the split of ex MHEST and the transfer of technology to the MEDT, the link between research and innovation has been neglected or even lost. SPIRIT being the executive agency of MEDT should put more emphasis on the RDI cooperation, while at the same time the cooperation and coordination between two ministries, in collaboration with GODC (because of S4), should be enhanced. MEDT and MESS should, after the formation of the new Government, define their roles and cooperation modes in the field of innovation and technology development.
5	Optimising the RDI funding system according to principles of flexibility and cost effectiveness	POSTPONED	Again, this depends mostly by the provisions set by the new R&D law, which should be adopted as soon as possible.
6	Establishing a comprehensive RDI funding system based on complementarity and synergies among national and European RDI funds that will enable co-funding Slovenian researchers in excellent projects for which sufficient funds on European level are not available (ERC grants, SME instrument, spreading scientific excellence and cooperation instruments, etc.).	ON TRACK	In this field, lots of activities have been implemented, especially in supporting the internationalisation of Slovenian science. The Ministry and the SRA strongly support the internationalisation. One such example is the complementary scheme, financed by the SRA, supporting research projects that passed the first threshold in the ERC programmes. The next measure that should be mentioned is the measure of co-financing the potential ERC candidates to visit ERC grantees. This measure offers the opportunity to researchers to exchange knowledge on how to apply for ERC projects. These measures should be continued and expanded include H2020 and Marie Curie projects.
7	Continuing with the introduction of improvements in selection procedures of research and development projects that enhance the quality of assessment procedures in accordance with international peer-review principles.	ON TRACK	This is done by the SRA and by the MESS. Both institutions are following the higher standards of international trajectories in the field of assessment. The SRA system is well defined and tries to achieve the maximum level of objectivity in the assessment of research proposal.

	Priority area 1 EFFECTIVE NATIONAL RESEARCH AND INNOVATION SYSTEM	Progress	Assessment
8	Assuming growth of investments in accordance with RISS objectives, increased investments in transnational collaboration projects within Horizon 2020, support programmes and other EU measures for strengthening ERA with a clear integration of instruments in the national funding system.	ON-GOING WITH DELAY	The delay can be attributed especially to the strong austerity measures between 2011 and 2015, where the RDI sector followed the same way as other sectors. Since the funds decreased for 'national' science it was expected that it would decrease also for international cooperation. We urge the decision-makers to accelerate the inclusion of international instruments in the national system with an emphasis that international measures should not be understood as supplementary, but as complementary.
9	Establishing a project funding and evaluation system in the technological innovation field that takes into account principles of international peer-review, stimulates collaboration between PROs and innovative industry, and further stimulates investment of the business sector in RDI.	ON TRACK	This is partially done by the measure of applied projects and by the cooperation between PROs and private entities. However, what is missed here is the systemic approach. The systemic approach (not ad hoc) would further enhance the development of cooperation in the field of RD and technology cooperation.
10	Stimulating the integration of the private sector in transnational collaboration projects within Horizon 2020, support programmes and other EU measures for strengthening ERA.	ON TRACK	This measure is on track and producing results. In the last H2020 call, 16 Slovenian enterprises applied for H2020, which is almost one-fourth of all application. The Ministry and SRA should continue to support such research-industry cooperation.

	Priority area 2A JOINTLY ADDRESSING GRAND SOCIETAL CHALLENGES	Progress	Assessment
11	Targeted co-funding of transnational public research.	ON TRACK	In spite of delays in RISS implementation, where special resources, dedicated to this issue were planned, some progress has been achieved. Under the measure of financing basic and applied projects, the Slovenian Research Agency (SRA) has introduced the category of interdisciplinary projects, where themes, addressed by the JPIs can obtain funding on competitive basis. While the measure should be continued, the resources available need to be significantly increased to and strengthened.
12	Establishing a monitoring and assessment system for each individual partnering instrument based on which a review of benefits of cooperation in all existing (and potential new) JPI and ERA-NET initiatives and other forms of joint programming can be performed.	CANCELLED	The measure was cancelled due to the insufficient human resources to dedicate to this task. Still, the measure should be continued since it is relevant for the Slovenian RDI system, where an appropriate programme/ body is needed to review and discuss the benefits or problems of international scientific collaboration in the system of JPIs and ERA-NETs and its integration in /with Slovenian RDI system and priorities.
13	Strengthening the role of JPI SRIAs in devising priorities of RDI policy.	ON TRACK	As mentioned the SRIA JPI are part of our RDI policy development, there are also included in some SRA calls. This approach should be continued.
14	Integrating social sciences and humanities (SSH) in research.	ON TRACK	The integration of SSH in international/global research is slower than it would be expected. One of the factors for such resistance is the idea of language and culture perseveration. However SSH institutes are year-by-year more intensively involved in different cross-border cooperation, where ERANETs (HERA etc.) and also some JPIs (Urban Europe, Climate Change) should be mentioned. Because of partially resistant internal environment, it is suggested that the political decision-makers invest more effort in presenting the advantages of the cross-border cooperation for SSH excellence.

