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Addressing the innovation gap: Lessons from the Stairway to Excellence (S2E) project

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Abstract

There is a considerable territorial disparity in terms of research and innovation (R&I) performance within Europe between EU15 and EU13 Member States (MSs)¹. The two biggest European funds, European Structural and Investment Funds ([ESIF](#)) and Horizon 2020 ([H2020](#)), aimed at supporting the development of European competitiveness, growth, and knowledge generation, as well as closing the innovation gap and promoting research excellence across Europe.

Smart Specialisation Strategies ([S3](#)) play a key role in fostering an efficient and inclusive Research and Innovation (R&I) ecosystem by creating the right framework for focused investments based on selected high value added priorities and a shared vision of territorial development. Also, the European Commission's project Stairway to Excellence ([S2E](#)) is focussed on the provision of assistance to EU MSs and Regions with an emphasis on promoting R&I excellence and maximising the specific value added of S3 investments such as capacity building to support R&I activities and the exploitation of research results for raising the overall social/economic impact.

This report summarises the main outcomes of the activities undertaken by the S2E team during the initial phase of the project from June 2014 to January 2017. It focuses on the S2E Country Reports – *produced by the national independent experts and that provided analysis on the optimal use of key European R&I funds* – and the Joint Statements of S2E National Events – *an outcome of national events covering the issues and main conclusions* – as well as the other analytical work of the project. By picking those issues and actions common to more than one country and frequently mentioned, the main bottlenecks and possible policy actions to address them, these issues are summarised within three dimensions; namely, *quality of R&I governance, capacity building, and innovation and commercialisation*. This analysis and particularly the policy recommendations offer solutions for these issues that can also contribute to closing the innovation gap in Europe, a gap which is demonstrated by the annual [European Innovation Scoreboard](#) comparing the performance of the EU MSs.

¹ EU13 includes the Member States that joined the European Union since 2004; namely, Bulgaria, Czech Republic, Cyprus, Estonia, Croatia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia and Slovenia while EU15 MSs refer to the countries that participated in the EU before 2004 (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and United Kingdom).

Introduction

This report summarises the main outcomes of the activities of the Joint Research Centre (JRC)² Stairway to Excellence (S2E)³ project's pilot phase, which is a part of the Smart Specialisation Platform (S3P)⁴, focussed on two kinds of activity: *capacity mapping* and *capacity building*. Capacity mapping activities include a critical assessment of past performance in Framework Programmes (FPs) and European Structural and Investment Funds (ESIF), as well as analysis of the alignment between public and business stakeholders. The capacity mapping activities also aim to better define how innovation actors can attempt to achieve synergies when using different funding sources in a complementary way. For this purpose, the S2E project produced quantitative and qualitative information on the EU13 Member States (MSs) and their regions, including "[National and Regional Facts & Figures](#)", "[S2E Country Reports](#)" and "[Synergies Examples](#)" (case studies on the synergies between EU funding sources).

In addition to capacity mapping, capacity building activities assist the Research and Innovation (R&I) actors in the effective use of European Structural and Investment Funds (ESIF) sources and hence amplify the innovation impact of European funding. The main activities of capacity building are national policy events, which were organised in each EU13 country. The main outcomes of these events, [Joint Statements](#) for each MS, were published. Moreover, as a part of the capacity building activities, a set of case studies (synergy examples) were provided in which Structural Fund (SF) and/or European Structural and Investment Funds (ESIF) and FP7/H2020 funds have been combined in order to amplify the R&I investments and their impacts. While this report compiles important information and outcomes from the S2E analytical work, it focuses on the two main outcomes – Country Reports & National Events – in order to identify the main issues and bottlenecks limiting the establishment of an effective innovation ecosystem:

- **The S2E Country Reports**⁵, produced in collaboration with independent national experts, aim to provide a good understanding of national characteristics of R&I ecosystems and include further analysis on selected policy issues in relation to efficient use and combination of key European Union (EU) funding.

As a part of the capacity mapping activities, the S2E Country Reports provide a comprehensive overview of factors and mechanisms, which help understanding (1) the national participation patterns in FP7/H2020, (2) absorption capacity of SF/ESIF and the synergies between different funding programmes and (3) quality of governance. It should be noted that each report was developed based on interviews with the key stakeholders from public authorities (those in charge of designing and implementing the Research and Innovation Strategies for Smart Specialisation (RIS3) and other R&I related funding), research organisations and companies involved in joint R&I activities. Finally, these reports provide detailed analysis on the EU13 innovation ecosystems, factors supporting or limiting the use of opportunities and policy mechanisms that can facilitate the efficient exploitation of the public sources.

- **The S2E National Events**⁶ were organised in all EU13 MSs by the European Commission (JRC and DG REGIO) and the respective national authorities.

The S2E National Events were an important part of the project's capacity building activities. The events provided a platform to better understand of the European innovation ecosystem, raising awareness of the actions needed to enable synergies and drawing lessons for future actions. A fundamental characteristic of these events was to bring together different stakeholders: namely, national and regional authorities responsible for the implementation of Smart Specialisation Strategies (S3) and European

² For information on the Joint research Centres, please see <https://ec.europa.eu/jrc/en>

³ For more information on the S2E, please see <http://s3platform.jrc.ec.europa.eu/stairway-to-excellence>

⁴ For more information on the S3P, please see <http://s3platform.jrc.ec.europa.eu/>

⁵ The S2E Country Reports are available at <http://s3platform.jrc.ec.europa.eu/country-region-information>

⁶ More information on the S2E National Events and Joint Statements are available at <http://s3platform.jrc.ec.europa.eu/national-events>

funding programmes – including ESIF Managing Authorities (MAs) and National Contact Points (NCPs); national and international experts on the EU funding programmes; and stakeholders from universities, research centres and business. The main issues raised by the stakeholders of MSs and recommendations proposed by the participants are summarised in the country-specific Joint Statements⁷.

Efficient use of EU financial sources is a key issue for the European MSs in order to build up sustainable knowledge capacities and improve the overall quality of national and regional innovation ecosystems. Especially the effective use two key sources – The European Structural and Investment Funds (ESIF) and Horizon 2020 (H2020) – can contribute not only to the quality of R&I activities but also to closing the innovation gap in Europe. ESIF is an important financial instrument of the EU to support economically viable projects that promote EU policy objectives. Indeed, more than half of EU funding has been allocated through the ESIF and, in practical terms, the five funds of ESIF are jointly managed by the European Commission and the MSs. With the ultimate objectives of job creation and the development of a sustainable European economy and environment, ESIF focuses on five thematic areas including research and innovation⁸. On the other hand, H2020 continues to provide funding on the basis of excellence, regardless of geographical location; while ESIF aims to allocate funds effectively to build up regional/national excellence and capacities. By fostering synergies between these different funding sources (ESIF, H2020, other European instruments and national programmes) they can then complement one another through the different stages of the innovation process.

The report starts with an explanation of the phenomenon of the innovation gap between EU15 and EU13 MSs, including presentation of some quantitative indicators and local factors, particular to the national or regional system, hindering the efficient use of R&I sources observed especially in the EU13 MSs. This section focuses on the participation in the Framework Programmes and MSs' absorption rate/capacity of Structural and Cohesion Funds. The second section focuses on the potentials coming from the EU financial sources and strategic opportunities related to RIS3. Section three is based on the 13 S2E Country Reports and Joint Statements of the S2E National Events in order to identify the main issues (barriers and bottlenecks) with the policy actions and recommendations to address these issues. In this section, specific issues common across the countries and frequently mentioned by either S2E event participants⁹ or independent national experts are highlighted and elaborated in detail. The last section is the main concluding remarks based on the lessons learnt from the S2E analytical work, as well as highlighting the critical success factors to contribute to closing the innovation gap in Europe.

⁷ A policy insight "Synergies for Innovation: Lessons Learnt from the S2E National Events" is available at <http://s3platform.jrc.ec.europa.eu/-/synergies-for-innovation-lessons-learnt-from-the-s2e-national-events>

⁸ For more information also see https://ec.europa.eu/info/funding-tenders/european-structural-and-investment-funds_en and <http://www.eib.org/products/blending/esif/>

⁹ Participants of S2E national events consist of national and regional Managing Authorities, national Contact Points from Framework Programmes and other EU-funded programmes; national and regional authorities in charge of smart specialisation strategies; members of the H2020 Programme Committee; selected European experts on EU funding programmes and regional policy; selected representatives from businesses; selected representatives from universities, research centres and any other organization with experience and/or interest in EU-funded programmes.

1 A phenomenon: innovation gap

The concept of the "innovation gap" generally refers to the disparities between innovation performances in the European Union (EU) and those of the United States (US). It can also refer to other innovation-leading countries such as Japan and South Korea. Although the performance of the EU has been on the rise in recent decades and has partially reduced the gap with the US, there is another phenomenon on the European agenda: the internal innovation gap between EU MSs. This gap can be described in different geo-political terms, such as that between Eastern Europe and Western Europe or between old (EU15) and newer (EU13) MSs and also between northern and southern Europe.

While the gap between Europe and other advanced countries decreases slowly, the internal gap between EU MS keeps increasing. Marich (2013)¹⁰ highlights that while the overall performance of the EU has improved at an annual average rate of 1.6% over the five year period 2007-2012, the innovation index has worsened in nine countries: with a slight decline in United Kingdom (-0.2%) and in Poland, Czech Republic, Hungary, Portugal, Romania, Greece. The most dramatic deteriorations were observed in Bulgaria (-18.7%) and Malta (-16.0%)".

Table 1. Main R&I indicators of EU13 and EU15 (2013)

	EU13*	EU15	EU28
Population	105,127,027	401,484,800	506,611,827
GDP – Euro per capita	10,417	29,800	25,700
GDP – Euro per capita in % of EU average	40.5	115.3	100
R&D expenditure – Total (million Euro)	11,521.81	260,036.97	271,558.78
R&D expenditure – Total (% of GDP)	1.05	5.09	2.02
R&D expenditure – Business Enterprise Sector (BES) [% of GDP]	0.54	1.34	1.28
R&D expenditure – Government Sector (GOV) [% of GDP]	0.23	0.25	0.25
R&D expenditure – Higher Education Sector (HES) [% of GDP]	0.27	0.49	0.47
R&D expenditure – Private non-Profit Sector (PnP) [% of GDP]	0.004	0.02	0.02
R&D Personnel** – Total (% of active population)	0.62	1.25	1.12
R&D Personnel – BES (% of active population)	0.25	0.69	0.60
R&D Personnel – GOV (% of active population)	0.15	0.15	0.15
R&D Personnel – HES (% of active population)	0.22	0.39	0.36
R&D Personnel – PnP (% of active population)	0.002	0.01	0.01
Unemployment Rate***	9.9	9.50	9.60

Source: Compiled and calculated by using Eurostat 2013

* EU13 aggregate not available in EUROSTAT

** R&D personnel refer to the number of full time equivalent R&D personnel.

***Unemployment uses latest available figures for 2013 age group 15 years and over

The heterogeneous characteristics within Europe in terms of Research and Development (R&D) and innovation performance in the year 2013 can be observed in the macro indicators (Table 1). The total R&D expenditures of the EU15 MSs are more than 22 times higher than the corresponding expenditures of the EU13 MSs. Moreover, the R&D expenditure per person is almost six times higher in EU15 (€109.6 in EU13 and €647.7 in EU15). Similarly, R&D expenditures in the business and education sectors significantly lag behind the EU15 averages. Also the percentage of R&D personnel in the active population in EU13 is five times smaller than the rest of Europe. It is notable that the only indicator where EU13 catches up with EU15 is the R&D expenditure as a percentage of GDP in the government sector, which is a consequence of increasing share of R&D in public sources.

¹⁰ Marich, Mark (2013) "EU Closing Innovation Gap with US" available at

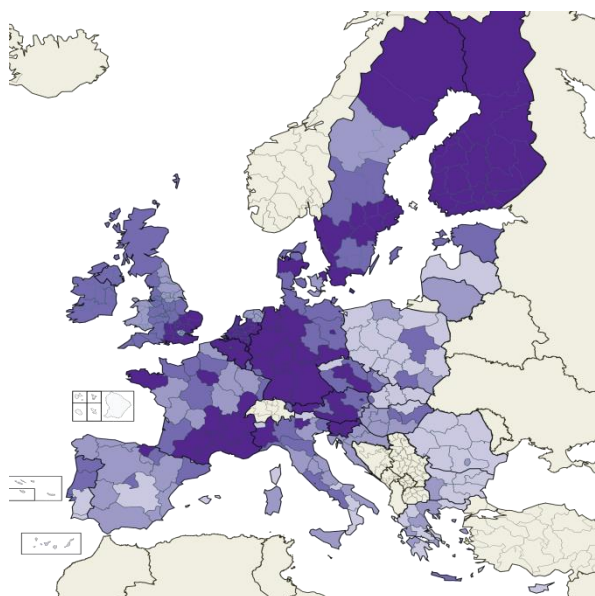
<http://www.kauffman.org/blogs/policy-dialogue/2013/april/eu-closing-innovation-gap-with-us> (accessed on 25.08.17)

Table 2. Main R&D indicators of EU13 Member States (2013)

	Population	GDP per capita (% of EU mean)	R&D expenditure (% of GDP)	R&D Personnel (% of active population)
BG	7,284,552	21.30	0.65	0.52
CY	965,878	73.60	0.48	0.29
CZ	10,516,125	55.00	1.91	1.17
EE	1,320,174	53.70	1.74	0.86
HR	4,262,140	39.20	0.81	0.57
HU	9,908,798	38.30	1.41	0.87
LT	2,971,905	45.30	0.95	0.76
LV	2,023,825	44.90	0.60	0.53
MT	421,364	66.40	0.85	0.79
PL	38,062,535	39.20	0.87	0.54
RO	20,020,074	27.50	0.39	0.34
SI	2,058,821	66.30	2.59	1.51
SK	5,410,836	51.50	0.83	0.63
EU13	105,127,027	40.50	1.05	0.62
EU15	401,484,800	115.30	2.09	1.25
EU28	506,611,827	100.00	2.01	1.12

Source: Compiled and calculated by using Eurostat 2013

Table 2 demonstrates the state of play for each EU13 MS in 2013. According to the share of R&D expenditure within total GDP, the only EU13 MSs that reached the average of the EU15 is Slovenia, while nine of them are even below the EU13 average. Czech Republic, Estonia and Hungary perform relatively better than the other EU13 MSs. Similar observations can be made at regional level as the Regional R&D intensities in EU13 MSs are much below those in EU15 regions (figure 1). There is a claim that the gap is such that there is significant polarisation between the EU13 and the EU15, with the disparities reflecting structural features, such as the level of technology, capacity and long-term performances (e.g. Doryn, 2016; Mykhnenko & Wolff, 2017; Harrap & Doussineau, 2017).

