Council of the European Union

Brussels, 8 April 2016
(OR. en)

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COVER NOTE

From:	Secretary-General of the European Commission, signed by Mr Jordi AYET PUIGARNAU, Director
date of receipt:	7 April 2016
To:	Mr Jeppe TRANHOLM-MIKKELSEN, Secretary-General of the Council of the European Union
No. Cion doc.:	SWD(2016) 123 final
Subject:	COMMISSION STAFF WORKING DOCUMENT Horizon 2020 Annual Monitoring Report 2014

Delegations will find attached document SWD(2016) 123 final.

Encl.: SWD(2016) 123 final

EUROPEAN
COMMISSION

Brussels, 7.4.2016
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PART 1/2

COMMISSION STAFF WORKING DOCUMENT

Horizon 2020 Annual Monitoring Report 2014

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1. INTRODUCTION

Horizon 2020 is the European Union's Framework Programme for Research and Innovation (2014-2020).[1] With its dedicated budget of around EUR 75 billion[2] over seven years, Horizon 2020 is the biggest EU Research and Innovation programme ever.

Textbox 1: Priorities and Specific Objectives in Horizon 2020

The first priority of Horizon 2020 is **Excellent Science,** which aims to reinforce and extend the excellence of the Union's science base and to consolidate the European Research Area in order to make the Union's research and innovation system more competitive on a global scale. It consists of 4 specific objectives: (i) the European Research Council (**ERC**), which funds Europe's top researchers through Europe-wide competitions; (ii) Future and Emerging Technologies (**FET**), supporting collaborative research in order to extend Europe's capacity for advanced and paradigm-changing innovation; (iii) the Marie Skłodowska-Curie Actions (**MSCA**) on researcher training, mobility and careers; and (iv) **Research infrastructures**, providing networking and access to these infrastructures and maximising their innovation potential.

The second priority is **Industrial Leadership,** which aims to speed up the development of the technologies and innovations that will underpin tomorrow's business and help innovative European SMEs to grow into world-leading companies. It consists of 3 specific objectives: (i) Leadership in Enabling and Industrial Technologies (**LEIT**) to make Europe a more attractive place for businesses to invest in R&D and innovation; (ii) **Access to Risk Finance**, to strengthen EU support to venture capital and loans for innovative companies; (iii) **Innovation in SMEs actions** (including the SME instrument), which provide tailored support targeting SMEs with the potential to grow and internationalise across the single market and beyond.

The third priority "**Societal Challenges**" responds directly to the policy priorities and societal challenges that are identified in the Europe 2020 strategy and that aim to stimulate the critical mass of research and innovation efforts needed to achieve the Union's policy goals. Funding focusses on the following specific objectives: (i) Health, demographic change and wellbeing; (ii) Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bio-economy; (iii) Secure, clean and efficient energy; (iv) Smart, green and integrated transport; (v) Climate action, environment, resource efficiency and raw materials; (vi) Europe in a changing world - inclusive, innovative and reflective Societies; (vii) Secure societies – Protecting freedom and security of Europe and its citizens.

In addition to the 3 priorities, the legal basis of Horizon 2020 identifies 2 specific objectives: (i) "**Spreading Excellence and Widening Participation**" (SEWP), aiming at addressing the disparities across Europe in research and innovation performance; and (ii) "**Science With and For Society**" (SWAFS), strengthening the social and political support to science and technologies in all Member States.

Investment in research and innovation is essential for Europe's future and it is at the heart of the Europe 2020 strategy for smart, sustainable and inclusive growth[3] and of the priorities of the Juncker Commission. Governments across Europe need to take an active stance in supporting growth enhancing policies, notably research and innovation to reap their benefits

[1] Regulation (EU) No 1291/2013 of the European Parliament and of the Council of 11 December 2013 establishing Horizon 2020 – the Framework Programme for Research and Innovation (2014-2020) and repealing Decision No 1982/2006/EC.

[2] Following the entry into force of the Regulation (EU) 2015/1017 on the European Fund for Strategic Investments (EFSI), the total budget of Horizon 2020 is set at EUR 74 828,3 million over the 7 years of the programme. The total budget of Horizon 2020 including Euratom is EUR 77 201,8 million. For 2014, the total budget adopted by the Budget Authority amounted to EUR 9,3 billion for Horizon 2020 (EU and Euratom).

[3] Communication from the Commission, Europe 2020: A strategy for smart, sustainable and inclusive growth, COM(2010) 2020 final.

in terms of economic prosperity and quality of life.[4] Horizon 2020 is helping to achieve this by coupling research to innovation and by focusing on three mutually reinforcing priorities and two specific objectives (see textbox 1). The goal is to ensure that Europe produces world-class science and technology that drives economic growth.

For Horizon 2020, the Commission has a legal obligation to monitor continually and systematically its implementation and to report annually and disseminate the results of this monitoring.[5] Monitoring is an integral part of the Commission's Better Regulation agenda. It is a continuous and systematic process of data collection, addressing in particular implementation issues. The Annual Monitoring Report looks at *what* has happened in the implementation of Horizon 2020 and its Specific Programme, but unlike an evaluation, it does not look at *why* something has occurred and it does not issue policy recommendations.