	Priority area 2A JOINTLY ADDRESSING GRAND SOCIETAL CHALLENGES	Progress	Assessment
15	Strengthening national and better use of international/EU networking instruments for researchers and institutions.	ON TRACK	Some of the measures proposed by the SRA supports the exchange of researchers and experiences. However, as pointed above, enlargement/widening of the support of networking is recommended by launching several other measures that would develop the necessity of inclusion in the international/EU research system.
16	Joining forces in the efforts to unify standards and procedures for assessing projects in EU and joint calls, especially according to the Lead Agency principle.	POSTPONED	SRA already supports some projects where the concept of the lead agency system is applied (Vlanders, Austria, Hungary). However, a larger impetus is needed here to develop a single system of evaluation under the system of Lead Agency.

	Priority area 2b OPTIMAL USE OF PUBLIC INVESTMENTS IN RESEARCH INFRASTRUCTURES	Progress	Assessment
17	Implementation and interim review of RIDP.	ON TRACK	Because of austerity measures, Slovenia invested limited finances and missed to fulfil the RIDP. However, some investments in research infrastructure was implemented during 2007-2013 period through the Centres of Excellence, which proved to be an adequate instrument for the development of national research infrastructure, yet was discontinued in the on-going financial perspective. The Ministry supported the investments in the research infrastructure according to the RIDP and ESFRI and plans to support such activities also in the future, subject to availability of financial resources.
18	Continuation of cooperation within ESFRI.	ON TRACK	Slovenia seeks to participate in as many research infrastructures as possible within the ESFRI roadmap, responding in particular to the initiatives of the research community.
19	Stimulating the use of ESIF and EFSI for investments in research infrastructure.	ON-GOING WITH DELAY	As mentioned, significant investment in the research infrastructure was implemented through the ERDF support of Centres of Excellence during 2007-2013 financial period. One of the challenges is the maintenance and upgrading of the existing infrastructure. Here more effort could be made by the authorities to use ESIF and EFSI funds at least in the priority areas of smart specialisation (S4).
19a	Guaranteeing renewal of research infrastructure in accordance with national priorities	CANCELLED	This measure is marked as cancelled since no programmes were available for the renewal of the research infrastructure. In the last decade some measures were launched for the purchasing of the research equipment, but no measure was launched to sustain and renew the acquired research infrastructure. It is recommended that the Ministry not only finances the measures for acquiring new research infrastructure, but also develops a stable financing system for the continuous renewal of the existing research infrastructure.

	Priority area 3 OPEN LABOUR MARKET FOR RESEARCHERS	Progress	Assessment
20	Scheme for increasing the number and share of researchers collaborating with industry.	ON TRACK	In last years various measures have been adopted to enhance the collaboration between the public and private research sector (e.g. Researchers at the initial stage of their career). These measures were promoted by MESS, SRA and MEDT. However, this positive trend should be intensified to achieve a less ad hoc and more structural transfer of knowledge between public and private research organisation.
21	Elimination of administrative, technical and tax obstacles for international mobility in both directions.	ON-GOING WITH DELAY	The problem of international mobility (incoming and outgoing) is still hindering the maximal inclusion of Slovenian research area in international research structures. In the case of outgoing researchers, the problem is in the taxation of their revenues (scholarships etc.) abroad, and in the instability of their domestic job-posts. In the case of incoming researchers, the main problem still presents the requirement of proficiency in the national language (the knowledge of Slovenian is compulsory for academics at the University) and the public sector salary system (all researchers at the University and in PROs are included in this system). Here, it is recommended to the decision-makers to address and resolve these barriers to a greater mobility as soon as possible.
22	Formation of internationally compatible mechanisms to recognise researcher qualifications.	POSTPONED	The idea based on Charter and Code. Since the funds for HR are not available within this financial perspective, the implementation of the measure has been postponed to the next financial perspective. However, what is relevant is that also at the EU level the measure is not clearly defined. Slovenia strongly supports a common approach to this mechanism.