Figure 1. Regional R&D intensity of Europe (% of GDP, 2013)

Source: R&I Regional Viewer (<http://s3platform.jrc.ec.europa.eu/synergies-tool>)

Kontolaimou et al. (2016) developed a typology of European countries based on innovation efficiency. The innovation performance measure shows that not only the innovation capacity but also innovation efficiency of EU13 MSs have been significantly lagging. Similarly, OECD (2016) highlights the significant difference between EU13 and EU15 in terms of overall growth in the volume of R&I activities. Moreover, according to European Innovation Scoreboard (2017)¹¹, there are four performance groups in Europe with regard to innovation performance: innovation leaders, strong innovators, moderate innovators and modest innovators (Table 3). There is only one EU13 MS, Slovenia, classified as "strong innovator" although its performance is below the EU average. Moreover, 10 EU13 MSs are classified as "moderate innovators" while Romania and Bulgaria are classified as "modest innovators" with innovation performance substantially below the EU average.

Table 3. EU Member States Innovation Performance (2017)

Category	Description	Member States
<i>Innovation Leaders</i>	innovation performance well above the EU average	Switzerland, Sweden, Denmark, Finland, the Netherlands, the UK, Germany
<i>Strong Innovators</i>	innovation performance above or close to the EU average	Iceland, Austria, Luxembourg, Belgium, Norway, Ireland, Israel, France, Slovenia
<i>Moderate Innovators</i>	innovation performance below the EU average	Czech Republic, Portugal, Estonia, Lithuania, Spain, Malta, Italy, Cyprus, Slovakia, Greece, Hungary, Serbia, Turkey, Latvia, Poland, Croatia
<i>Modest Innovators</i>	innovation performance well below the EU average	Bulgaria, Macedonia (FYROM), Romania, Ukraine

Source: European Innovation Scoreboard 2017

Lastly, it should be noted that a significant number of EU13 MSs reached the highest growth rate of innovation performance from 2008 to 2015; namely, Latvia, Malta, Lithuania, Bulgaria, Slovakia, Slovenia, and Estonia have achieved a higher growth rate than the EU average. Also, as the European Institute of Innovation and Technology (EIT, 2016) highlights, the biggest EU's innovation potential is based on EU13 MSs, which could be harnessed by investing more in the fields of R&I in these countries and enhancing the competitiveness all over Europe.

1.1 Low Level Participation in the Framework Programmes

The European Commission's Framework Programmes (FPs) for research, innovation and technological development have been intended to give researchers powerful tools that would enable them to enhance the development of European competitiveness, growth and knowledge generation¹². These programmes were initially launched with several objectives with one of them being focussed on closing the innovation gaps in Europe. However, the disparity between MSs in terms of innovation performance remains similar in relation to participation in FPs. In other words, the innovation gap reflects the entirety of research activities, including the participation in the Framework Programmes of the European Union, currently H2020. For example; the average FP contribution per person for EU13 MSs (2.54€/year for FP7 and 3.45€/year for H2020) is much lower than the EU15 average (13.6€/year for FP7 and 18.71€/year for H2020). Even though there is more homogenous distribution of FP contribution compared to general R&D intensity, the largest part of EU13 MSs and their regions accessed much less funding than the rest of Europe. Again, the FP-based performance map remains quite unequal in European landscape (see Figure 2).

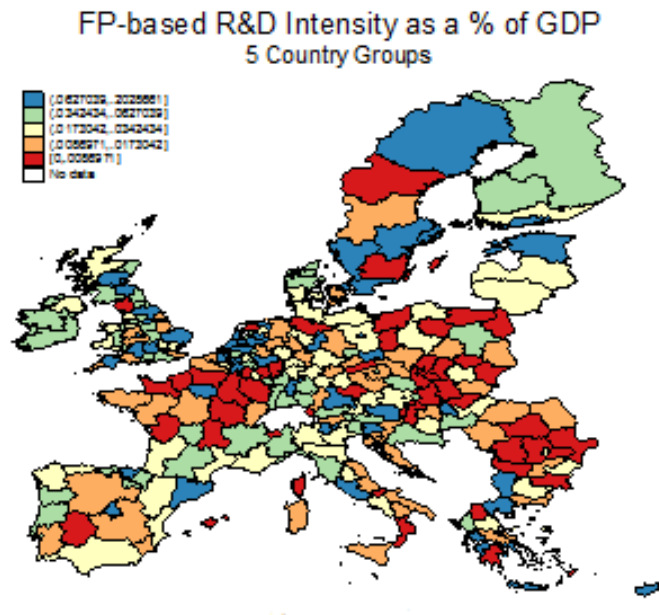
Figure 3 shows the evolution of the share of FP7 budget for the EU15, EU13 and associated countries. The share of budget from FP6 is considered as the reference (base 100). The graph represents the share of cumulated funding by year for each of these

¹¹ The full report is available at http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards_en

¹² <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM%3Ai23022>

categories. Therefore, the year 2014 demonstrates the total share of budget taken in the FP7¹³.

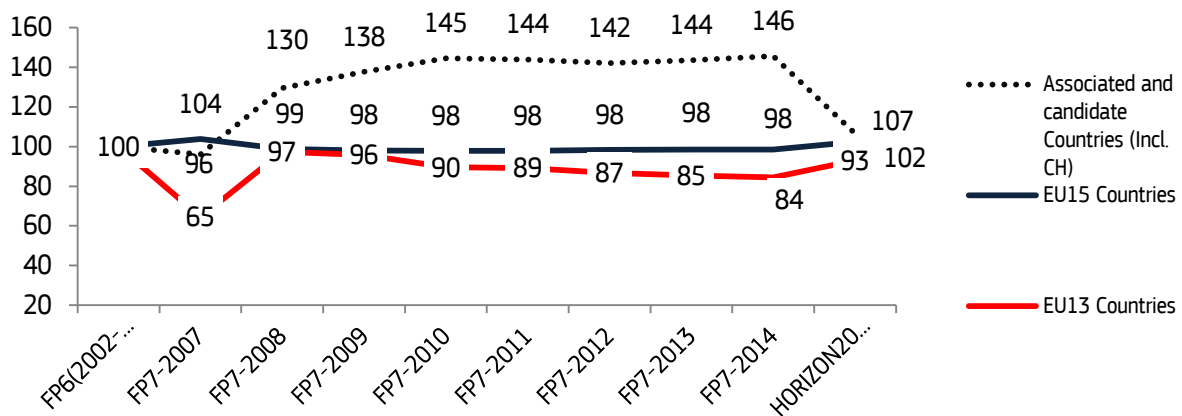
Figure 2. FP7 contributions to European Regions (% of GDP – total funds allocated, 2013)



Source: European Commission JRC, 2015b

The funding allocated to EU13 mostly stayed below the EU28 FP6 average during the previous programming period. The FP7 funding per person is €17.80 for EU13 MSs, which is much less than the per-person funding received by EU15 MS, €95.20 (see table 4). Although the funding allocation has slightly increased in current programming period, it is still lagging behind the European average.

Figure 3. Evolution of the share of EU FP funding allocation (EU FP6 budget share is 100)



Source: European Commission JRC, 2015b

Table 4 represents not only the performance difference between EU15 and EU13, but also the internal disparities among EU13 MSs. First of all, the differences between the FP7 contributions per person are notable; only €6.40 for Romania while it reaches €111.90 for the Czech Republic. Indeed, the Czech Republic is the only EU13 MS that has a higher per-person funding allocated than the EU15 average. In addition to Czech Republic,

¹³ The FP7 data are used in this figure as the fact that data are available for entire programming period whereas it is only partial for H2020.

Slovenia is the second EU13 MS that overcomes the EU28 per-person funding (€83.50 and 78.90 respectively).

Table 4. Details of FP7 funding allocation for EU13 MSs (covering all the projects funded under FP7)

	FP7 funding (€M)	FP7 funding (per capita - €)	FP7 # of participation / project coordination	FP7 funding related to S3 priorities (€M)
BG	97.40	12.90	697 / 45	46.83 (56.9%)
CY	91.70	111.90	442 / 73	31.37 (70.4%)
CZ	286.40	27.30	1409 / 120	116.63 (63.9%)
EE	88.68	66.20	541 / 55	30.62 (67.7%)
HR	90.60	20.50	394 / 39	30.51 (71.2%)
HU	97.40	28.00	1581 / 206	110.05 (73.8%)
LT	54.73	17.40	416 / 28	23.87 (81.7%)
LV	48.19	22.70	326 / 29	17.8 (68.6%)
MT	21.00	50.80	189 / 23	9.31 (80.5%)
PL	439.12	11.50	2197 / 240	
RO	136.60	6.40	1049 / 60	54.83 (63.4%)
SI	170.80	83.50	914 / 55	91.72 (80.1%)
SK	77.80	14.40	480 / 38	16.62 (33.5%)
EU13	1883.60	17.80	10635/1011	n/a
EU15	37852.20	95.20	n/a	n/a
EU28	44364.10	78.90	n/a	n/a

Source: Compiled from European Commission JRC, 2015b

2 Potential & opportunities: Alignment of ESIF, FPs and RIS3

In spite of the phenomenon of the innovation gap in Europe based on the limited R&I capacity, each MS has the potential and opportunities for exploitation to create an efficient innovation ecosystem. First of all, there is a significant financial opportunity provided by European Structural and Investment Funds (ESIF) where the investment strategy is aligned with the smart specialisation priorities.

ESIF is the biggest public support of European Union (EU) with more than half of EU funding allocated through the ESIF¹⁴. The five funds of ESIF are jointly managed by the European Commission and the MSs. Underpinned by the main purpose of job creation and development of a sustainable European economy and environment, ESIF is allocated through five funds by 11 thematic objectives including research and innovation¹⁵. Framework Programmes (FPs – FP7 for the period of 2007-2013 and H2020 for 2014-2020) continue to provide funding on the basis of excellence, regardless of geographical location, while ESIF aims to allocate funds effectively to build up regional/national excellence and capacities. By fostering synergies between these different funding sources (ESIF, H2020, other European instruments and national programmes) they can complement one another through the different stages of the innovation process.

Figure 4. ESIF allocations according to Thematic Objectives (Dec 2015)



Source: European Commission JRC, 2015b (based on final ESIF partnership agreements as of Dec. 2015)

ERDF: European regional development fund; ESF: European social fund; CF: Cohesion fund; EAFRD: European agricultural fund for rural development; and EMFF: European maritime and fisheries fund.

Approx. €122 billion - approx. €234 billion
 REGIO open data available at: <https://cohesiondata.ec.europa.eu/>

The European Cohesion Policy¹⁶ and the creation of synergies between different EU funding sources, in particular with the combination of the sources of ESIF and H2020 has already significantly contributed to efforts to close the innovation gap in Europe and creating new job opportunities, economic values and social impact. In order to align the R&I activities with concrete socio-economic impact, Research and Innovation Strategies for Smart Specialisation (RIS3) have a key role. At this juncture, the critical point is to align FPs funded projects with the RIS3 priorities as ESIF is allocated based on these

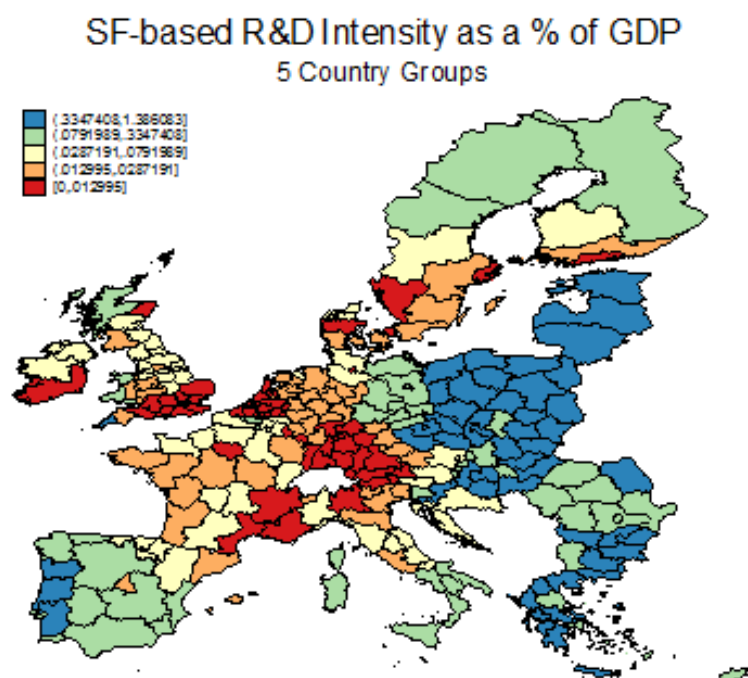
¹⁴ See https://ec.europa.eu/info/funding-tenders/funding-opportunities/funding-programmes/overview-funding-programmes/european-structural-and-investment-funds_en

¹⁵ For more information on the thematic objectives, please see http://ec.europa.eu/regional_policy/en/policy/what/glossary/t/thematic-objectives

¹⁶ For more information on the EU Cohesion Policy, please see http://ec.europa.eu/regional_policy/en/faq/

priorities. This can increase the complementarity between different activities and enhance synergies with increasing socio-economic impact.¹⁷

Figure 5. Structural funds allocation for the strengthening R&I (as a % of GDP, Dec 2015)



Source: European Commission JRC, 2015b

As can be seen in Figure 4, ESIF have supported 11 investment priorities/thematic objectives. This corresponds to a budget of €454 billion; in addition, it has been supported by €185 billion of national co-funding. Significant amounts are used to strengthen research, technological development, innovation and related areas. Furthermore, the biggest part of ESIF has been allocated to less developed regions in order to allow these regions to catch up with the technological and economic levels of more developed European regions (see figure 5). Funding for regional and cohesion policy for the period of 2014-2020 amounts to €351.8 billion and €178 billion is allocated to the less developed regions¹⁸. This created an important financial input for the activities undertaken in these countries and regions.