Horizon 2020 marks a shift towards the use of indicators that aim to capture results and impacts. The legal basis of Horizon 2020 specifies a list of compulsory Key Performance Indicators to be taken into account in its evaluation and monitoring system. The fact that for the first time these Key Performance Indicators are identified prior to the start of the Framework Programme is a significant development as this provides a solid and coherent basis for the monitoring and evaluation system for Horizon 2020, coupled with the focus on measuring results and impacts of the Programme. In addition, the legal basis indicates a list of 14 cross-cutting issues that serve to monitor on an annual basis the Horizon 2020 programme implementation.

The implementation of Horizon 2020 is based on multiannual Work Programmes. The Work Programmes are prepared by the European Commission in consultation with stakeholders and with inputs from advisory groups of experts. Each Work Programme (WP) sets out the funding opportunities under the different WP parts through calls for proposals and other actions such as public procurement. Each call for proposals contains topics and each topic describes the specific challenge to be addressed, the scope of the activities to be carried out, and the expected impacts to be achieved.

This first Annual Monitoring Report focuses on the implementation of the Work Programme 2014-2015, which was adopted in December 2013. It covers 58 calls within the Horizon 2020 Work Programme and six calls from the Work Programmes of the Public-Private Partnerships (Joint Undertakings), resulting in 101 call deadlines having closure dates equal to or preceding 31 December 2014.[6]

[4] Communication from the Commission, Research and Innovation as sources of renewed growth, COM(2014) 339 final.

[5] Regulation (EU) No 1291/2013 of the European Parliament and of the Council of 11 December 2013 establishing Horizon 2020, Article 31.

[6] The Annual Monitoring Report 2014 is based on data collected directly from the Common Research Data Warehouse (CORDA) Portal using Commission's internal reporting tools provided by the CORDA team, Unit J4 of Directorate J, Common Support Centre, of the Directorate-General for Research and Innovation (DG RTD).

It includes single stage calls and the second stage of two-stage calls[7], producing results aggregated at call level.[8] All proposals belonging to these calls are covered[9], except non-eligible proposals, which represent only 2% of the total number of proposals submitted.

The statistics on participation are based on grant agreements signed before 1 December 2015, which constitute 97.82% of the successful projects. Details on participation and implementation for each call are presented in Annex III to this Staff Working Document under the relevant Work Programme part to which the call belongs.

The Report also includes the implementation activities of the European Institute of Innovation and Technology (EIT) as well as of the Euratom Research and Training Programme.[10] Annex IV analyses each cross-cutting issue and its indicators.

Next Annual Monitoring Reports will cover calls for proposals closing before 31 December of each year, in order to enable a comparison of the implementation of Horizon 2020 from one year to the next. Evidence provided in the Annual Monitoring Reports will generate factual data that will feed into the Interim and Ex-post evaluations of Horizon 2020.

2. ASSESSMENT OF HORIZON 2020 CALLS CLOSED IN 2014

2.1 Overall participation

Since its inception in December 2013, 101 call deadlines under Horizon 2020 were closed in 2014.[11] Their distribution by Specific Programme's part is listed in table 1:

Unless otherwise specified, the source of data in this report is CORDA. Additional information regarding methodology is available in Annex I.

[7] First-stage proposals in 2-stage calls are excluded from the Annual Monitoring Report since they do not provide a full statistical dataset.

[8] It should be noted that calls can include more topics, covering more than one Programme's part, highlighting the integrative approach of Horizon 2020.

[9] Proposals within the continuous calls H2020-Adhoc-2014-20 and EURATOM-Adhoc-2014-20 are limited to those having a submission date before or equal to 31/12/2014.

[10] Council Regulation (Euratom) No 1314/2013 of 16 December 2013 on the Research and Training Programme of the European Atomic Energy Community (2014-2018) complementing the Horizon 2020 Framework Programme for Research and Innovation. Article 21.

[11] The Annual Monitoring Report 2014 is based on data collected directly from the Common Research Data Warehouse (CORDA) Portal, using Commission's internal reporting tools provided by the CORDA team, Unit J4 of Directorate J, Common Support Centre, of the Directorate-General for Research and Innovation (DG RTD).

Table 1: Distribution of calls per specific programme's part

Specific Programme's part	Number of calls deadlines	EU funding to successful projects(EUR million)
Excellence Science		
European Research Council (ERC)	**5**	**1 734,26**
Future and Emerging Technologies (FET)	**5**	**220,05**
Marie-Sklodowska-Curie Actions (MSCA)	**6**	**864,23**
Research Infrastructures (RI)	**6**	**391,05**
Industrial Leadership - Cross-theme		
Leadership in Enabling and Industrial Technologies (LEIT)		**(1 601,32)**
Information and Communication Technologies	**5**[12]	**960,86**
NMBP[13]	**9**	**508,60**
Space	**4**	**131,86**
Access to Risk Finance (ARF)	**2**	**4,56**
Innovation in SMEs (+ SME instrument)	**5 + 2**	**266,12**
Societal Challenges - Cross-theme		
Health, demographic change and wellbeing (SC1)	**3**	**570,06**
Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy (SC2)	**7**[14]	**333,03**
Secure, clean and efficient energy (SC3)	**10**[15]	**615,53**
Smart, green and integrated transport (SC4)	**4**	**589,66**
Climate action, environment, resource efficiency and raw materials (SC5)	**6**	**295,78**
Europe in a changing world - inclusive, innovative and reflective societies (SC6)	**6**	**117,51**
Secure societies - protecting freedom and security of Europe and its citizens (SC7)	**4**	**209,30**
Spreading excellence and widening participation (SEWP)	**3**	**50,12**
Science with and for Society (SWAFS)	**5**	**48,47**
Euratom	**3**	**514,98**
Horizon 2020 Grants to Named Beneficiaries	**1**[16]	**41,81**
TOTAL HORIZON 2020	**101**	**8 467,83**

[12] Including the calls ECSEL-2014-1 and ECSEL-2014-2 for the ECSEL Joint Undertaking.