	Priority area 4 GENDER EQUALITY AND GENDER MAINSTREAMING IN RESEARCH	Progress	Assessment
23	Designing action plans to improve career opportunities for researches in all stages of their career and to ensure the enforcement of the gender equality principle at public research institutes.	POSTPONED	Regarding the fact that Slovenia strongly supports the gender quality, some measures could be adopted to enhance the inclusion/appearance of women as heads in PROs and in research programmes/projects. What is to be noted is that there is a strong imbalance between the overall number of women in RDI and their participation in top/decision-making level. Planned design of the Action plans should be developed simultaneously with the preparation of the new Law on RDI.
24	Continuous support to the operation of the expert body Commission for Women in Science and the inclusion of other stakeholders of the RDI system.	ON TRACK	The new commission was formed in 2017, not named anymore "for women in science", but it is the Commission for equal opportunities in science. Since this area is well developed and evolving, the continuation of this measure is suggested.
25	Support to research projects in the field of gender equality and dissemination of their results.	POSTPONED	The measure was postponed because of the "lack of funds" in the SRA system. However, it is argued that this measure should be started as soon as possible.
26	Implementation of the gender equality principle via public funding organisations in setting up evaluation committees and in the content of funded research programmes and projects.	ON-GOING WITH DELAY	This measure is already on-going. SRA tries to follow the rules of equal opportunities when evaluating the projects.
27	Establishment of an appropriate analytical system on national level to follow selected indicators in the field of gender equality in research based on gender.	CANCELLED	This measure was not cancelled, but the decision-makers realised that the data are already collected in different variations by different bodies. Thus they decided to find another plausible system of collecting data, which would be more efficient and would optimise human and financial resources, also on the decision-making level. A detailed analysis should be done on how this measure can be implemented and whether the decision-makers should develop a new measure replacing this measure.

	Priority area 4 GENDER EQUALITY AND GENDER MAINSTREAMING IN RESEARCH	Progress	Assessment
28	Consistent consideration of a balanced structure in all bodies appointed by the competent ministry in the field of science.	ON TRACK	Slovenia follows the rules on promoting and developing the idea of gender equality (equal opportunities).
29	Presenting the UNESCO L'Oréal awards to women in science and active encouragement of candidates and institutions to propose female candidates for other awards in science.	ON TRACK	Well developed under the umbrella of SRA. What is a problem here is that this measure is directed mostly to women from S&T, while women researchers from SSH do not have access to this measure. The Ministry should create a parallel measure also for women researchers from the SSH.
30	Establishment of an expert body at the competent ministry to coordinate and implement measures enforcing the gender equality principle in science.	POSTPONED	Partially this was solved by the establishment of the *Advocate of the Principle of Equality*. The entitled Ministry should develop the cooperation with this Advocate and in that way Slovenia can optimise the implementation of measures of gender equality. However, a suggestion can be that maybe the newly-nominated body for equal opportunities can nominate someone that can take this task within the Ministry.

	Priority area 5A SCIENTIFIC KNOWLEDGE TRANSFER	Progress	Assessment
31	Adoption of the National Intellectual Property Development Strategy in 2016.	POSTPONED	The adoption of national strategy of IPR is a *conditio sine qua* non for the developing of intellectual property in a country. This National strategy should be developed simultaneously with the Law of RDI and other supporting/correlated strategies and activities.
32	Formation of the national protocol (manual) for industry with regard to its cooperation with PROs, including basic guidelines on the management of intellectual property resulting from cooperation.	ON TRACK	In 2017 the Ministry issued a call for the enhancement of the transfer of knowledge. In the call of 6 mio €, the selected party is expected to prepare the material for the implementation of all the planned measures under 5A. The project ends in 2022 and it is expected that all the measures under Priority 5A will be implemented. Close monitoring of the implementation of the project is however advised, since non-implementation of the project tasks could significantly endanger the implementation of Priority 5a.
33	Establishment of a common point for the intellectual property protection of inventions and innovations stemming from the public research sphere, also offering legal consultation to businesses and PROs in their cooperation.	ON TRACK	See above.
34	Establishment of a common knowledge base (“The Slovenian knowledge base”) that will provoke interest and built understanding among the business community providing a comprehensive overview of fields of activity of all PROs, and its strategic inclusion in similar knowledge bases on international level.	ON TRACK	See above.