In terms of the alignment between FPs' financial contribution and Smart Specialisation priority themes¹⁹, most of the EU13 MSs have received financial contribution from the FP7 budget in line with their priority areas chosen by the countries and their regions with respect to the Smart Specialisation Strategies. In terms of this alignment, the biggest gap is observed for Slovakia where their S3 priorities correspond to only 34% of FP7 contribution. Bulgaria also has lower levels of alignment while Hungary and Slovenia have almost fully aligned their smart specialisation strategies with their FP research activities.²⁰

¹⁷ For the alignment of FP7 funded projects with national and regional RIS3 in EU13 MSs, please see the S2E Facts & Figures, available at <http://s3platform.jrc.ec.europa.eu/country-region-information>. Guidelines for enabling synergies between ESIF and H2020 is available at http://ec.europa.eu/regional_policy/sources/docgener/guides/synergy/synergies_en.pdf

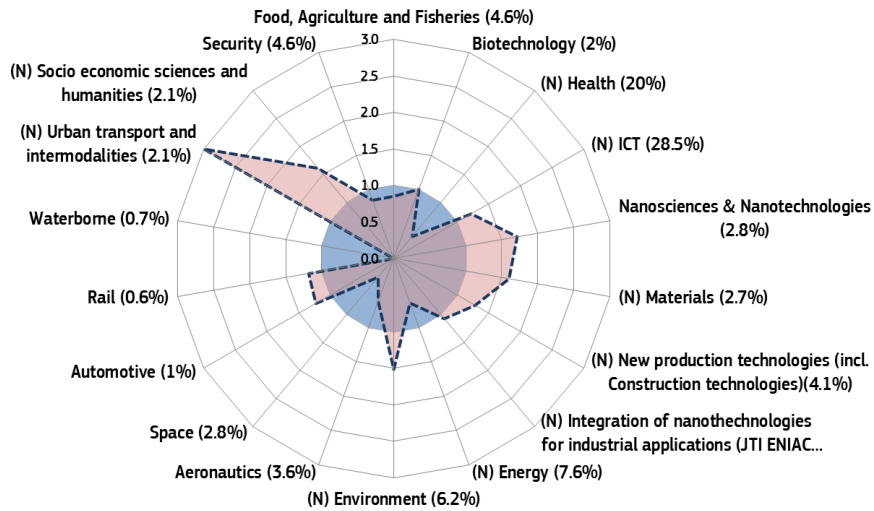
¹⁸ http://ec.europa.eu/regional_policy/en/funding/available-budget/

¹⁹ This analysis on alignment is based on the estimation where data from Eye@RIS3 and FP7 database are compared without in-depth analysis on the thematic areas; therefore, the level of alignment can be differently elaborated in specific fields.

²⁰ For the level of alignment for each EU13 MS, please see the National and Regional Facts & Figures (available at <http://s3platform.jrc.ec.europa.eu/country-region-information>)

Figure 6. Alignment of FP7 financial contribution and smart specialisation strategies (Slovenia)

■ Framework programme 7 (% of FP7 budget dedicated to cooperation programme in the area) (N): National smart specialisation area chosen
 🇸🇯 SLOVENIA



Source: European Commission JRC 2015b

The alignment between FP thematic areas and S3 priority areas provide additional opportunities to plan and exploit existing potential efficiently since the FP7/H2020 corresponds (or develops) a scientific expertise and it would create significant impact with an investment source, such as SF/ESIF. This impact can come in two ways: either high-level scientific activity can take place by means of the capacity (e.g. research infrastructure, equipment, support networking, enhancement of the qualification of related staff, etc.) build by SF/ESIF or SF/ESIF can be used for the commercialisation or technological development based on the outcomes of FP/H2020 funded research activities. Either way, the impact would be much higher than any other activity only focusing on single source funding.

3 Issues and policy recommendations

In this work, we analyse the main bottlenecks and issues mentioned in the S2E Country Reports by national experts (based on the interviews undertaken with different stakeholders including representatives from public authorities and business, as well as researchers) and the Joint Statements resulting from the S2E National Events. More importantly, there are actions taken by the national authorities to address these bottlenecks and issues, as well as possible policy recommendations considered as being solutions to overcome them. Analysis of the issues, bottlenecks and possible actions is principally based on these two sources and the most frequently mentioned issues are selected and discussed. Therefore, different actors indirectly contributed to this selection; namely, participants of S2E National Events, S2E national experts who wrote the Country Reports and those interviewed by the experts. Both, event participants and interviewees, cover the profiles listed below.

- National and regional Managing Authorities,
- National Contact Points from Framework Programmes and other EU-funded programmes,
- National and regional authorities in charge of smart specialisation strategies,
- Members of the H2020 Programme Committee,
- Selected European experts on EU funding programmes and regional policy,
- Selected representatives from businesses
- Selected representatives from universities, research centres and any other organization with experience and/or interest in EU-funded programmes

The issues and bottlenecks and their potential solutions are summarised under three dimensions: **quality of governance**, **capacity building** and **innovation and commercialisation**. The following sections describe the issues under each dimension which are summarised in the tables 5, 6 and 7 (for the full list of issues, bottlenecks and possible actions see Annex 1 and Annex 2, corresponding the reviews of Country Reports and Joint Statements respectively).

3.1 Quality of R&I governance

The instability of governance systems is one of the most common bottlenecks for EU13 MSs. This bottleneck is also related to unstable political structures (lack of a widespread sense of the legitimacy of the state authority based on economic crises, breakdown of political communication channels, successive elections, unsuccessful institutional restructuring, etc.), frequent changes in the policy instruments and legislative acts, lack of continuity of RIS3 implementation and changes to the responsible staff. As the governance system affects all the stakeholders, this bottleneck can be considered as an urgent issue to achieve a well-functioning innovation ecosystem. Hence, the national authorities in charge of funding programmes should strive to put more effort into aligning their activities and in creating a more open and flexible working culture. Additionally, the Entrepreneurial Discovery Process (EDP) helped with the improvement of dialogue between stakeholders and the enhancement of bottom-up approach; in this way, EDP significantly contributed to the establishment of a more participatory working culture.

The main issue highlighted in almost all the events and Country Reports was **the need to improve coordination and communication between different stakeholders** related to authorities in charge of ESIF and/or RIS3 and potential beneficiaries of the ESIF or H2020, including ministries, national and regional public organisations, research organisations, universities and businesses. It is a common phenomenon that the ministries and their agencies have different priorities and hence use different approaches. Therefore, R&I related activities are mostly not strategically aligned. Moreover, in most of

the EU13 MSs numerous agencies are responsible for implementing the R&I policies under the auspices of different ministries and at different levels of aggregation such as urban, regional and national. This leads to uncoordinated agendas and a fragmented research system without a strategic focus and a high risk of the duplication of effort. Also, the lack of coordination of instruments affects almost all R&I activities including management of education, research and innovation. Furthermore, this issue contributes to related bottlenecks in R&I governance such as the lack of both information circulation between stakeholders (silo effect) and collaborative management. In conjunction with limited human capital and facilities, it is a contributing factor as to why most of EU13 MSs remain inefficient in terms of exploiting their R&I potential. Thus, the coordination between the ministries and regional institutions is a crucial issue for the national and regional innovation ecosystems in order to exploit opportunities available from different European and national programmes.

In response to the coordination and communication issues outlined above **the establishment of coordination body**, which can assist all the stakeholders, was recommended by S2E National Event participants and national experts. Such a body should align the related activities and provide timely information and support to potential beneficiaries for the calls, application procedures and project implementation. Also, it was underlined that this coordination body should be independent from the government and short-term policy interests. In this way, it would have an opportunity to consult on critical issues with the business and other, non-government, stakeholders and transfer this information to the public authorities. Additionally, the national experts highlight that the EU offices or consultancy services, which are mostly established within the PROs and HEIs, are important to help stakeholders to overcome coordination problems.

As the nature of ESIF and H2020 are different and each one requires different types of procedures, researchers at public and private organisations underlined the importance of **accessing the necessary information in a timely manner** in order to have adequate time to plan and build up a consortium. Hence, integrating different funding programmes is already a challenging and complicated task to address. For this, the key issue identified by the S2E stakeholders is better communication between different stakeholders'. Open and enhanced dialogue helps in overcoming bottlenecks and generating the consensus needed for collaborative work. There is a clear need for more timely information on the ESIF opportunities, calls and application procedures, which would allow potential stakeholders to efficiently exploit these opportunities. Suggestions to launch new communication channels and enhance the current information and communication tools were frequently given in the S2E events.

Box 1. Synergy Example: The EIT Climate-KIC: "Pioneer Cities" & "Transition Cities"

- A multi-dimensional good practice including improvement in the governance system at urban and regional levels by means of the instruments provided by EIT Climate-KIC (Knowledge Triangle Integration, coordinated local centres, working experience with municipalities and city councils).
- Pathfinder project is followed by an implementation project while being coordinated by EIT Climate-KIC.
- Focused on low emission and renewable energy use in different regions and cities all over Europe.
- Demonstrated how the EU bodies can contribute to the improvement of regional innovation ecosystems.

Details available at <http://s3platform.jrc.ec.europa.eu/synergies-examples>

The structure and composition of the national administration managing the SF/ESIF, together with the difficulty of recruiting staff with the necessary expertise on related regulations and poor management of the technical assistance funds were mentioned by stakeholders as the origin of several problems observed at the implementation level. This

makes it very difficult for beneficiaries to plan projects and look for funding programmes' complementarities, giving the feeling that applying for SF/ESIF is not worth the effort required. Therefore, another issue is the **complicated administrative procedures** of EU and national funding programmes. This barrier is valid at different levels, including timing of the calls, delays of payment, inconsistent state aid bureaucracy, time-consuming public procurement procedures including long-lasting/non-transparent evaluation, and the workload of staff dealing with project management. In addition, overloaded administrative and/or lecturing tasks of the researchers in PROs and HEIs and low capacity of MAs and NCPs are other related issues adding to the administrative burden. In order to address these issues, the S2E stakeholders recommended taking some actions, such as simplifying the administrative process of R&I activities, employing more qualified staff, institutional support for the researchers in HEIs and PROs and so on. Correspondingly, the public organisations in charge of funding programmes should strive to put more effort into aligning their activities and in creating a more open and efficient working culture.

The lack of long-term strategic planning is one of the most important barriers to enabling synergies. It is crucial for reinforcing a shared vision of R&I policies, building up a consensus on the S3 prioritisation and aligning activities from different fields. In other words, in order to achieve such a shared vision, a strategic plan should be established with a consensus for the long-term objectives. Indeed, the development of a Smart Specialisation Strategy has contributed to a more inclusive and transparent policy building process by means of the Entrepreneurial Discovery Process (EDP) and as this process requires active involvement of different stakeholders, including the governmental, educational, research and private sectors. However, some MSs had limited involvement of specific actors in the process of EDP, particularly researchers and business representatives. Therefore, stakeholders and experts recommended that there should be a **continuous EDP** in order to enhance the strategic alignment between the national and regional levels. It also facilitates the enlargement of the participatory decision-making process from the design of the instruments to implementation. Lastly, the objectives of long-term planning should not be limited to the programming periods; thus, the strategic vision can go beyond 2020 and aim to achieve social and economic impacts. This also requires a flexible approach where the update of the strategic vision would be needed. Consequently, this can facilitate the participation of business into the wider innovation ecosystems since a stable economic environment helps business actors to plan investment decisions and long-term initiatives.

A crucial element is **the degree of collaboration of business with academia** for strategic R&I projects. Building business awareness of both potential funding and synergy opportunities is therefore an important dimension for a successful S3 implementation. On the one hand, the involvement of business is critical for the strategic development of commercialisation activities; on the other hand, it requires more effort on the improvement of communication and coordination between public institutions, academia and business. Hence, the common request by many EU13 MSs was to establish independent coordination bodies (one-stop shop) that can assist and provide advice in a timely and tailored manner to all the different stakeholders (SMEs, big companies, universities) while helping authorities to shape strategies and public interventions.

The low level of participation of business in the R&I activities is considered in relation to several deficiencies and bottlenecks; namely, (1) weak interaction between Higher Education Institutions (HEIs), Public Research Organisations (PROs) and the private sector; (2) lack of venture capital, (3) limited capacity of micro enterprises and SMEs; (4) investment of the private sector in R&I and no experience in finding partners; (5) research community is internally fragmented as well as being externally disconnected from business; (6) underdeveloped incubation activities and lack of support for start-ups; (7) lack of awareness about the business oriented programmes; (8) lack of entrepreneurial universities; (9) high administrative burden and low-success rate hinder the motivation of companies; (10) long period from submission of the project proposal to contract accompanied and (11) limitations on commercial use of the public research

infrastructure. In addition to this long list, several experts criticised the funding policy of the European Commission based on the fact that business potential is mostly in the developed regions of the country while ESIF are oriented more towards the less developed regions. From another perspective, it was mentioned that capacity building and financial sources should be planned together; otherwise, it is hard to bring key stakeholders together.

There is a significant effort undertaken by the MSs to solve the issue of efficient business involvement in innovation support activities. Some of these actions have already achieved successful results. One of these actions is the establishment of centres for the coordination of knowledge transfer from PROs to business; including incubation/excellence/competency centres (implemented in Slovenia) as well as lead market initiatives and the establishment of clusters and platforms to facilitate business participation. Other actions include, award systems for SMEs, tax subsidy for R&I investment activities, and innovation vouchers. There are also several detailed policy recommendations raised by participants at S2E events and the national experts; e.g. networking and brokerage events bringing together academia and business, support mechanisms to facilitate Public-Private-Partnerships, programmes to support entrepreneurship and competitiveness, incentives and loan systems for venture capital, simplified funding for start-ups and so on (for more detail and recommendations see Annex 1).