[13] NMBP stands for Nanotechnologies, Advanced materials, Biotechnology and Advanced manufacturing and processing.

[14] Including the call H2020-BBI-PPP-2014-1 for the BBI Joint Undertaking.

[15] Including the call H2020-JTI-FCH-2014-1 for the FCH Joint Undertaking which is shared with SC4 and the call H2020-EE-2014-1-PPP on Energy-efficient Buildings and SPIRE, shared with SC7.

[16] The Grant to Named Beneficiary (H2020-Adhoc-2014-20) encompasses projects in many different areas. These correspond to Identified beneficiary actions (in which the legal entities to be granted are listed in the adopted Work Programme) and Specific Grant Agreements (SGA) awarded in the context of Framework Partnership Agreements (FPA), establishing a long-term cooperation mechanism between the Commission/Agency and the beneficiaries of grants ("partners") and specifying the common objectives, the procedure for awarding specific grants, rights and obligations of each party under the specific agreements.

These calls have attracted 33 792 eligible proposals, including 122 713 applications from 36 139 unique applicants worldwide. Compared to the last year of implementation of the Seventh Framework Programme (FP7), Horizon 2020 has attracted a significantly higher number of eligible proposals (20 739 in 2013 under FP7).

While on average each unique applicant has submitted 3.4 applications, the number of applications per unique applicant ranges from 1 for 64.28% of unique applicants to more than 100 for 0.45% of unique applicants. 24 367 unique applicants (67.43%) are newcomers, in the sense that they have not received EU funding from FP7.

In terms of EU financial contribution, the total EU funding requested for the 33 792 eligible proposals was almost EUR 55 billion, or about six times the total commitment budget adopted by the Budget Authority for Horizon 2020 for 2014 (EUR 9,3 billion).

2.2 Success Rate

After the evaluation of eligible proposals, 4 524 proposals including 19 220 applications from 8 688 unique applicants were retained (of which 3 713 are newcomers or 42.7%), with a cumulative financial envelope for retained proposals of EUR 7 975,85 million. When looking at success rates, this can be expressed in different ways. The conventional Success Rate in terms of number of eligible proposals is 13.39% (13.18% excluding grants to named beneficiaries); in terms of EU financial contribution requested, it is 14.51% (14.19%

Definitions of Success Rate

This report applies the following definitions of Success Rates, in terms of:

Eligible proposals: it is equal to the number of retained proposals divided by the number of eligible proposals.

EU financial contribution: it is equal to the EU financial contribution going to retained proposals divided by the EU financial contribution requested by eligible proposals.

Applicants: it is equal to the number of unique applicants (legal entities) in retained proposals divided by the number of unique applicants in eligible proposals.

Applications: it is equal to the number of applications (act of involvement of a legal entity in a proposal) in retained proposals divided by the number of applications in eligible proposals.

Adjusted Success Rates: compared to the conventional Success Rate (calculated on the basis of eligible proposals), the Adjusted Success Rate is calculated using as the denominator the numbers related to High-Quality proposals scoring above threshold, instead of the total numbers related to eligible proposals.

For a definition of the above keywords, the reader is referred to the Glossary (Annex VI).

excluding grants to named beneficiaries); in terms of number of applications, it is 15.66%; and in terms of number of applicants, it is 24.04%.

18 061 eligible proposals have scored above the high-quality threshold. They include 62 980 applications from 18 762 unique applicants, with a cumulative financial envelope of EUR 31,4 billion. The Adjusted Success Rates are respectively 25.05% of eligible proposals, 25.4% in terms of financial contribution requested, 30.52% in terms of applications, and 46.31% in terms of unique applicants.