	Priority area 5A SCIENTIFIC KNOWLEDGE TRANSFER	Progress	Assessment
35	Promotion of entrepreneurship among PhD holders and their integration in the support environment (e.g. university incubators, technology parks).	ON TRACK	See above.
36	Support of TTO operation through stimulating professionalization of their services, their strategic interconnection as a consortium and their collaboration with similar consulting services within the scope of other mechanisms supporting knowledge transfer (e.g. university incubators, technology parks).	ON TRACK	See above.
37	Support of collaboration between the public research sphere and industry in the form of long-term strategic partnerships in S4 areas in which Slovenia displays major potential.	ON TRACK	See above.
38	Establishment of an appropriate model to assess the efficiency of knowledge transfer.	ON TRACK	See above.

	Priority area 5B OPEN ACCESS TO SCIENTIFIC PUBLICATIONS AND RESEARCH DATA	Progress	Assessment
39	Action plan for Open Access to Scientific Publications and Research Data in Slovenia 2016-2020 with all concrete measures, responsible institutions for individual measures and deadlines for their implementation will be prepared to realise the set objectives.	FINISHED	The Ministry in 2017 published an Action plan for open access. It is provided that the Government is going to support strongly the open access of all scientific publication within the territory of Slovenia and also that a national repository will be established. Such an action plan presents a platform for developing the open access of all national journals, while at the same time it commits to the publication of national research in the open access journal worldwide.

	Priority area 6 INTERNATIONAL COOPERATION	Progress	Assessment
40	Increased funding for international cooperation, increasing participation and success rate of Slovenian partners in international research projects.	ON TRACK	The entitled Ministry intensified its efforts to promote the international cooperation of Slovenian researchers. This resulted in an increased number of applications and also in an increased number of successful applicants. It is recommended that the Ministry increases the financial support for the internationalisation of RDI activities and promotes further already developed activities in the international arena.
41	Preparation of the Slovenian Strategy for Bilateral Cooperation Development in Research and Development 2016-2020 and the formation of new strategic partnerships.	ON-GOING WITH DELAY	This should be accelerated. Such Strategy should be prepared hand in hand with the new Law on RDI.
42	Preparation of the Strategy for the Internationalisation of Slovenian Science defining strategic goals.	ON-GOING WITH DELAY	A draft of this Strategy is already in the interdepartmental negotiations. The finalisation of this Strategy should be coordinated with the outline of the Law on RDI to ensure full compatibility.

ANNEX 2: OVERVIEW OF THE IMPLEMENTATION OF ERA ROADMAP

	No. of measures	FINISHED	ON TRACK	ON-GOING WITH DELAY	POSTPONED	TERMINATED	CANCELLED	SCHEDUELED FOR
Priority area 1 Effective national research and innovation system	10		4	1	4		1	
Priority area 2A Jointly addressing grand societal challenges	6		4		1		1	
Priority area 2b Optimal use of public investments in research infrastructures	3		2	1				
Priority area 3 Open labour market for researchers	3		1	1	1			
Priority area 4 Gender equality and Gender mainstreaming in research	8		3	1	3		1	
Priority area 5A Scientific knowledge transfer	8		7		1			
Priority area 5B Open access to scientific publications and research data	1	1						
Priority area 6 International Cooperation	3		1	2				
	42	1	22	6	10	0	3	0

ANNEX 3: CHART OF INDICATORS WITH VALUES

Priority area 1: Effective national research and innovation system			
	Situation in 2012	**Situation in 2018**	**Situation in 2020**
Research excellence indicator:	28.8 (EU-28: 47.8) *data for 2012*	26.3 (EU-28: 44.4) *data for 2016* ↓	
(1) highly cited publications	45.6 (EU-28: 55.4)	80.1 (EU:103.8) *data for 2017* ↑	
(2) PCT patents	27.3 (EU-28: 37.9)	44.7 (EU: 95.8) *data for 2017* ↑	
(3) ERC grants	55.2 (EU-28: 81.8)	No data	
(4) MSCA grants	No data available	56 (CORDIS- cumulative figure)	
Share of gross domestic expenditure for RD in GDP (of which the share of budget appropriations for R&D)	2.39% (0.43%) *data for 2014*	2.01% (0.40%) *data for 2016* ↓	
Innovation Union Scoreboard composite indicator (IUS)	0.5339 (EU: 0.5551)	0.465 (EU: 0.504) *data for 2017* ↓	