Table 5. Quality of Governance: Issues and Policy Recommendations

Issues Raised in the S2E Country reports & National Events QUALITY OF GOVERNANCE	<ol style="list-style-type: none">1. Lack of strategic approach, long-term planning, common vision and prioritisation2. Status quo, conservative thinking, traditional approach and risk averse3. Unstable political and administrative structure: fragmented and unstable research system (including frequent changes in policy instruments, related staff and as well as lack of flexibility)4. Fragmentation and duplication of R&I activities5. Lack of coordination and communication between different stakeholders6. Lack of intermediary organisations in the governmental system7. Low level of participation of business in the R&D activities8. Lack of business awareness of cooperation opportunities with academia9. Weak timely information circulation (aggravated by the silo effect) & lacks of open dialogue and mutual trust between stakeholders10. Common perception of corruption, fraud and conflict of interests, also for R&I funding11. Administrative burden and complicated procedures12. Heterogeneous EU regulations adoption into national provisions13. Different responsiveness of Managing Authorities to new economic challenges14. Heterogeneous interest by Managing Authorities towards other EU innovation initiatives (e.g. macro regional EU programmes, cooperation initiatives, cluster policies, thematic platforms etc.)15. Modifying the Operational Programmes is complicated16. Low level of salaries and lack of job security for the high level researchers and qualified administrative staff17. Lack of international links and weak integration to the EU networks18. Different nature and regulations of EU funding (especially ESIF & H2020)19. Repeated controls/audits with heterogenous interpretation of the ESIF rules and regulations
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POSSIBLE POLICY ACTIONS

- Develop a long-term vision and exploit opportunities provided by the continuous EDP - including the improvement of participatory mechanisms with transparent evaluation and monitoring
- Improve the implementation of the active policy measures & mechanisms for involvement in the EDP
- Establish a transparent/shared information database (including sharing stakeholders' know-how & planned changes of programmes) & evaluation /audit system - promote new approaches and methodologies
- Establish a clear division of labour and define responsibilities for all authorities in charge of designing and implementing funding programmes - also avoid frequently changing the administrative staff
- Set up clear and simple objectives for the programmes and projects - more focused activities
- Better coordinate the current information channels, offices and platforms & exchange information between MAs, NCPs and other stakeholders & establish an independent evaluation/monitoring body (where missing)
- Establish an independent coordination body (*one-stop shop*) -consisting of different public and private representatives- for communication with stakeholders
- Lower the administrative burden, invest in qualified staff, provide training for project management & simplify the public procurement & vary the administrative requirements based on the project size
- Learn and adapt from good practices (with networking events ebringing together different stakeholders) & provide more detailed guidance how to deal with eligibility, application and submissions)
- Jointly engage and maintain the priorities identified by the RIS3 & follow-up with continuous EDP
- Specific schemes , vouchers , incentives, pre-seed activities & follow-up support for business
- Ensure links between the development of R&I programmes, higher education programmes and R&D infrastructure using SF/ESIF funding - also allow business to access public infrastructure

3.2 Capacity building for research excellence

Capacity building activities for MSs and their regions refers to the use of EU and national resources to reinforce a territorial R&I ecosystem and thus favours a more attractive and competitive environment where local actors could successfully participate in international R&I initiatives such as H2020 calls and other research schemes.

The major concern expressed in the S2E National Events and Country Reports by national experts is **the lack of modern research infrastructures and limited human resources for the R&I activities**. On the one hand, there is an ongoing debate about the efficient use of existing infrastructure capacities as there are laboratories and equipment that do not attract a viable number of researchers who can use them; however, on the other hand, there is a consensus on the inadequacy of the research infrastructures and the need for more investment in the infrastructure to undertake high level scientific activities. The limited human resources refer to either the lack of staff or the lack of skills and knowledge of the existing staff. Therefore, in order to address these issues, there is an urgent need regarding investments in research infrastructure as well as capacity building to ensure more and better trained researchers and technicians. It is important to keep these two investments aligned as the infrastructure without qualified staff would be an inefficient use of public resources. Furthermore, the maintenance activities of the existing research infrastructure should take place on a regular basis.

The low absorption capacity of R&I funds is a common issue for both, public and private units in EU13. Notably all the newer members of the EU consider the capacity building should be one of the first actions to focus on. Different types of stakeholders pointed out lack of public resources, limited number of excellent researchers, inadequate maintenance of the equipment, inefficient coordination capacities, and lack of venture capital as the reasons for low absorption of funds. Furthermore, according to the S2E national experts, these issues have become worse during **the Euro-crisis** since significant budget cuts in the fields of education and innovation were realised.

Several MSs reduced the impact of the crisis by means of increasing the share of EU funding, particularly H2020, and provided more finance to related activities. These countries established new mechanisms to strengthen international networking and reshuffled the financial resources to improve **the research units' networking capacities**. This resulted in an increase in the FP7 and H2020 contribution to the country. Considering these experiences, similar improvements should be possible by using the European and national funding sources efficiently; for example, creating such capacities at the level of research organizations in the form of a "project office", preparing researchers and research centres to H2020 applications and allowing joint use of research infrastructure by public and private entities in order to create the physical and virtual infrastructure required for structured partnerships.

The efficiency issue is also related to infrastructures that were built up with Structural Funds in the previous funding period, which are not always maintained on a regular basis. This could be due to intrinsic mistakes in the planning as well as a preference by policy makers towards physical investments (rather than so-called intangible knowledge-based expenditure) in both the design and implementation of funding initiatives. Moreover, one related problem is that past projections made in relation to some of these investments were too optimistic and they did not take into account the existing capacity in these territories. Therefore, mapping the existing research infrastructures and facilities to avoid **duplication** and reinforce economies of scale is a common need across many regions and MSs. Indeed, rather than potential financial constraints which impede the building of new facilities, the issue of **economic sustainability** of the existing infrastructure is more relevant in many territories.

Brain drain is also a critical issue and exacerbates the fact that a lack of human capacity is already a common issue for the EU13 MSs. Indeed students accessing a high level of education in their countries frequently decide to pursue their postgraduate degrees and research careers abroad for considerably higher salaries. Therefore, **the wide salary**

difference for researchers between MSs would be seen as another reason causing an increase in the level of brain drain. Furthermore, at the level of the individual researcher, the current career/salary system does not motivate researchers from public organisations to participate in H2020 collaborative research projects. The S2E stakeholders highlighted that H2020 provisions do not adequately take the bonus system in many EU13 countries and H2020 regulations establish a limit of €8000 as eligible cost for salary bonuses²¹. Consequently, researchers in EU13 MSs mostly have less project budget in H2020 than their counterparts in EU15. There is a significant remuneration gap between "old" and "newer" MSs.

Box 2. Synergy Example: Central European Institute of Technology (CEITEC)

- A good practice with significant capacity building - through ERDF co-fund, created research infrastructure and human resources while enhancing the international networking.
- Followed by successful FP7 and H2020 projects
- Achieved at favourable regional environment for international collaboration and innovative business.

Details available at <http://s3platform.jrc.ec.europa.eu/synergies-examples>

There are several issues negatively affecting **the participation of EU13 MSs in the Framework Programmes**, FP7 in the previous period and H2020 in the current period. The one most commonly raised issue by different experts is **the lack of expertise and experience** in the application and implementation of transnational collaborative projects. Lack of personnel with the necessary knowledge – including lack of qualified professors, language abilities and capacity of managing public co-funded projects – is a common phenomenon in the most EU13 MSs. This is reflected in the preparation and drafting of proposals for research programmes. As the FPs are competitive schemes, the lack of quality at the project proposal stage would create clear disadvantages in this competitive environment. Although the process of innovation requires long-term engagement and identification of prospective follow-up activities, most of the applicants just focus on short-term research objectives and required funding without emphasis on further steps of the innovation process. Another issue that should be considered in relation to participation in competitive research programmes is **a lack of commitment of governmental authorities to co-finance infrastructure** that is not financed by Framework Programmes. Although the Structural Funds are a good source of complementary funding, there is also a lack of awareness of these opportunities. Furthermore, as mentioned before, there are problems when using existing infrastructure commonly between public and private institutions even if this infrastructure would be funded by the EU public sources.

Lastly, it should be mentioned that **the lack of support from National Contact Points (NCPs) in some MSs** was raised a few times by the S2E event participants and international experts. In detail, it was highlighted that not only organising the information days or general information on calls, but also supporting the integration to the European consortia and specifications of the calls are important factors. In other words, such a problem negatively affects the support activities provided by these institutions since beneficiaries do not receive enough support and technical advice from the relevant ministries, agencies and H2020 National Contact Points (NCP) and; consequently, it results in more difficulties for the beneficiaries to understand the overall funding process. Therefore, strengthening the NCP networks including support to proposal drafting, finding project partners and coordination with Managing Authorities is another action to increase the level of H2020 participation. Also universities with project offices could achieve greater success in FPs if those offices have an open dialogue and information flows with NCPs. Several HEIs and PROs increased their participation in the

²¹ The European Commission adopted new rules for funding salaries in H2020 grants in February 2017 (for information see http://ec.europa.eu/research/press/2017/pdf/270217_memo_en.pdf).

FPs by exploiting the support given by NCPs and MAs. Also joint activities with these bodies, e.g. joint trainings and workshops, organisation of info-days especially for researchers and businesses, joint monitoring tools and similar forms of assistance have created large impacts in some MSs; for example, in this way Estonia and Slovenia increased their participation in H2020 compared to FP7, per person funding increased from 11.03€/year to 18.14€/year in Estonia and from 13.91€/year to 22.41€/year in Slovenia. These activities can be organised at the international level and provide a space to share good practices and improve the know-how information (for more policy recommendations, please see Annex 1).

Table 6. Capacity Building: Issues and Policy Recommendations

Issues Raised by the Participants & National Experts CAPACITY BUILDING	1. Low absorption capacity of funding sources (especially public and private R&I units)
	2. Low public sector expenditure on research and overall low R&I intensity
	3. Lack of modern infrastructure, dependency on ESIF and H2020 (lack of commitment of governmental bodies to co-finance infrastructure) & unsustainability of research infrastructure due to maintenance costs
	4. Relatively low success rate of participation in H2020, including lack of experience for preparation of the proposals & perception that H2020 is a 'closed club membership'
	5. Lack of awareness, information and network for accessing the possible funding & partners
	6. Low level of research collaboration with EU15 Member States
	7. Inadequate human resources (including number of researchers), lack of expertise and qualified staff to support participation in H2020
	8. Brain drain, including lack of younger generation of researchers, weak technical support provided in EU13 and salary differences between researchers in EU13 & EU15
	9. Lack of support for SMEs to participate in international research collaboration
	10. Considering ESIF as an easy/guaranteed source for short-term research projects (substitution effect versus other R&I funds)
	11. Focusing the fund for research projects but not necessarily following the needs of stakeholders and not aiming to go through all the innovation process
	12. Quality of support mechanisms: lack of project management experience and expertise, cost of coordination activities, no assistance for ESIF project preparation, lack of language ability, overloaded staff etc.
	13. Limits for business to access public infrastructure
	14. Lack of public-private partnership
	15. Lack of efficient legal framework for public procurement
	16. Lack of bottom-up approach to amend policy tools when needed
	17. EU crisis and cuts in public budget: particularly cuts in the budgets of PROs and HEIs & shrank in financial and technological services of business
	18. Lack of synergy with geographical and thematical programmes
	19. Lack of funding for mixed projects: <u>strict distinction between basic and applied research</u>

Possible actions

- Map the existing research infrastructure and facilities
- Increase the public investment in the capacities and competencies (modernisation, technology upgrading, human resources, networking etc.) & also avoid delays to final payments
- Develop a strong project pipeline in collaboration with a wide network of partners to address low success rate of H2020
- Offer professional advisory support activities and training to potential users of infrastructures & assist project applications for H2020
- Promote science entrepreneurship, e.g. adjusted researchers' contracts to work with business in H2020
- Improve access to public infrastructure and equipment (also for business enterprises) & support joint infrastructure and parallel laboratories
- Develop tailor-made instruments to strengthen absorptive capacity and acceleration of a new ideas pipeline through the innovation support services
- Develop motivational mechanisms for researchers, support programmes for young researchers & comprehensive and transparent system of scientific promotion - subsequent to track brain-drain
- Launch measures to mitigate the researchers' remuneration gap between EU13 and EU15
- Extend the widening participation towards a new instrument for opening up the excellent research infrastructures to a wider variety of users, e.g. industry
- Provide guidelines, methodologies, good practices and other documents in national languages
- Strengthen NCP network, MAs, the offices of PROs and HEIs for the project cycle management and consulting services of national authorities
- Remove restrictions on the funding for mixed and pre-competitive projects

3.3 Innovation and commercialisation

Commercialising the research results can lead to the creation of new jobs and socio-economic impact. For this, as mentioned before, **a continuous and sustainable financing** is "sine qua non". This is a crucial issue for the research organisations and private companies since they can achieve a high level of innovation and research excellence only by planning within the innovation process. However, most of the EU funding instruments (e.g. H2020, COSME, ESIF etc.) cover a 7-year programming period, however, there is a clear need for longer-term plan for successful commercialisation and innovation. Therefore, many organisations and enterprises might not benefit from the research results in the case of non-availability of the long-term financial support. Moreover, considering **the high risk of failure of commercialisation**, many public organisations are reluctant to get involved in these activities. On the one hand, it was stated especially by national authorities that smart specialisation have already helped to plan the activities in the longer term and provided good support for SMEs and business especially under the TO1, TO3 and TO8²². On the other hand, the strategic vision should go beyond programming periods and aim to establish a sustainability-focused strategic plan with an emphasis on improving the connections with business in the innovation ecosystem.

The participant of S2E National Events stated that the business environment in EU13 is mostly based on SMEs and micro companies where they have **very limited capacities and resources**. To achieve a final product without systemic public support is difficult for these types of small enterprises. At this juncture, the collaboration with business can be extended towards the companies in EU15 MSs in order to harvest research outcomes efficiently. Although the research is undertaken in EU13 countries, there are more opportunities in EU15 for technological updating and commercialisation of the research results. However, there are barriers to enhancing this collaboration as explained in detail before (also see the Section 3.2). One of the most important barriers is the **lack of competences and experience in international collaboration and commercialisation**. PROs and HEIs can assist with some parts of the missing competencies if public-private collaboration is enhanced. This can also contribute to changing **the orientation of PROs** as they are mostly not focused on the commercialisation phases and marketable research results. Therefore, as a consequence of this action, the lack of knowledge transfer from HEIs/PROs to business can be partially addressed, as well. Public-private partnerships would additionally help achieving a more stable investment in the long term with the establishment of a balance of large and small projects and as well as public and private sources.

Developing and exploiting synergies between different funding sources at regional, national and European levels would assist the MSs in the effective implementation of S3, promoting scientific excellence and closing the current innovation gap. However, **synergy is not one of the main considerations** for EU MSs. Most of the synergy actions with the combination of different funding sources has been realised by coincidence and/or individual attempts instead of developing a strategic/methodological approach²³. The European Commission put significant effort into raising awareness of synergies; consequently, it is possible to assert that this issue has been partially addressed and the national authorities in charge of the design and implementation of S3 are now better informed. Also, most of the MSs have direct references to synergies and funding complementarity in their Operational Programmes and/or following Action Plans. Although it is not easy to valorise this at the implementation level, the strategic approach has already taken place in the MSs' agendas. However, there are further actions still pending, e.g. using the existing schemes more efficiently (for example the Seal of Excellence and Widening Participation), monitoring and coordinating

²² List of Thematic Objectives available at http://ec.europa.eu/regional_policy/en/policy/what/glossary/t/thematic-objectives

²³ For the best practices of the combination of different funding programmes, please see <http://s3platform.jrc.ec.europa.eu/synergies-examples> (accessed at 04/09/2017)

schemes/programmes and activities facilitating the information sharing (for example events, workshops, online databases, media tools etc.).