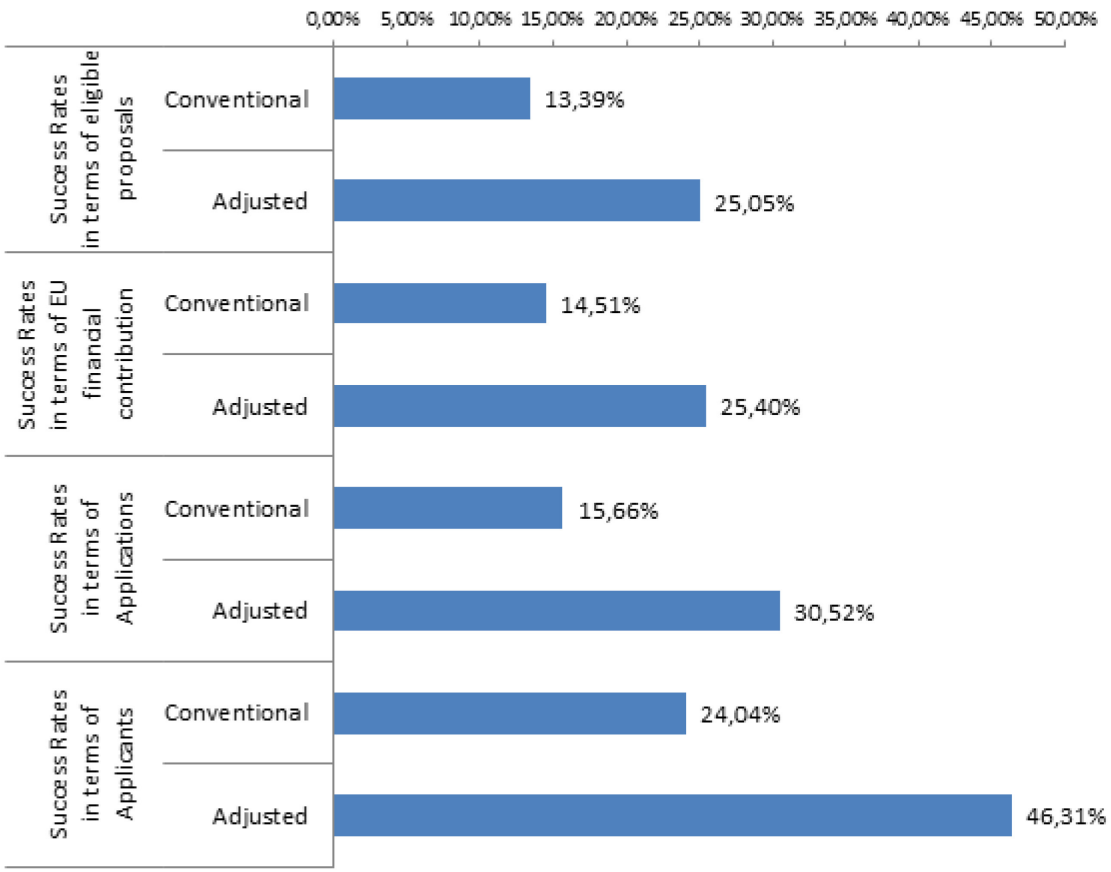
After the selection stage, the number of successful projects actually funded under Horizon 2020 rises to 4 809, indicating that 285 projects were retrieved from the reserve list, for a total EU financial contribution going to successful projects of EUR 8 467,83 million (table 1 above).

By the cut-off date of 1 December 2015, 4 704 grant agreements had been signed, including 19 595 participations from 8 504 unique participants (of which 3 569 are newcomers), with a budget allocation to signed grants of EUR 8 363,45 million (table 2). This represents an implementation rate of 97.82% of the number of successful projects and 98.77% of the EU financial contribution to successful projects.

Table 2: Key figures

Eligible Proposals			
Number	**Applications**	**Applicants (newcomers)**	**EU financial contribution requested**
33 792	**122 713**	**36 139 (24 367)**	**EUR 54,92 billion**
High-Quality Proposals			
Number	**Applications**	**Applicants (newcomers)**	**EU financial contribution requested**
18 061	**62 980**	**18 762 (9 885)**	**EUR 31,40 billion**
Retained Proposals			
Number	**Applications**	**Applicants (newcomers)**	**EU financial contribution requested**
4 524	**19 220**	**8 688 (3 713)**	**EUR 7,98 billion**
Signed Grants (1 December 2015)			
Number	**Participations**	**Applicants (newcomers)**	**EU financial contribution allocated**
4 704	**19 595**	**8 504 (3 569)**	**EUR 8,36 billion**