Priority area 2a: Jointly addressing grand societal challenges			
	Situation in 2012	Situation in 2018	Situation in 2020
The share of national GBAORD funds intended for transnational public RDI programmes	6,486	5,173 *data for 2016* ↓	
The number of cross-border ownership of patents of the Slovenian (considering the place of residence) innovator with one or more EU MS and one or several non-EU countries.	0.25 (EU-28: 9.89)	0.14 (EU: 277.97)[6] *data for 2013* ↓	
The number of projects and the amount of acquired funds from Horizon 2020 – 3rd pillar (societal challenges)	2016: (2014-2015)[7] 146 projects/ € 39 million	2018: (2014-2017)[8] ↑ 751 project participation/ €195 million	2020: (2018-2019)

Horizon 2020 – 3rd pillar: Societal challenges	The number of selected applicants	The amount of co-funding by the EU (€)	Number of selected projects by 2018[9]
Health, demographic change and well-being	24	5,865,204.00	38
Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy	12	1,298,146.00	36
Secure, clean and efficient energy	40	13,081,639.00	64
Smart, green and integrated transport	22	6,773,383.00	49
Climate action, environment, resource efficiency and raw materials	28	8,311,154.00	42
Europe in a changing world – inclusive, innovative and reflective societies	13	1,917,992.00	22
Secure societies – protecting freedom and security of Europe and its citizens	7	1,796,706.00	12

[6] See more at: Eurostat (2017): https://ec.europa.eu/eurostat/search?p_auth=mR4ayFR9&p_p_id=estatsearchportlet_WAR_estatsearchportlet&p_p_lifecycle=1&p_p_state=maximized&p_p_mode=view&_estatsearchportlet_WAR_estatsearchportlet_action=search&text=CO-PATENTING, 23 August 2018.

[7] Data from the eCORDA database until 23 February 2016. The eCORDA is an external COmmon Research DAtawarehouse, a reporting tool used by the EC to report on the implementation of framework programmes for research and innovation generating data three times a year (February, June, and October).

[8] See more at: https://webgate.ec.europa.eu/dashboard/sense/app/e8a41234-20b4-4e7e-80ef-335dd9e6ae36/sheet/941d3afe-da24-4c2e-99eb-b7fcbd8529ee/state/analysis, 23 August 2018.

[9] See more at: https://webgate.ec.europa.eu/dashboard/sense/app/e02e4fad-3333-421f-a12a-874ac2d9f0db/sheet/941d3afe-da24-4c2e-99eb-b7fcbd8529ee/state/analysis, 28. 8. 2018.

Priority area 2b: Optimal use of public investments in research infrastructures			
	Situation In 2012	Situation In 2018	Situation In 2020
Availability of RIDP with detailed investments in research infrastructure	✓	✓	✓
Number of research infrastructures from the list of ESFRI active projects where Slovenia is participating	14/48	12/50 ⟷	
The number of ESFRI projects in the implementation phase where Slovenia is participating	5/14	12/50 ⟷	

Priority area 3: Open labour market for researchers			
	Situation in 2015	Situation in 2018	Situation in 2020
Research posts advertised through EURAXESS jobs portal in the public sector per year	91	110 *data for 2017* ↑	

Priority area 4: Gender equality and Gender mainstreaming in research			
	Situation in 2014	Situation in 2018	Situation in 2020
Proportion of “A grade" women in higher education	22.5	22.5 (*last data from She Figures Report 2015*)	
Share of women with PhD per year	50	47.9 (2017) ↓	
The share of PRO with an action plan for equal opportunities	16 (3/19)	16 (3/19) (*last data from She Figures Report 2015*)	

Priority area 5a: Scientific knowledge transfer			
	Situation in 2012	Situation in 2018	Situation in 2020
Share of innovative companies that cooperate with universities, higher education institutions and/or public research institutes	25.4	13.2 (*EIS, data for 2017*) ↓	
Share of public research funded by the entrepreneurial sector	12.64 / 9.6%	8.4% (*SORS, data for 2016*) ↓	

Priority area 5b: Open access to scientific publications and research data			
	Situation in 2016	Situation in 2018	Situation in 2020
Share of open-access publications available in the country from 2008 to 2013	53.2 (EU: 52.2)[10]	n.a.	
Action plan for open access to scientific publications and research data in Slovenia 2016-2020	NO	YES	

Priority area 6: International Cooperation			
	Situation in 2014	Situation in 2018	Situation in 2020
Number of international scientific co-publications per million citizens	1042	1,134.6 *data for 2017* ↑	

[10] See in European Research Area: Progress Report Slovenia (2016). Available at http://ec.europa.eu/research/era/eraprogress_en.htm, 28 August 2018.