Box 3. Synergy Example: Innovative Therapeutics in Alsace Region

- A good practice on knowledge transfer between research institutions and business, as well as commercialisation of research results.
- The work undertaken by the PROs in specific fields carried to the market.
- ERDF, national and FP7 funding sources combined over time.
- Delivered patents, market products and technological improvement.
- Demonstrated the efficient use of ESIF and FPs in a complementary way.

Details available at <http://s3platform.jrc.ec.europa.eu/synergies-examples>

Another practical barrier for synergies is **the timing of ESIF and H2020 calls**, which are mostly not aligned. In terms of the ESIF calls, it is a common phenomenon to launch a call without disseminating the information adequately; in addition, these calls stay open either in a very short time or with significant delays. Furthermore, these calls are designed regardless of the H2020 calls and other national calls. Indeed, as mentioned before, innovation requires strategic planning especially where there is a clear need to align research outcomes and investment sources. Without planning the timing of ESIF and H2020 calls, getting synergies through these sources is much more complicated. What's more, as the selection criteria and even the strategic goals of these two schemes significantly differ from each other, individual actors like research organisations and business enterprises are obliged to follow these schemes and fulfil the requirements separately. This process can easily be facilitated by some recommendations proposed by the S2E stakeholders; i.e. launching the ESIF calls on an annual basis and using more open/permanent calls in order to avoid time lags and to enable applicants to prepare project proposals without pressure of deadlines. Also some calls can be launched with dedication to synergy activities like follow-up calls for completed FP7 and H2020 funded projects or capacity building calls for already identified high-level research activities. Any of these amendments requires very detailed coordination of the funding schemes and in some cases conditional agreement on financing.

Another issue related to the commercialisation of research results is directly related to the internal regulations of MSs and their bureaucracy. In the context of synergies between H2020 and ESIF, **the different legal framework for different funding sources** (ESIF support follows the state aid rules whereas H2020 does not) causes confusion. Also, the need to avoid problems such as double funding of the same cost item was mentioned as an important barrier by the S2E stakeholders. This means there can be a reluctance to combine the funding due to the perceived complexity and possible legal problems. Such problems may include state aid regulations; particularly, **the complication of the state-aid rules** under the European Framework inhibits business from involvement in the European collaboration networks although these companies could also collaborate with other public and private organisations. **The simplification of the state-aid procedures and providing clear guidelines for businesses** are one of the urgent needs to make private enterprises more involved in the European schemes.

A further issue was **the restrictive national legislation for public procurement** that complicates the application for structural funds. Following this issue, it was noted that the simplification of public procurement procedures and establishment of transparent, fair and competitive procurement system (including expert support, web-based guidelines, training programmes etc.) are necessary to generate business opportunities and align public and private R&I activities. In addition, international experts for S2E proposed to develop an innovative public procurement system where the process can be simplified further and facilitated with an exception for the procurement related to the projects funded by the Framework Programmes. This can also be aligned with other

commercial initiatives such as lead market initiatives, clusters, collaborative projects with the EU bodies and platforms etc.

The Commission's initiative, **Seal of Excellence (SoE)**, which allows regions to recognise the quality label awarded to promising project proposals submitted under H2020, is welcomed by the MSs. The scheme currently allows only SMEs to access the fund. However, several critical points were also raised with regard to the implementation process. As the SoE is a follow-up instrument to accelerate R&I activities, there is a desire to expand the coverage beyond SMEs towards all possible stakeholders, for example, the consortia from different programmes and initiatives (i.e. ERA-NETs). In addition, it was highlighted that the project selection under the framework of SoE should focus on regional and national impacts rather than excellence only and more funding can be allocated to close-to-market research projects. Consequently, the selection phase should focus on the possible economic and social impacts that can take place in a specific territory. The regional benefit and even the research quality can be considered as complementary criteria.

Finally, an issue raised several times by different stakeholders and experts is that there is a substitution effect that seems to be at play between competitive international funding programmes (such as H2020) and "territorial-specific" available R&I funding under ESIF. As H2020 is directly managed by the European Commission whereas ESIF is on a decentralised basis through shared management by the Commission and local administration, potential beneficiaries consider **ESIF as a guaranteed source for short-term research projects** instead of using this source for innovation activities or building up the capacity for excellent research. Moreover, legal issues such as the grant agreements, consortium agreements, intellectual property rights etc. are highlighted as further obstacles. Therefore, this does not generate an incentive for R&I actors in these regions to enter into international collaborations and thus speed up the integration of local R&I ecosystems into broader markets and research environments. On the other hand, current practices show that RIS3 can facilitate targeted support of R&I where territorial strengths and opportunities are identified and a contribution to territorial competitiveness and development have already started to be observed²⁴. Enhancing the participatory approach of EDP and linking education, research and industry by means of active involvement in the decision-making process can help more in the future to allocate public sources based on local strengths as well as to avoid misuse of the financial sources.

²⁴ See "Smart Stories" available at <http://s3platform.jrc.ec.europa.eu/smart-stories>

Table 7. Innovations & Commercialisation: Issues and Policy Recommendations

Issues Raised by the Participants & National Experts
INNOVATION & COMMERCIALISATION

1. Sustainability of the projects: lack of continuous support and incentives for commercialisation
2. Missing entrepreneurial culture & limited business capacity and resources of SME-based business environment
3. Lack of transfer from PROs to business: limited roles of Technology Transfer Offices and support services for business & lack of entrepreneurial universities
4. Missing lead market initiative, cluster/platform support and other market incentives
5. Rigid public procurement regulations & Complicated state-aid rules
6. Synergy is not one of the main considerations (happened by coincidence): lack of awareness of synergy opportunities, fear of double-funding, limited guidance on the synergies with ESIF & no strong impulse to create mechanisms facilitating synergies
7. Very detailed designed instruments limit the implementation of synergies
8. Lack of international collaboration & information and data sharing among the authorities in charge of ESIF and EU-level programmes
9. ESIF and H2020 calls are not aligned: delays (and in general timing/time-frame) of R&I calls, different requirements /eligibility and implementation
10. Competition with other funding opportunities: considering ESIF as an easy source since the success rate of H2020 is low & also there is a language advantage in ESIF calls (use of one's own language rather than English)
11. Lack of systematic evaluation of the instruments: missing strategic intelligence and ex-post evaluation & lack of trust to evaluators as the system is not transparent
12. Lack of support to main hubs because of priority of lagging regions: though the R&I capacity concentrated in the developed regions, funding priority is given to the lagging regions
13. Regulation of Intellectual Property Rights: PROs and HEIs to cover all costs associated to IPR before commercial value of the products is proven
14. Need for enlarging the scope of the Seal of Excellence initiative (or similar schemes in national level)

Possible Actions

- ESIF calls to be published on annual basis & more permanent/open calls in order to avoid time lags and enable applications to prepare project proposals in continuum with no pressure of deadlines
- Design the instruments NOT in a detailed manner (leave room for re-adjustment to accommodate other measures, calls at regional, national or EU level)
- More public funds and [tax] incentives for PROs/HEIs and researchers in collaboration with business – support even beyond the programming period
- Support activities to increase awareness (active and continuous EDP, better organised NCP, trainings, tool for coordination of schemes, monitoring, [brokerage] events, practical workshops, map of available funding, shared information database, online and media tools , etc.)
- Include project management costs into the support activities
- Collect project ideas from the regional agencies in line with the RIS3 – that can help to successively fund the H2020 projects
- Impact-based evaluation and long-term monitoring (more rational and less frequent) to create sustainable ecosystem & also re-define the project and programme indicators to allow parallel monitoring of different schemes
- Remove the administrative burdens limiting the combination of different financial sources
- Increase lagging economies' participation in H2020 through the encouragement of the consortiums with partners from more developed economies
- Simplify the state-aid procedures and develop innovative public procurement system
- All research infrastructure to be open for entire EU network (business and PROs/HEIs)
- ESIF allocation is to give priority for market-oriented researches activities & launch the calls asking for the solutions of specific local/regional/national challenges instead of the present thematic calls
- Reinforce cluster policies to encourage cooperation between public and private stakeholders
- Expand the coverage of Seal of Excellence beyond SMEs & launch similar schemes at national levels

4 Concluding Remarks

The innovation gap between EU13 and EU15 MSs is a common phenomenon in Europe, which refers to the gap between innovation performances of the countries, indicators of such a gap can include, limited public and private R&I expenditures, low participation in Framework Programmes, and low absorption capacity of Structural Funds. While recent innovation performance in Europe in terms of overall growth in the volume of R&I activities has been promising, the territorial differences of innovation performance remain significantly unequal across the European landscape. One of the possible solutions to close this gap is to exploit different R&I sources (especially ESIF and H2020) and create synergies by means of using public financial sources in a complementary way. The synergies between different European resources can contribute not only to an individual MS, but also the entire European geography. It is an efficient way to overcome the post-crisis period in Europe, especially by contributing to closing the existing innovation gap, creating new job opportunities, economic value and social impact. Smart Specialisation Strategies have a key role in this process, including the large spectrum of support provided by the Smart Specialisation Platform (S3P). Additionally, country-specific support and thematic initiatives (i.e. Stairway to Excellence (S2E) and RIS3 Support in Lagging Regions), can lead to even more positive outcomes.

Based on the S2E Country Reports (written by an independent expert to provide country-specific information on the national and regional characteristics of R&I ecosystems) and the Joint Statements (main outcome of S2E National Events organised in EU13 MSs and brought together different types of stakeholders), it is possible to mention common issues and bottlenecks across EU13 MSs as well as policy actions in order to address these issues. Moreover, some policy responses can create a comprehensive impact on research excellence, innovation and socio-economic structure. The actions and recommendations elaborated in this report can provide insights for future policy design and activities

Quality of governance is a key issue to achieve successful implementation. Europe has a great variety based on different characteristics of MSs and their novelties; however, it is essential to improve the governance structures to contemporary standards where the activities in MSs and Europe can be aligned and contribute to European economic and societal development. For this, stable and simplified governance systems reinforced with participatory mechanisms should be established. Meanwhile, policy recommendations to address critical issues defined by the S2E stakeholders can be taken into consideration:

- *Establish a long-term strategic plan with a shared vision:* (1) apply the continuous EDP with large spectrum of stakeholder participation; (2) build up a clear division of labour in national authorities; (3) establish long-term monitoring tools and impact-based approaches
- *Improve coordination and communication between main actors:* (1) a coordination body for R&I activities (one-stop-shop); (2) efficient use of EU offices; (3) transparent/shared information and monitoring tools centred on ESIF and H2020 funded activities; (4) communication tools between PROs, HEIs and business; (5) better coordinate the current information channels
- *Support collaboration between academia and business:* (1) increase the awareness of each other's activities (2) build up mutual trust-based on systematic communication and interactions
- *Simplify administrative procedures:* (1) establish innovative public procurement and efficient state-aid procedures; (2) align the timing of R&I calls; (3) build up transparent evaluation mechanisms; (4) improve the staff qualifications through educational and mobility schemes; (5) coordinate between MAs and NCPs

Another crucial requirement to improve the efficiency of the innovation ecosystems in EU13 MSs is **capacity building activities for research excellence**. The policy

recommendations in relation to a lack of capacity for R&I activities can be summarised as follows:

- *Capacity building*: (1) mapping existing research facilities and equipment; (2) investing in the modern research infrastructure following the stock of high level researchers capacity; (3) efficient use of existing infrastructure and equipment; (4) supporting the international networking activities; (5) exploit the sub-programme of H2020, [Spreading Excellence and Widening Participation](#).
- *Improvement in human capital*: (1) mobility programmes for researchers, PhD grants and training the administrative staff; (2) instruments to stop brain drain and convert to brain gain; (3) motivational mechanisms for researchers to participate in FPs; (4) support programmes for young researchers; (5) transparent promotion evaluations
- *Targeted support to increase participation in FPs*: (1) project offices with expert support; (2) connecting research institutions to European networks; (3) project pipelines in collaboration with a Europe-wide network partners; (4) promoting science entrepreneurship (adjusted researchers' contracts facilitating working with business in H2020); (5) guidelines and know-how; (6) strengthen NCPs.

Lowering the barriers to research excellence is also essential for closing the innovation gap within Europe. This can help the **exploitation of the research results for commercialisation**. Based on the S2E stakeholders' discussion that took place in the S2E events, some key recommendations can be pulled out as follows:

- *Continuous and sustainable financing*: (1) target and plan funding synergies; (2) support venture capital and apply mechanisms to reduce their risk; (3) use S3 as a reference point for long-term investments; (4) establish long-term innovation objectives and monitor systematically.
- *Support public-private collaboration at the international level*: (1) change the orientation of PROs towards market-oriented research; (2) encourage PROs/HEIs in collaboration with business by supporting public funds and incentives; (3) include project management costs in the national support activities.
- *Align RIS3 and research activities especially where the cooperative advantage is*: (1) align H2020 and ESIF calls (or open calls for ESIF); (2) modernise the state-aid procedures & structure an innovative public procurement system; (3) exploit Seal of Excellence and similar schemes; (4) establish impact-based evaluation for the ESIF funded activities; (5) build up communication between regional agencies in charge of RIS3 and PROs/HEIs; (6) use ESIF resources to give priority for market-oriented researches activities.

The S2E project will continue to assist MSs and their regions to support a more efficient and effective implementation of RIS3 by building synergies between R&I funding instruments. In doing so, it will continue providing both country-tailored and R&I thematic support. In line with the new mandate from the European Parliament - operational from 2017 onwards - the geographical scope is extended also to cover the entire EU28. Finally, the S2E will reinforce thematic support to enhance regional investments under RIS3 priorities and the opportunities offered by Horizon 2020 and other R&I funding programmes.