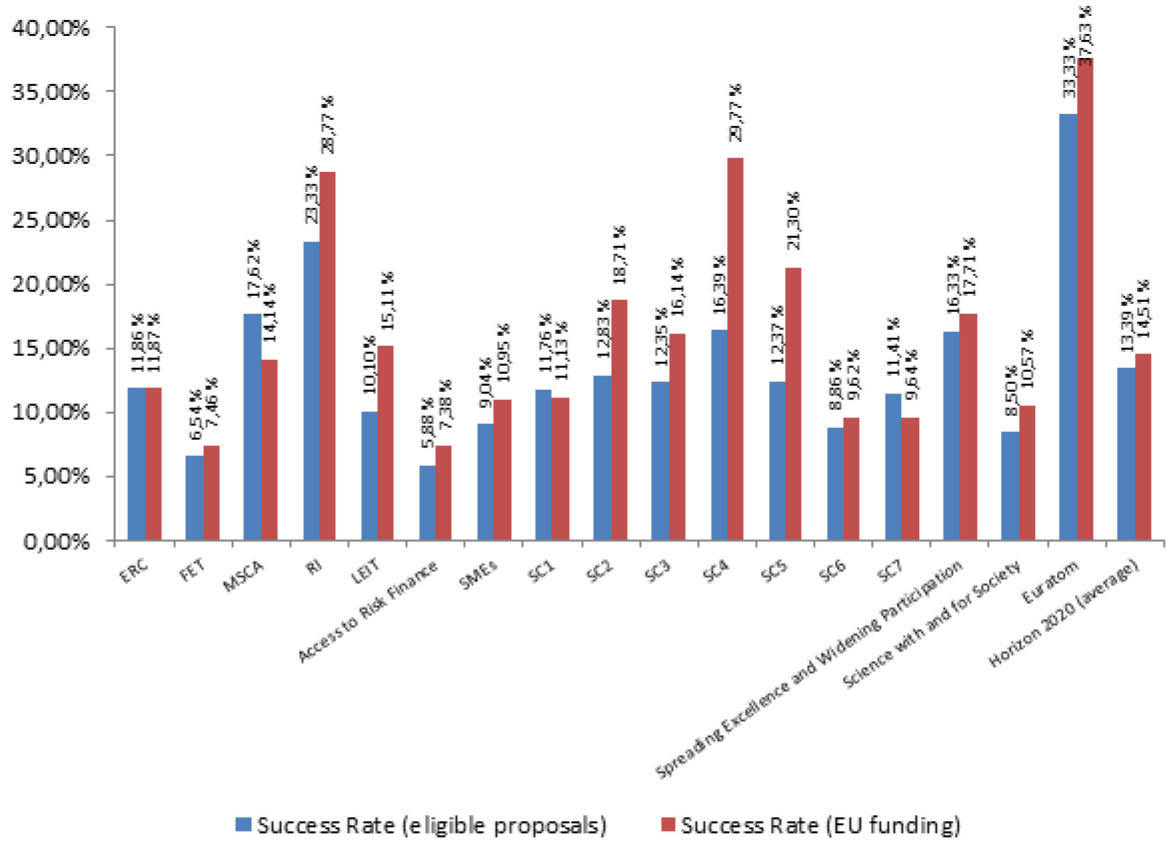
Chart 1: Success Rates in Horizon 2020 for 2014 calls



The Horizon 2020 conventional Success Rates in terms of eligible proposals and in terms of EU financial contribution are significantly lower than the average conventional Success Rates under FP7 (respectively 19% in terms of eligible proposals, 19% in terms of EU financial contribution and 22% in terms of unique applicants[17]), while the success rate in terms of unique applicants is slightly higher. In practice, while in FP7, one out of five proposals was finally retained, in Horizon 2020, less than one out of seven proposals is retained.

[17] 7th FP7 Annual Monitoring Report 2013: data available in Table B1, p. 93. The Success Rate in terms of applications was not calculated under FP7.

Chart 2: Conventional Success Rates per specific programme's part



The above chart shows the conventional success rate per Specific Programme part. FET calls have the lowest success rate of the Programme (6.54% in terms of eligible proposals and 7.46% in terms of EU financial contribution) given that only 63 out of 933 eligible proposals were retained. These rates are affected significantly by the results of one call (H2020-FETOPEN-2014-2015-RIA), which received the highest number of proposals within FET calls (638) though only 24 proposals were retained: its success rates were only 3.76% in terms of eligible proposals and 3.90% in terms of EU financial contribution.

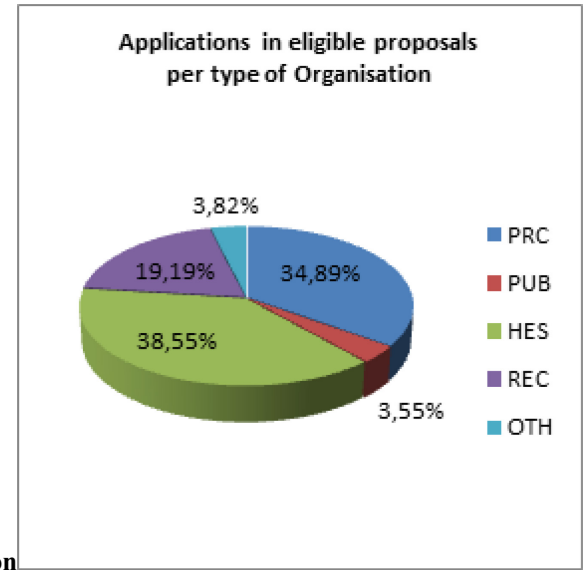
Euratom calls have the highest success rates of all programme parts, given the relatively low number of applicants in the specific focus area of nuclear research in nuclear fission, radiation protection and waste management. Research Infrastructures scores well with success rates of respectively 23.33% in terms of eligible proposals and 28.77% in terms of EU funding. MSCA actions, SEWP and Societal Challenge 4 (Transport) are above the EU average in terms of eligible proposals, which is 13.39%, while Societal Challenges 2 (Bioeconomy), 3 (Energy) and 5 (Climate Action) and LEIT are above the EU average in terms of EU funding, which is 14.51%.