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List of abbreviations

CF	Cohesion Fund
COSME	Competitiveness of Enterprises and Small and Medium-sized Enterprises
COST	European Cooperation in Science & Technology
EAFRD	European Agricultural Fund for Rural Development
EC	European Commission
EDP	Entrepreneurial Discovery Process
EFSI	European Fund for Strategic Investments
EMFF	European Maritime and Fisheries Fund
ERDF	European Regional Development Fund
ESIF	European Structural and Investment Funds
ESF	European Social Fund
EU	European Union
FP	Framework Programme
H2020	Horizon 2020
HEI	Higher Education Institution
MA	Managing Authority
MS	Member State
NCP	National Contact Point
OP	Operational Programme
PA	Partnership Agreement
PRO	Public Research organisation
R&D	Research & Development
R&I	Research, Development & Innovation
RIS3	Research and Innovation Strategies for Smart Specialisation
S2E	Stairway to Excellence
S3P	Smart Specialisation Platform
SME	Small and medium-sized enterprises
SoE	Seal of Excellence
TO	Thematic Objective

Key definitions

Coherence	Lack of contradictions between policy objectives and between implementation mechanisms at the EU, national and regional levels.
Complementarity	Funds and instruments reinforce each other in achieving their objectives.
Coordination	Mechanisms that ensure that funds and instruments work together effectively during implementation at the EU, national and regional levels
Synergy (among funding programmes)	Amplifying the research and innovation investments and their impact, combining different forms of innovation and competitiveness support, or carrying innovative ideas further along the innovation cycle or value chain to bring them to the market
Issue	Problem or difficulty observed in a system
Bottleneck	A specific phenomenon that limits the performance of a system
Absorption capacity	Ability of a Member State [or its region(s)] to fully spend in an effective and efficient way the allocated financial resources from the Structural Funds, also including the ability to co-finance EU supported programmes and projects.
S2E Country Reports	(written by an independent expert to provide country-specific information on the national and regional characteristics of R&I ecosystems)
Joint Statements	main outcome of S2E National Events organised in EU13 MSs and brought together different types of stakeholders
National Authorities	Refer to the organisations responsible for design and implementation of funding programmes

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Annex 1. Review on the S2E country reports: Issues, potentials and policy actions/recommendations

Issue	Sub-issue (if exists)	Potential/Advantage/Motivation	Possible Policy Actions/Recommendation
QUALITY OF GOVERNANCE			
<i>Instability of governance system</i>	<ul style="list-style-type: none"> - Political instability affects the central administration of R&I leading to changeable structures, frequent legislative changes, division of labour of the national authorities and responsibilities of national authorities - Strong institutional inertia - National R&I funds are greatly delayed due to the restructuring of the institutional system - Lack of continuity of the implementation of RIS3 hinders the effective implementation of policy changes - Various service-providing institutions often play a similar role - Non-systemic innovation governance, characterised by limited synergies, networks, clusters & associations - Underdeveloped national system of R&I - The consolidation of its research system – needed to decrease the number of institutions - Perception of high levels of corruption, fraud and conflict of interests, both EU and national funds <p>Related MS: CZ, HU, LT, LV, RO, SI, SK</p>	<ul style="list-style-type: none"> - Departments are in charge of international coordination is relatively stable - Active participation of different stakeholders into the EDP helps to overcome this barrier - RIS3 envisaged the merger of research agencies and resulted more efficient <p>Related MS: SI, SK</p>	<ul style="list-style-type: none"> - Establish a clear division of labour and responsibilities for all authorities in charge of designing and implementing the funding programmes with a transparent and easily understandable structure - Fine-tune the instruments and consensus on the implementation - Keep experienced staff in the same tasks - Centralised management of funding programmes can help - Better monitoring and auditing system – more transparent <p>Related MS: LV, RO, SI, SK,</p>
<i>Low level of business participation in R&I activities</i>	<ul style="list-style-type: none"> - Weak interaction between HEIs, PROs and private sector and lack of overarching policy framework - Limited industrial activity and the low investment of the private sector in R&I and no experience to find a partner - The long period from submission of project proposal to contract and difficulties to find finance (like loan from banks) with this long process - Participation in SME measures of FPs is low because it is less attractive for private enterprises as perceived very risky (low success rate), having high 	<ul style="list-style-type: none"> - Established instruments (and centres) to stimulate cooperation between PROs and business and also an award system for SMEs for H2020 participation - Preparatory activities through dedicated project assistance and partner search for both public and private actors - Tax subsidy for investments in R&I - Increasing participation of business 	<ul style="list-style-type: none"> - Launch programmes to support entrepreneurship and competitiveness e.g. researchers' (or institutional) contracts to provide time to work with business and H2020 - For the calls for research vouchers the eligibility condition is the engagement of PPP and co-finance - External evaluations and more focused on SMEs - More instruments for business R&I support, including efficient loan systems and move to higher impact innovations, large scale R&I

	<p>administrative load and being far from the market</p> <ul style="list-style-type: none"> - No clear information for follow-up support programmes (e.g. pre-seed activities and commercialization/start-up financing) and lack of awareness about the programmes addressing business - Research community is internally fragmented and disintegrated, and as well as externally disconnected from the business sphere - ESIF is mainly used by the PROs and HEIs which have already established cooperation with industry (those are strong research institutions that absorb most of FPs funds). Then small units lack of capacity to absorb ESIF and FPs, same for business - Underdeveloped incubation & support for start-ups - Eligibility criteria regarding the financial background of applicants has become tighter through the years, which did not facilitate R&I activities within corporations - Lack of Entrepreneurship of the universities and research institutes - Lack of venture capital - Large companies are facing the loss of competitiveness and thus moving to new business fields - Government agencies are reluctant to finance risky projects targeting first scale manufacturing, advanced manufacturing capabilities etc. - Limitations on commercial use of the research infrastructure <p>Related MS: BG, CZ, CY, HR, HU, LT, LV, PL, SI, SK</p>	<p>in the FPs since FP5 and deepened relations with business</p> <ul style="list-style-type: none"> - Promotions of R&I calls via specific events, webpages, contact points etc. addressing different stakeholders - Some OPs have priority axis focusing on SMEs (also pro-innovation support to strengthen cooperation between research organizations and business including innovation vouchers and technology transfer) - Widening participation addresses the networking gaps & deficiencies between the research institutions of the EU13 and internationally-leading counterparts at EU level - Pact for H2020 signed between different ministries and scientific organisations formalising mutual obligations – to be agreed to some support mechanisms such as engagement to business partnerships <p>Related MS: CZ, HU, SI, LV, LT, PL, RO</p>	<p>projects, new international markets, spin-outs</p> <ul style="list-style-type: none"> - Promote investment in R&I among the inactive SMEs subsidies of certain kind - Launch follow-up support programmes (e.g. pre-seed activities and commercialization/start-up financing and especially follow-op for FPs - Allow start-ups to access ESIF without evaluation on the financial background and also launch fund for mentoring and incubating activities - Mobilize researchers who are discouraged to participate in ESIF due to lack of resources in terms of a size of lack of capacity and collaboration with industry - Consolidate fragmented research resources for the needs of ESIF: to integrate research community with business - The broad range of SMEs should be encouraged to participate in ESIF projects as key actors of entrepreneurial discovery process and key partners of research organisations - Dedicated budget from H2020 for the EU13 MSs - The evaluation of FP funded projects takes too long and companies hesitate about getting involved in this <p>Related MS: CZ, HR, HU, LT, SI</p>
Administrative barriers	<ul style="list-style-type: none"> - Complicated procedures and documentation in both, application & implementation & FPs and SFs - SF/ESIF involves complicated and time consuming processes & sometimes stricter than the EU regulations. - Low administrative capacity of the managing authorities (frequent changes; few staff available or 	<ul style="list-style-type: none"> - Administrative burden (for ESIF) already lowered – rules are regulations partially simplified - Public procurement legislation is currently being under “reconstruction” – simplifying the procedures 	<ul style="list-style-type: none"> - Lower the administrative burden (for both ESIF & H2020; from application to evaluation; for public procurement & state-aid - Need for institutional support to overcome administrative barriers (including training and consultancy centres) - Establish offices to take over the administrative

	<p>poorly trained and low paid; slow response; lack of consistency and different interpretations of rules) and changes of rules during the project cycle</p> <ul style="list-style-type: none"> - Lengthy preparation, administrative burden in the evaluation procedures and reimbursement for both large small research units - Overload administrative burden of H2020 for HEIs and lack of capacity to manage FP-funded projects - State Aid needs more effective enforcement, greater predictability and transparency - Public procurement is unnecessary time-consuming, mostly delayed and no innovative public procurement - No financial support for project management costs - Local regulations do not allow using ESIF to fund part of projects. This blocks achieving certain types of synergy - Fear of errors and double funding - National co-financing was not provided at the appropriate time. Particularly problematic for SMEs - EC legal and procedural requirements result in inefficiencies and inflexible with complicated implementation structure of the OPs - Administrative burden and overloaded lecturing of researchers in PRO & HEI - Inadequate understanding of research activities by administration - having difficulties in understanding practical problems - During project implementation, public supervisory authorities often provide insufficient or even contradictory interpretations - Report periods of H2020 and national funds differed, which put extra administrative burden on applicants <p>Related MS: ALL EU13 MSs</p>	<ul style="list-style-type: none"> - The procedures have been designed differently depending on the funding agency or ministry – provided flexibility - Free-of-charge training cycles assisting the academic staff and personnel of funding agencies to improve management process <p>Related MS: CZ, SI, PL</p>	<p>burden from the researchers and prepare formally eligible project applications</p> <ul style="list-style-type: none"> - System should work in a predictable manner so funding possibilities can be planned in advance - Portability between different funding sources of evaluations (to facilitate synergies) - Grant and funding contracts to be more standardized to minimize the arbitrariness and uncertainty of users and contracting bodies regarding financial issues - Project management costs of R&I to be covered - Administrative burdens should vary according to project size, furthermore documents that can be received directly from authorities should not be requested from applicants - The government to guarantee credit and loan arrangements for the projects implementation – can overcome delay to co-financing <p>Related MS: BG, CZ, HR, HU, LV, MT, RO</p>
Coordination problems	<ul style="list-style-type: none"> - Multiple agencies responsible for implementing policies from different ministries, and between regional and national levels, leads to uncoordinated agendas and a fragmented research system without a strategic focus and duplication of effort 	<ul style="list-style-type: none"> - Events and mechanisms (e.g. NCPs and MAs) partially fill in the information gap - Big universities have EU project offices or consultancy agencies 	<ul style="list-style-type: none"> - Establish a coordinating centre assigned (with a responsibility to monitor synergies) - Dialogue between the MA and potential beneficiaries (and NCPs) should be improved – establish a two-way communication

	<ul style="list-style-type: none"> - Coordination between the various public bodies in relation to R&I governance takes place on a voluntary basis with many ad-hoc committees and/or coordination mechanisms for the governance of R&I are missing - Lack of capacity, information and expertise to coordinate R&I policies and programmes - Lack of coordination of R&I policies under ESIF with the priorities of EU programmes (such as the rural development and maritime programmes) - Lack of information and data sharing among the authorities in charge of ESIF programmes and those authorities in charge of EU-level programmes <p>Related MS: ALL EU13 MSs</p>	<p>(contributing the coordination)</p> <ul style="list-style-type: none"> - Increased transparency (most of the calls available at publically accessible web pages) - Some MSs have centres for the coordination of SF-based R&I measures - Regional agencies and central ministries meet on regular basis in framework of Regional Forum for S3 - "Bottom-up" approach - on the basis of EDP <p>Related MS: CZ, PL, SI,</p>	<ul style="list-style-type: none"> - Monitoring of the EDP (linked with the NCPs where they can be better informed & trained specifically of the synergies) - More detailed guidance how to deal with the different eligibility criteria related to the various programmes - The broad range of SMEs and key partners to research organisations should be involved in the process as the key actors of EDP - Establish a more transparent/shared information database & evaluation system (including sharing stakeholders' know-how & planned changes of programmes) - More cohesion among the main actors in policy design and their increased cooperation in the preparation and implementation of the main policy/strategy documents and ensure to facilitate streamlined, joined-up implementation of the S3 priorities - Ensure links between the development of R&I programmes, higher education and business <p>Related MS: CY, CZ, HR, LT, SI, SK</p>
<p>Lack of international links</p>	<ul style="list-style-type: none"> - Many researchers and business enterprises do not maintain active international collaborations - Lack of necessary competencies to form and manage networks of partnerships - Majority of scientific community is fragmented, lacking networking and connections - Limited competency in English - Lack of individual motivation and skills of researchers - Weak integration into the EU networks and - Lack of incentives for internationalisation - ESIF has limits on spending outside the OP territory while H2020 stress the international dimension - It is difficult to have international evaluators for ESIF funded projects (also limited expertise of international evaluators about the local problems and potentials) 	<ul style="list-style-type: none"> - Some large research organisations and universities have established their own offices for EU projects and international cooperation - Ambition to become an internationally acclaimed and appreciated institution (the prestige factor) - Some MSs cover the researcher's travel expenses to the events related to international programmes - Promotion of high level international research for the use of international industry companies and international research institutions 	<ul style="list-style-type: none"> - Support wider international participation for national events - International networking events, info days, brokerage events and support for researchers mobility – also grants to visit such international events - Doctoral students and postdoctoral researchers with mandatory international mobility - Encourage a good level of English to engage in the EU and global innovation systems - Substantial parts of ESIF applications for R&I funding to be written in two language versions (including English) - Consider synergies between ESI funds with potentially linked calls and partners from different countries (the experience of ERA-NETs)

	Related MS: HR, LT, LV, MT, PL, RO	Related MS: HR, LT, LVE	joint calls and funding decisions is a good practice to share and use) Related MS: CY, BG, EE, HR, LT, MT, PL, RO
Salary regulations	<ul style="list-style-type: none"> - H2020 salary regulations only take account of basic salary and not performance based bonuses €8000 available in H2020 problematic as criteria unlikely to be fulfilled - Researchers' and personnel's salaries in PROs/HEIs are low - Professionals cannot be retained, as they cannot be guaranteed job security Related MS: BG, HU, LT, PL, RO, SK	<p>EC adopted new rules for funding salaries in H2020 grants in February 2017, for info http://ec.europa.eu/research/press/2017/pdf/270217_memo_en.pdf</p>	<ul style="list-style-type: none"> - The administration rules of H2020 need to be reviewed (e.g. the rule on accounting for the salaries and calculating the cost on man-days reduces the motivation to participate in those countries where salaries are lower) Related MS: LT
Inconsistency from the EC	<ul style="list-style-type: none"> - Different regulations for ESIF and H2020 and sometimes incompatible rules at the EU level may negatively affect synergies between ESIF and H2020 - EU regulations and national legislation are not unequivocal and detailed at the beginning of project cycle. Some particular regulations are detailed and re-interpreted during the implementation – creates extra difficulties Related MS: CZ, EE, PL		
Activities of particular stakeholders and support in the area of R&I are in some cases overlapping	<ul style="list-style-type: none"> - Duplication of similar functions in national authorities - different ministries have the same units and offices related to projects but rarely communicate to each other - Weak horizontal and vertical flow of information between national authorities, NCPs, scientific managers, HEIs and PROs - Fragmentation and duplication of R&I infrastructures, institutions and support mechanisms - Limited research base & fragmented R&I structure - The research policies are generic without clear thematic focus Related MS: CZ, HR, LT, LV, SK		<ul style="list-style-type: none"> - State administration departments in charge of the EU-funded projects to be identified & their functions to be evaluated in order to eliminate all overlaps in their obligations and to facilitate their communication - Reduce fragmentation and improve policy capacities (e.g. by ensuring better links between the policy routes and resources to effective programme management) - The ambitious numbers of objectives for every programming instrument should be reduced (maximum of two or three objectives are more rational) Related MS: HR, LT, LV
Missing priorities and	<ul style="list-style-type: none"> - Common strategy/vision missing for whole economy and as well as R&I system 	<ul style="list-style-type: none"> - The development of a Smart Specialisation Strategy contributed 	<ul style="list-style-type: none"> - Adopt more targeted approach, especially as regards the identification of research priorities