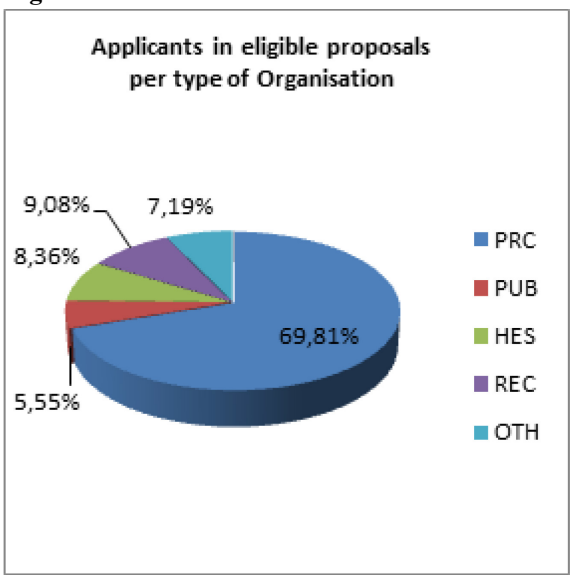
2.3 Participation by Type of Organisation

In line with the practice already established for the monitoring of FP7, the following descriptions and convention codes will be used for distinguishing between different types of organisations: private for profit companies (PRC), public bodies (excluding research and

education) (PUB), research organisations (excluding education) (REC), secondary and higher education establishments (HES), and other entities (OTH).[18]

Chart 3: Applications and Applicants in eligible proposals per type of organisation





For the 101 call deadlines analysed, almost three quarters of all applications (122 713) were made by HES and PRC organisations (47 309 HES applications and 42 814 PRC applications), while REC organisations ranked third with 23 554 applications, PUB organisations made 4 352 applications and OTH organisations made 4 684 applications (see left part of chart 3).

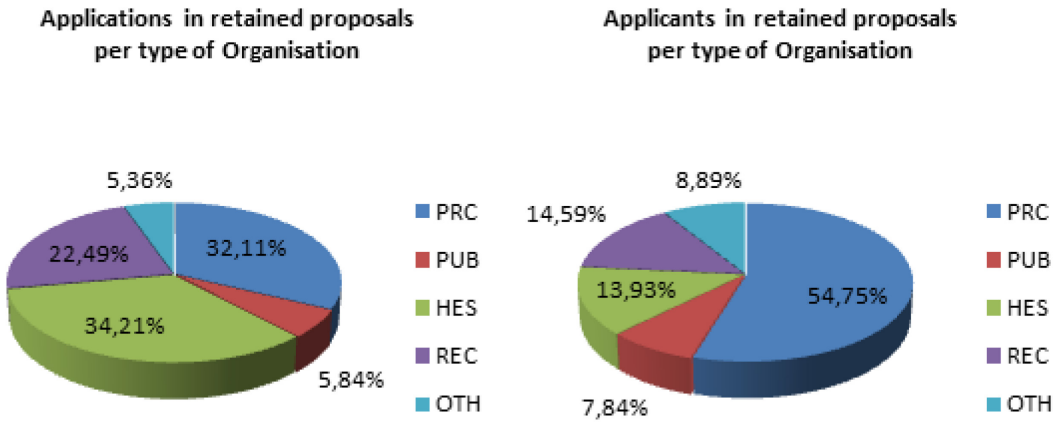
Looking at unique applicants (right part of chart 3), almost three quarters of the 36 139 unique applicants are listed as private for profit organisations (PRC): this implies that 25 230 different private legal entities have applied for EU research funding (1.69 applications per unique PRC applicant on average). HES organisations, which have submitted a higher number

[18] See also the Top-50 tables by organisation types ranked by EU financial contribution allocated in signed grants, Annex V to the SWD.

of applications, include only 3 021 unique applicants: on average, every unique HES applicant has submitted 15.7 applications, indicating a high degree of concentration of applications in a few number of unique HES organisations. A similar trend can be observed for unique REC organisations (3 282 applicants) with an average of 7.18 applications per unique REC applicant, while PUB (2 006 applicants) and OTH (2 600) organisations have average applications per unique applicant of 2.17 and 1.80 respectively.

The number of applications from SMEs is 26 311. This represents 21.44% of the total number of applications and 61.45% of PRC applications. The number of unique SME applicants was 15 251, or 42.20% of the total number of unique applicants and 60.45% of the unique PRC applicants, indicating a strong interest of SMEs in applying for research funding.

Chart 4: Applications and Applicants in <u>retained</u> proposals per type of organisation

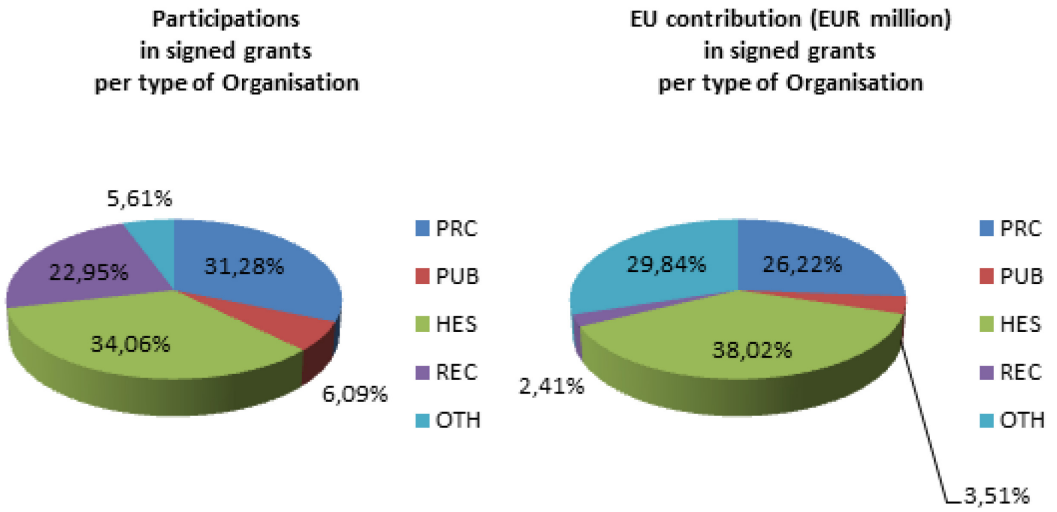


In the 4 524 retained proposals, the number of successful applications is 19 220. HES organisations account for 34.21% (6 575) of the overall number of applications in retained proposals. The HES success rate in terms of applications is 13.90%. PRC organisations have made 32.11% (6 171) of the applications in retained proposals. Their success rate in terms of applications is 14.41%. With 4 322 applications in retained proposals (22.49%), REC organisations have a success rate of 18.35%. The highest success rate in terms of applications is for PUB organisations (1 122 applications in retained proposals or 5.84% of the total) with a success rate of 25.78%, followed by OTH entities (1 030 applications in retained proposals or 5.36% of the total) with a success rate in terms of applications of 21.99%. SME applications in retained proposals are 3 413 with a success rate in terms of applications of 12.97%.

The number of unique applicants in the 4 524 retained proposals is 8 688. 54.75% of all unique applicants are PRC entities (4 757), though with a relatively low success rate in terms of applicants (18.85%) compared to HES institutes, which had 1 210 applicants in retained proposals and a success rate of 40.05%; to REC organisations, which had 1 268 applicants in retained proposals and a success rate of 38.63%; to OTH entities, which had 772 applicants in retained proposals and a success rate of 29.69%; and to PUB entities, which had 681

applicants in retained proposals and a success rate of 33.95%. The SMEs applicants in retained proposals are 2 765 with a success rate in terms of applicants of 18.13%.

Chart 5: Participations in signed grants and EU contribution per type of organisation



By 1 December 2015, the 4 704 grant agreements signed involved 19 595 participations and an EU contribution of EUR 8 363,45 million. While PRC participations account for 31.28% of the total number of participations (6 130), the share of the EU contribution in signed grants allocated to PRC entities is 26.22% (EUR 2 193,02 million). HES entities account for 34.06% of participations (6 675) and 38.02% of the EU contribution (EUR 3 179,76 million). REC organisations have a lower percentage in terms of participation compared to PRC companies (22.95% or 4497 participations) but have an higher percentage in terms of EU contribution (29.84% or EUR 2 495,36 million). PUB and OTH entities have a similar share of participations (respectively 6.09% and 5.61% or 1 194 and 1 099 participations respectively), though PUB have received 3.51% of the EU contribution (EUR 293,88 million) while OTH have received 2.41% (EUR 201,42 million). The SMEs participations in signed grants are 3 711 with an EU contribution of EUR 1 169,20 million.

Table 3: Overview of participations per type of organisation

	PRC (SMEs)	PUB	HES	REC	OTH	Total
Applications (eligible)	42 814 (26 311)	4 352	47 309	23 554	4 684	122 713
Applicants (eligible)	25 230 (15 251)	2 006	3 021	3 282	2 600	36 139
Applications (retained)	6 171 (3 413)	1 122	6 575	4 322	1 030	19 220
Applicants (retained)	4 757 (2 765)	681	1 210	1 268	772	8 688
Participations (signed grants)	6 130 (3 711)	1 194	6 675	4 497	1 099	19 595

EU contribution (signed grants)	EUR 2,2 billion (EUR 1,17 billion)	EUR 0,3 billion	EUR 3,2 billion	EUR 2,5 billion	EUR 0,2 billion	EUR 8,4 billion

As shown in the technical annexes[19], from the Top 50 secondary and higher education institutes (HES) in terms of EU financial contribution received, 14 are based in the UK, 10 in the Netherlands and 6 in Germany, while 4 are based in non-EU countries (Israel and Switzerland). None of the Top 50 HES organisations is based in the EU-13 countries.

From the Top 50 (EU contribution) private for profit (PRC) organisations, 11 are based in France and Germany respectively, five in the Netherlands, and two in non-EU countries (Israel and Norway). No PRC organisations from EU-13 countries appear in the Top 50 list.

From the Top 50 research organisations (REC), nine are based in Germany, seven in France, six in Spain and two in non-EU countries (Switzerland and Norway). Only one REC organisation from an EU-13 country, namely from Slovenia, figures in the Top 50.

From the Top 50 public entities (PUB), eight are based in the UK, seven in Spain, five in Sweden and France respectively, and 4 in non-EU countries (Israel, Norway and Turkey). Two PUB entities from EU-13 countries, namely from Poland and the Czech Republic, figure in Top 50.

From the Top 50 other organisations (OTH), 14 are based in Belgium, and six in the Netherlands and France respectively. Cyprus, Estonia and Slovenia each have 1 OTH organisation in the Top 50.

From the Top 50 SMEs, 12 are based in the UK, seven in France, five in Germany and Spain respectively, and two in non-EU countries (Norway and Israel). The only EU-13 SME in the list is from Slovenia.