<p>common vision for the RDI system</p>	<ul style="list-style-type: none"> - Lack of targeted approach with regards to prioritisation and their alignment with RIS3 - Limited analytical and strategic information used for policy preparation – not evidence-based - Weak involvement of stakeholders in the process of designing R&I policy - Not adopted RIS3 – missing strategic orientation of R&I - There is a need for better streamlined targets, policies, incentives for internationalisation <p>Related MS: CZ, HR, LT, LV, SK</p>	<p>to a more inclusive and transparent policy building process</p> <ul style="list-style-type: none"> - High involvement of different stakeholders (government, society, business community, education and science sectors) – e.g. to develop RIS3 and build an effective platform wherein stakeholders could communicate <p>Related MS: LV</p>	<p>in line with RIS3 to better reach critical mass and avoid unrealistically high number and wide scope of project objectives</p> <ul style="list-style-type: none"> - Develop a special tool to facilitate not only preparation of various regional support schemes/prioritised individual projects, but also the capacity to implement RIS3 strategy at national as well as regional levels - Improve the implementation of the active policy measures/mechanisms for involvement of the EDP, which is left to quite spontaneous for researchers and companies - The principle of EDP and priority areas defined by the S3 require much more coordination, guiding actions and administrative support <p>Related MS: CZ, HR, LV</p>
<p>Repeated controls/audits with disunited interpretation of the ESIF rules and regulations</p>	<ul style="list-style-type: none"> - Repeated and frequent audit (internal & external) controls of ESIF project - often focusing on similar details - (Opposite to above) lack of auditing - Lack of coordination leads to parallel monitoring and duplicated auditing controls - Inappropriate control mechanisms applied to projects related to innovation support – using the same approach for both innovation related projects and infrastructure projects - The programmes and control systems in place often incorporate certain details, criteria, excessive documentation and/or other requirements <p>Related MS: CZ, HU, LT2, LVE</p>		<ul style="list-style-type: none"> - Increase the efficiency of controls/monitoring through, e.g. towards more rational, less frequent period –also share results among various organizations and take into account the obligatory internal/external audits - Improve the dialogue with potential beneficiaries so that it represents a two-way communication and dialogue where the MA can be involved, as well - External reviewers should be involved to enable the evaluation of market potential of developments - Time required for evaluation should be made more predictable <p>Related MS: CZ, HU, LV</p>
<p>Status quo and traditional approaches</p>	<ul style="list-style-type: none"> - MAs follows traditional approaches - no innovative & creative approach with evidence-based and tailored instruments - A very cautious, conservative thinking and risk averse contingent within the policy-makers and executive bodies <p>Related MS: CZ, LV</p>		

CAPACITY BUILDING			
Economic crisis and Financial Inadequacy	<ul style="list-style-type: none"> - Unreliable funding as a consequence of the financial crisis - Financial processes are "ill-defined" - National funds and budget of PROs shrank over last years & delays in payment - Further budget cut for R&I in 2015 & 2016 - Most researchers are lacking projects grants and face difficulties to finance basic operational costs of scientific work - Corporate R&I spending is considered to be low compared to Europe 2020 objectives - Capacities of national companies (including financial and technological services for commercialisation) were further limited by the economic crisis - During the crisis, SFs were distributed based on need rather than on a competitive basis - Large part of the funds went to the activities reinforcing market rather than addressing market failures <p>Related MS: CY, HR, HU, LT, LV, SI, SK</p>	<ul style="list-style-type: none"> - Focus on financing R&I activities - FP7 was a great opportunity during the crisis - Structural Funds created reliant environment for PRO & HEI <p>Related MS: LT, LV, SI</p>	<ul style="list-style-type: none"> - Delays in final payments should be eliminated through increasing the capacities and competencies of contracting authorities <p>Related MS: HR</p>
Low absorption capacity of R&I (both, public and private) units in the country	<ul style="list-style-type: none"> - Low public sector expenditure on research and overall low R&I intensity - Lack of predictability of national funding limit the capacity to absorb funds - Lack of resources (including number of researchers) for competition based fundamental research - Equipment maintenance is insufficient, whereas new equipment purchases often depend on ESIF and H2020 projects - Lack of skills and capacities for managing and coordination of EU projects at the level of research institutions and individual level of researchers - High absorption capacity available only in big/central regions (not in the prioritised lagging regions) - Small research base –inadequate number of R&I jobs including PROs, HEIs and business - HEIs mostly support to mass education rather than 	<ul style="list-style-type: none"> - With extra centres (e.g. centre of excellence) some MSs facilitate joining the international network and reaching infrastructure abroad - EC sources enable to implement high-budget projects with shared risk - National institutional/block funds - Increasing interest in H2020 - In some MSs, governments reshuffled certain funds from other areas to R&I calls 	<ul style="list-style-type: none"> - Invest in the capacity building (modernisation, technology upgrading, human resources, networking etc.) - Guidelines, methodologies, calls and other documents in national languages - National programmes could be used to create such capacities at the level of research organizations in a form of a "grant/project office" - Support the human resource capacity of the R&I stakeholders to prepare quality project applications for H2020 - Share good practices - Investment has to move from hard infrastructure development to absorptive capacity strengthening and acceleration of new ideas pipeline through the innovation support

	<p>excellent research</p> <ul style="list-style-type: none"> - Current capacity building activities focused on the public R&I infrastructure rather than human resources, acquisition of technology and “soft” absorptive capacities - A mismatch between infrastructure and human resource decreases the effectiveness of R&I projects - Most beneficiary enterprises of structural funds are consumers (or working in low value-added sectors) rather than creators of innovation - Lack of strong commitment of the governmental bodies to co-finance infrastructure that is not financed by the FP/H2020 <p>Related MS: ALL EU13 MSs</p>		<p>services - need for diversified and tailor-made instruments</p> <ul style="list-style-type: none"> - Creation of parallel laboratories (for mutual uses) is to create physical and virtual infrastructure required for structured partnerships and joint R&I projects - Focus more on the number of R&I jobs rather than on R&I spending in monetary terms <p>Related MS: ALL EU13 MSs</p>
<p>Relatively low success rate of participation in FP7/H2020</p>	<ul style="list-style-type: none"> - Lack of research capacity in the public sector is a barrier to higher levels of participation in the FP - Low success rates for FPs discourage applications - Small number of projects in FP7/H2020 is coordinated by EU13 MSs - Lack of experience [especially for preparation of the proposals] - Common perception that FPs are a ‘closed club’ - Time requirement and administration (including overloaded researchers) and regulations (such as IPR) discourages small R&I institutions and SMEs - Low level of financial turnover from FPs considering the country contribution - Lack of awareness, information and network for accessing the possible partners, especially “evaluators” whose are mostly from EU15 - The assistance provided by NCP is not sufficient in some MSs - Language barrier 	<p>Related MS: HU, LT, SI</p> <ul style="list-style-type: none"> - Extra funds/incentives provided in some MSs to increase participation in FPs - Awareness of good reputation and large networking opportunities - High interest of research organisations for participation in FPs - ESIF initiatives support the participation in FPs, KICs, JPIs etc. – targeted synergies - Some research organizations offer an opportunity to further boost the participation in FPs - Trainings and capacity building activities provided in some MSs - Clusters are recognised as a mean to develop cooperation based on tripe-helix approach - Space-based schemes (e.g. BONUS, Danube...) 	<p>Related MS: ALL EU13 MSs</p> <ul style="list-style-type: none"> - Develop a strong project pipeline in collaboration with a wide network of partners to address low success rate - Improve the quality of NCPs - Pact for H2020 to be signed between Ministries and HEIs – with mutual obligations and focus on the amendment of rules for institutional assessment of scientific organisations to promote beneficiaries of H2020 - Phase I of H2020’s SME Instrument, grants are possible for feasibility assessment purposes. Such options to receive funding at the stage of business planning encourage first-time entrants (without prior project experience) to attempt to join and understand the functioning of the system - Provide support such as signposting calls, partner searches, grants for advice from specialised trainer, train EU project managers, including both FPs and ESIF - Support COST/ERA-Net projects on strategic topics - Ensure the preservation of the national science base and fundamental research in the PROs in

			<p>order to provide a basis for recruitment of excellent scientists</p> <ul style="list-style-type: none"> - Promoting science entrepreneurship, e.g. adjusted researchers' contracts to work with the business in H2020 <p>Related MS: BG, HR, LT, PL</p>
	<p>Related MS: ALL EU13 MSs</p>	<p>Related MS: CZ, HR, HU, LT, SI SK</p>	
<p>Focusing the fund but not necessarily following the quality</p>	<ul style="list-style-type: none"> - Limited number of PROs operating in the specific sectors where the comparative advantage exists - Missing development plans or strategic planning referring to the RIS3 priority areas - Financial success rate is significantly lower than the participation success rate - Current system of block institutional funding discourages excellence and promotes mediocrity - Research system is efficient in terms of input/output ratios (value for money), but has problem with efficacy: generating papers and citations with at a relatively low unit cost, but rarely appear in the leagues of top-class research performers - Strict distinction between basic and applied research & not enough funding for mixed projects <p>Related MS: CZ, MT, SK</p>	<ul style="list-style-type: none"> - Some national research agencies amended the regulation; in this way, they allow awards only for the submissions that passed the EC threshold <p>Related MS: SI</p>	<ul style="list-style-type: none"> - Promote competitive funding instead of block grants (Most public HEIs use block grant) - Remove restrictions on the funding for mixed and pre-competitive projects <p>Related MS: CZ, SK</p>
<p>Brain Drain</p>	<ul style="list-style-type: none"> - Scientists and researchers leave country with few returning due to low pay, poor career prospects and overall poor research environment - The criteria for promotion of researchers are not selective enough to sort out the top scientists - Lack of young generation of researchers <p>Related MS: BG, EE, HR, LT, RO, SK</p>		<ul style="list-style-type: none"> - Support programmes for young researchers - Comprehensive and transparent system of scientific promotion: employment and career development should be established in order to single out top scientists, with the emphasis on post-doctoral students, as a way of enabling their employment and development of their career in homeland, rather than abroad <p>Related MS: HR, SI</p>
<p>Quality of support mechanisms</p>	<ul style="list-style-type: none"> - Lack of project management experience and expertise as well as low capacity (including lack of human resources) within universities and research institutes - Quality of NCP network is low - Lack of awareness of Brussels Office, underutilised, but can also be under resourced - No direct assistance for ESIF project preparation 	<ul style="list-style-type: none"> - Some OPs provide support of education in technical fields - Use of ESIF for some support costs (human resources, new R&I infrastructure, balancing low level salaries etc.) - Measures connected to ESIF and FP 	<ul style="list-style-type: none"> - Strengthen NCP network including support to proposal drafting. Also develop partnerships with other entities such as managing authorities to help develop synergies - Universities and research institutes should have offices to support researchers and these should be of a good quality so there should be training

	<ul style="list-style-type: none"> - Lack of language abilities & overloaded staff etc. - Staff of implementation agencies does not possess sufficient knowledge of the industry 	<p>funds implemented include preparation support for H2020 & COST projects & macro-regional schemes. This support is given to all projects evaluated above threshold, and can be used for covering any type of preparation costs</p> <ul style="list-style-type: none"> - OPs draft version included dedicated support mechanism to increase readiness of SMEs for H2020 participation. - Ministry has obligations that include introduction of “grants for grants” support scheme, funding preparations of H2020 applications, improvement of operations of H2020 contact points 	<p>in research management and project cycle management some of which could be co-funded by ESIF</p> <ul style="list-style-type: none"> - Develop targeted training using ESIF funds. Training can include research management and administration, proposal writing and also IPR and state aid regulation - Set up liaison offices in Brussels aiming at introducing national research in Brussels and to represent the interests of national research at the EU level - Government set up Registry of Human Resource Development services – a central database of training and consulting services providers that have been through a formal verification process - Pact for H2020 signed between Ministry of Science and Higher Education signs and scientific organisations can formalise mutual obligations. Organisations agree to some support mechanisms such as effective administrative support for researchers applying for H2020 funding, reward researchers who manage grants
	Related MS: BG, CY, CZ, EE, HR, HU, LT, PL, RO	Related MS: CZ, LT, PL	Related MS: BG, EE, PL, RO
Infrastructures not fully exploited or adequate	<ul style="list-style-type: none"> - Infrastructures need to be more internationally visible, provide financing for maintenance and to exploit them for further development - Outdated research facilities and inadequate equipment to compete in science at EU and global level - No budget for maintenance of infrastructure - Very slow implementation of large research infrastructure projects 	<ul style="list-style-type: none"> - Relatively large investments into research infrastructure in recent years give good material base; research excellence (human resources) in some areas - High quality of infrastructures due to national and SF investments 	<ul style="list-style-type: none"> - Quality of research infrastructures should be better promoted internationally, so that potential H2020 consortium partners from other EU member states are motivated to liaise with MSs' research teams
	Related MS: BG, HR, LT, RO	Related MS: EE, RO	Related MS: PL
INNOVATION & COMMERCIALISATION			
Synergy is not in one of the main	<ul style="list-style-type: none"> - Lack of awareness of synergy opportunities - Difficulties to distinguish combination of funds and double-funding - Limited links and coordination to synergies with ESIF 	<ul style="list-style-type: none"> - SoE and Spreading Excellence and Widening Participation - Most of OPs already constructed the policy mix 	<ul style="list-style-type: none"> - Devise a scheme for funding H2020 proposals that achieved high scores but did not get funded (similar to SoE) - Application contents, catalogues of eligible costs

<p>considerations (happened by coincidence)</p>	<ul style="list-style-type: none"> - Different eligibility rules of ESIF and H2020 & Over-strict rules of financing agencies - Very detailed designed instruments may limit the implementation of synergies - Value added by synergies are not recognised - Tendency to inefficient use of funds - There is a lack of pressure from the interest groups on the policy makers and so there is no strong impulse to create mechanisms facilitating synergies <p>Related MS: CZ, EE, HR, LT, LV, SI, SK</p>	<ul style="list-style-type: none"> - Relatively larger funding opportunities and PROs & HEIS are encouraged to seek funds from programmes financed by the ESIF or H2020 - Centralised role/governance helps accessing synergies in some cases - Technical assistance and information-sharing about H2020 increase the awareness - Complementary national and joint funding <p>Related MS: ALL EU13 MSs</p>	<p>and evaluation criteria for main R&I support measures should take into account H2020 practices (including timing, contracting period, selection etc.) so that beneficiaries of one programme will find it easier to submit applications to the other programme</p> <ul style="list-style-type: none"> - Remove the administrative burdens limiting the synergies & more general approach (less details) in shaping R&I calls to give freedom to implementing agencies to enhance synergies - Support activities to increase awareness (active EDP, better organised NCP, trainings, tool for coordination of schemes, monitoring, [brokerage] events, practical workshops, shared information database, online and media tools etc.) - Launch an instrument funded by ESIF in order to prepare applicants to H2020 calls - Dedicated ESIF calls to follow-up H2020 projects - A map of available funding sources - Centralise the management of the authorities in charge of EU funding schemes <p>Related MS: CZ, HR, HU, LV, MT, PL, SI, SK</p>
<p>ESIF and FPs calls are not aligned</p>	<ul style="list-style-type: none"> - Delays and timing of calls (not aligned and/or coordinated) - Unpredictability of publication and closure of calls has been a great drawback of the system - The decision making process of the national support was in many case so lengthy that at the time of the decision of the national fund, the support already lost its relevance - The indicators requested differ in case of FP7 and national funds, which should be modified - The calls for the projects to be co-financed with SF were designed regardless of the FP calls - Different time-frames, different requirements and different implementation - Strategic goals of H2020 (scientific excellence) and ESIF (industrial/business application and 	<ul style="list-style-type: none"> - Some of national research infrastructure is open for EU projects - A yearly plan of R&I funding is available for some MSs - A dedicated ESIF calls for (1) the preparation of participants to H2020 and (2) the follow up of the FP funded projects - National calls similar to SoE - Different from the previous period, the new OPs include such links to synergies but detailed description is needed 	<ul style="list-style-type: none"> - ESIF calls should be published on an annual basis, thus giving applicants sufficient, advance notices - Align the timings of ESIF and H2020 calls – NCPs can take active role for this - Have more permanent/open calls in order to avoid time lags and enable applications to prepare project proposals in continuum with no pressure of deadlines - Synergy dedicated calls, either national or ESIF - Widening Participation can be used as parallel funding - It requires very detailed co-ordination of the concerned funding schemes and conditional agreement of financing (e.g. given the fact that most H2020 grant agreements are signed a

	<p>commercialization) are quite different</p> <ul style="list-style-type: none"> - Specific rules and different eligibility criteria (of ESIF and H2020) limit the combination opportunities - Lack of information and data sharing among the authorities in charge of ESIF and those authorities in charge of EU-level programmes - In many occasions RDI calls for applications have been published without having budget behind - The simultaneous organisation of calls for proposals under different measures, which has led to competition between the measures - National funds are used in place of ESIF and this is preferred by the beneficiaries as the administrative burden is lower for national calls - Low degree of mutual complementarity between OPs and national support measures - Unpredictability of the system, related to the timing of calls - Sustainability of the projects 		<p>certain time after the deadline for proposal submission, the MA could set up a conditional approval for ESIF grants that allows reserving ESIF budgets until the results of the evaluation of the H2020 project proposals are known)</p> <ul style="list-style-type: none"> - Collect project ideas from the regional agencies in line with regional development strategies – that can help to successively fund the successful FP projects by ESIF - While harmonizing H2020/ESIF rules, keep in mind differences between countries – such as the climate and the economic and physical size and capacities e.g. agriculture and construction can be guided by climate - All research infrastructure to open for EU network (business and PROs) - Design the instruments NOT in a detailed manner (leave room for re-adjustment to accommodate other measures, calls at regional, national or EU level - Public administration should be better informed about the calls and programmes and then they can provide timely information to applicants - Develop easily available and retrievable database(s) of all projects and participants of H2020/ESIF projects - Project and program level indicators should be defined in a way that they contribute to the monitoring of each RDI call or priority's contribution to the RDI policy objectives - A map of available funding sources should be developed that signals all available RDI sources - Pre-commercial procurement can be linked to H2020
	Related MS: BG, CZ, HR, HU, LT, LV, PL, RO, SI, SK	Related MS: CZ, HU, SI	Related MS: CZ, EE, HR, HU, LT, PL, SI
Lack of transfer from PROs to	<ul style="list-style-type: none"> - Insufficient motivation, capacity and design for cooperation between universities & business - No lead market initiative, innovative public 	<ul style="list-style-type: none"> - Centres of Excellence produced a number of patents, cooperation projects with business sector and 	<ul style="list-style-type: none"> - Incentives for the PROs and HEIs when involved in close-to-market research at EU level - Project management costs should be included in

<p>business</p>	<p>procurement, pre-commercial procurement, cluster/platform support and other market incentives</p> <ul style="list-style-type: none"> - Small number of participants in projects focused on scientific excellence - Business potential centred in the developed region but ESIF is available for lagging regions. It is hard to bring these two important actors together - Investments in intermediary organisations instead of the entrepreneurial capabilities of research institutions and creating professional innovation services - Too rigid setting of public policies <p>Related MS: EE, HR, HU, LT, SI</p>	<p>spin-offs</p> <ul style="list-style-type: none"> - Business leadership of Competence Centre - resulted in 117 innovations and 51 patents in 3 years - Collaboration tool between local business, academic and research communities (similar to EIT) - Many PROs develop new strategies and action plans to achieve better quality of research, scientific production, international visibility, etc. - A promising trend for enhanced cooperation between businesses and PROs given the requirements of the OPs - an opportunity for increased occurrence and enhanced cooperation among key actors <p>Related MS: CZ, HR, HU, LT, SI</p>	<p>the supported activities, thereby guaranteeing the adequate and timely implementation of projects – that would contribute to minimizing risk related to realisation of projects</p> <ul style="list-style-type: none"> - Open public research infrastructure to commercial use - Establish a balance of large and small-scale projects & allow the combined use of policy instruments for PPP - Develop new innovative and business models with related tools and initiatives (e.g. lead market initiative, innovative public procurement, pre-commercial procurement, cluster/platform support and other market incentives) and also stop financing unproductive ones - Innovation voucher is an effective instrument for SMEs - Extra support for large budget projects <p>Related MS: HR, HU, LT, LV, SI, SK</p>
<p>Lack of systematic evaluation</p>	<ul style="list-style-type: none"> - Missing strategic intelligence and limited evaluation culture - Missing ex-post evaluations and impact assessments – at policy, programme and institutions level - Lack of experience as evaluators/participants in FP schemes - The evaluation procedures of funded projects are commonly perceived as non-transparent - Focus on project activities rather than achievement of planned results e.g. commercialisation of the goods/ideas, developing new products and services or a combination of selection criteria and an assessment / peer review by an expert - Evaluations in general take much longer than what is set in the regulations - Lack of trust (to evaluator or intuitions) <p>Related MS: CZ, HR, HU, LT, LV, SI, SK</p>	<ul style="list-style-type: none"> - Ministry developed internal database of national experts in different technical areas, from which the evaluators for specific calls were invited - Integrated monitoring and management information system for the ESIF for all the OPs (with MAs, NCA, PCA, AA etc. - The unified online monitoring system was developed in some MSs - International experts are used for few schemes - Evaluation process is free of corruption <p>Related MS: CZ, HU, LT, LV, SI</p>	<ul style="list-style-type: none"> - Accepting external (EU) evaluation of research proposals - Focus in simple, quantitative evaluation methods comparing inputs and outputs - Develop a special tool to facilitate not only preparation of various regional support schemes/prioritised individual projects, but also the capacity to implement RIS3 strategy at national as well as regional level (stronger support to S3 managers, support for implementation structures, monitoring and evaluation, facilitation of entrepreneurial discovery process) - More rational, less frequent evaluation and joint control of the internal and external audits <p>Related MS: CZ, LT, SK, SI</p>
<p>Less support to</p>	<ul style="list-style-type: none"> - Regional and institutional disparities, i.e. spatial and institutional concentration of participants in more 	<ul style="list-style-type: none"> - RIS3 to new economic opportunities and emerging trends 	<ul style="list-style-type: none"> - Launch of the calls that would ask for the solutions of specific local/regional/national

<p>main hubs (prioritisation of lagging regions)</p>	<p>developed regions</p> <ul style="list-style-type: none"> - Priority in less developed regions in spite of their very limited R&I potential although the developed regions have much higher potential for innovation and economic impact - In the lagging regions, low level R&I activity, weak knowledge transfer, lack of human resources, under-developed incubation and support for start-ups <p>Related MS: CZ, HR, HU, LV</p>	<ul style="list-style-type: none"> - In some MSs, specific share of the support from the ERDF and CF to be allocated to operations located outside the programme area <p>Related MS: CZ</p>	<p>challenges instead of the present thematic calls</p> <ul style="list-style-type: none"> - Solution oriented calls have potential to better follow the EDP, to involve stronger the key technologies/priority areas determined by S3 - All stakeholders on national, regional and local levels should participate more actively in creation of ESIF projects to secure the implementation of the principle of EDP and realisation RIS3 - Increase lagging economies' participation in H2020 through the encouragement of the consortiums with partners from more developed economies <p>Related MS: HR, LV</p>
<p>Regulation of land and property registers</p>	<ul style="list-style-type: none"> - The current law is that it requires the researchers to cover all the costs associated with the intellectual property even before the commercial value of the product is proven - Many PROs and HEIs have problems with unregulated property and land register (cadastre) which completely block significant number of projects <p>Related MS: HR, LV, SK</p>		<ul style="list-style-type: none"> - Centrally regulate the IPR and land register (cadastre) <p>Related MS: HR</p>
<p>Competition with other funding opportunities</p>	<ul style="list-style-type: none"> - Many enterprises and R&I institutions do not have enough means (time and money) to apply to FP/H2020 particularly as success rates are so much better for ESIF and national funding - Language advantage to apply national and ESIF calls - ESIF and national calls also target similar projects that can be funded by H2020 <p>Related MS: CZ, EE, HR, HU, LT, LV, PL, RO</p>	<ul style="list-style-type: none"> - RIS3 are to facilitate targeted support of R&I processes building on regional and national strength and opportunities thereby contributing to territorial competitiveness - Also expressed that there was no negative impact of the competition between the SF and FP because FP attracts the highest level research groups who deem it prestigious to take part in H2020 <p>Related MS: HU, LT</p>	

* Selection of the issues, sub-issues and possible actions is based on cross-reading of the [S2E Country Reports](#) and picking the most common and more frequently mentioned issues and actions. Therefore, it also involves the elaborations and assessments of the independent national experts who wrote those reports.

Annex 2. Main issues raised by the participants of S2E National Events

QUALITY OF GOVERNANCE	
Issue	Frequency*
- Need for the improvement of coordination and communication between stakeholders dealing with ESIF and RIS3, including ministries, national and regional public organisations, universities and business enterprises. + Lack of awareness about the synergy opportunities	ALWAYS
- Administrative burden and complicated procedures (including centralised decision making, intense paperwork and lack of skills/qualified staff) + Need of support for applications with ad-hoc administration	ALWAYS
- Active involvement of business into the innovation ecosystem	ALWAYS
- Lack of Collaborative governance	ALWAYS
- Lack of timely information circulation between stakeholders (silo effect)	FREQUENT
- Strategic approach, long-term strategic planning and prioritisation	FREQUENT
- Need for open dialogue and improvement in mutual trust between different stakeholders	FREQUENT
- Fragmented and instable national research system (including lack of flexibility)	FREQUENT
- Unstable political structure & frequent changes in the policy instruments and related staff	FREQUENT
- Complications to modify Operational Programmes	RARE
- Different perceptions of Managing Authorities	RARE
- Low interest in EU macro-regional programmes	RARE
- Low interest in cluster policies	RARE
- Lack of intermediary organisations in the governmental system	RARE
- Business awareness of cooperation opportunities with academia	RARE
- Difficulties of adaption of EU regulations into the national provisions	RARE
CAPACITY BUILDING	
- Modern research infrastructure and inadequate human resources	FREQUENT
- Low motivation of SMEs to participate in international research collaboration	FREQUENT
- Lack of support for SMEs and business	FREQUENT
- Lack of expertise and qualified staff to support participation in H2020	FREQUENT
- Brain drain	FREQUENT
- Considering ESIF as an easy/guaranteed source for short-term research projects	OCCASIONAL

- Finance and maintenance of existing research infrastructure	OCCASIONAL
- Cost of coordination activities	OCCASIONAL
- Need to improve public-private partnership	OCCASIONAL
- Need to improve research collaboration with EU15 MSs	OCCASIONAL
- Lack of enterprise culture	OCCASIONAL
- Salary differences between researchers in EU13 and EU15 MSs	RARE
- Lack of bottom-up approach	RARE
- Business access to public research infrastructure	RARE
- EU crisis and cuts in public budget	RARE
- Need for an efficient legal framework for public procurement	RARE
- Attraction of EU13 Member States to foreign researchers	RARE
- Lack of synergy with geographical and thematic programmes	RARE
INNOVATION & COMMERCIALISATION	
- Continuous financing for commercialisation	FREQUENT
- SMEs-based business environment with limited capacity and resources	FREQUENT
- Lack of competences and experience in international collaboration and close-to-market research	FREQUENT
- Lack of support and incentives for business to bridge activities with science	FREQUENT
- Complication of the state-aid rules	OCCASIONAL
- Lack of guidance for business	OCCASIONAL
- High failure risk of commercialisation	OCCASIONAL
- lack of bottom-up approach	OCCASIONAL
- Low level of patenting activities and entrepreneurship	OCCASIONAL
- Business innovation culture	OCCASIONAL
- Inefficient Technology Transfer Offices	OCCASIONAL
- Better coverage of Seal of Excellence	RARE
- Easily accessible national funds preferred instead of complicated EU funds with high coordination cost	RARE
- Public procurement regulations	RARE
- Lack of systematic approach to place MS in the value chain	RARE

- Division of labour for researchers in HEIs (lecture vs research)	RARE
- Lack of education and training for researchers	RARE
- Lack of monitoring and transparency	RARE

* Frequency refers to number of mentions of the issues in all the S2E National Events organised in EU13 MSs.

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