2.4 Participation of EU Member States

The general objective of Horizon 2020 is to build a society and globally leading economy based on knowledge and innovation across the whole Union, while contributing to sustainable development. It supports the Europe 2020 strategy and other Union policies as well as the achievement of the European Research Area (ERA).[20]

The performance indicators for assessing progress against this general objective are Research & Development (R&D) intensity; the Innovation output indicator (IOI); and the Share of full-time equivalent (FTE) researchers, measured as a percentage of the labour force.[21]

[19] See Annex V.

[20] Regulation (EU) No 1291/2013 of the European Parliament and of the Council of 11 December 2013 establishing Horizon 2020, Article 5.

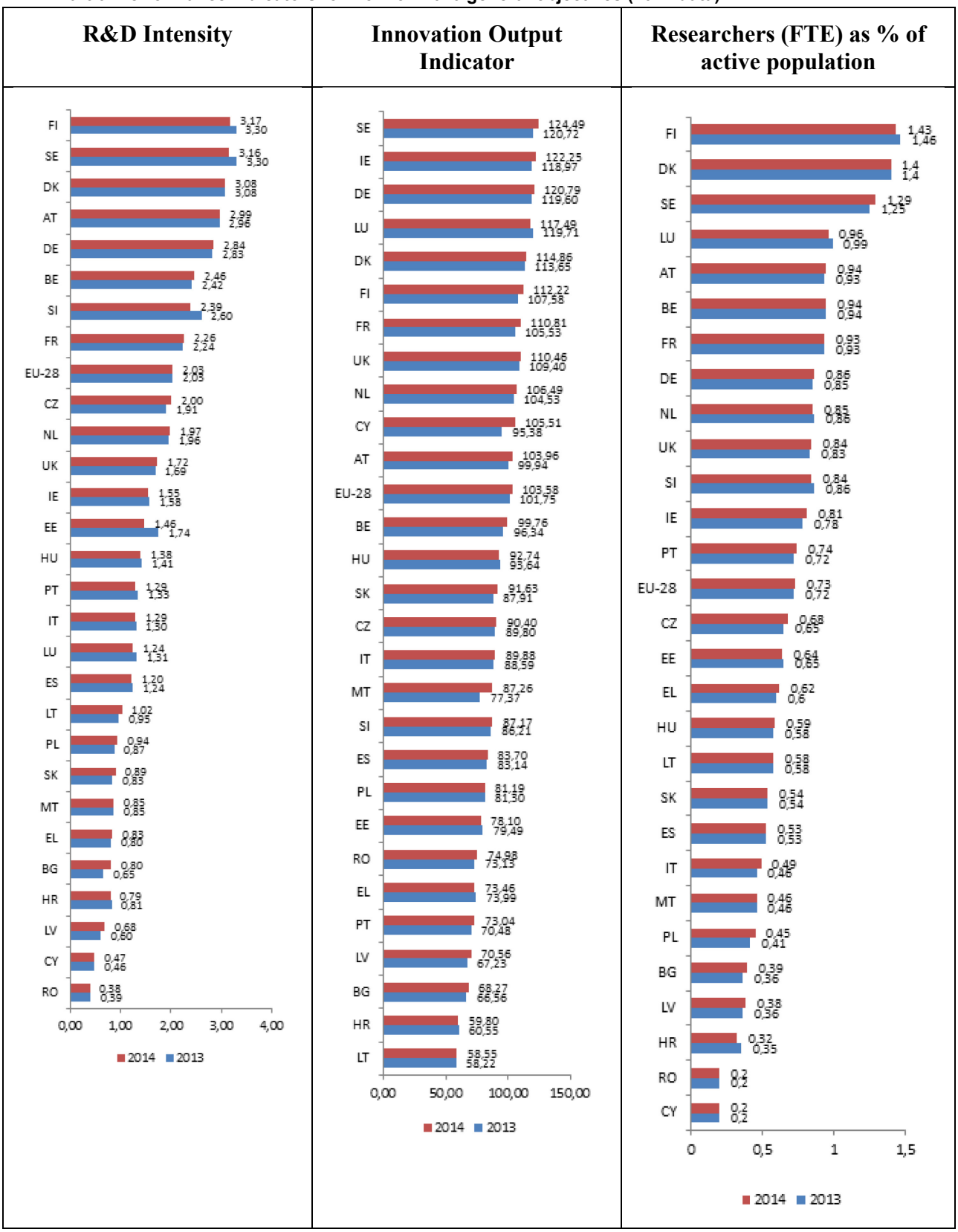
[21] Regulation (EU) No 1291/2013 of the European Parliament and of the Council of 11 December 2013 establishing Horizon 2020, Annex I.

The analysis of the Horizon 2020 participation by country will first focus on the performance of EU Member States in relation to these indicators; then EU Member State participations will be examined overall and for each Specific Programme part, in order to identify specialisation trends.

a) Performance Indicators for Horizon 2020 general objectives in EU Member States

Chart 6 below shows how Member States have performed in terms of R&D intensity as a percentage of GDP, in terms of the Innovation Output Indicator compared to the 2010 reference base of 100, and in terms of the share of FTE researchers in the active population. These graphs are generated based on 2014 data, ranked from the highest to the lowest performing Member State, and compared to 2013 – the baseline before Horizon 2020 started.

Chart 6: Performance Indicators for Horizon 2020 general objectives (2014 data)



Source: DG Research and Innovation. Data: Eurostat.

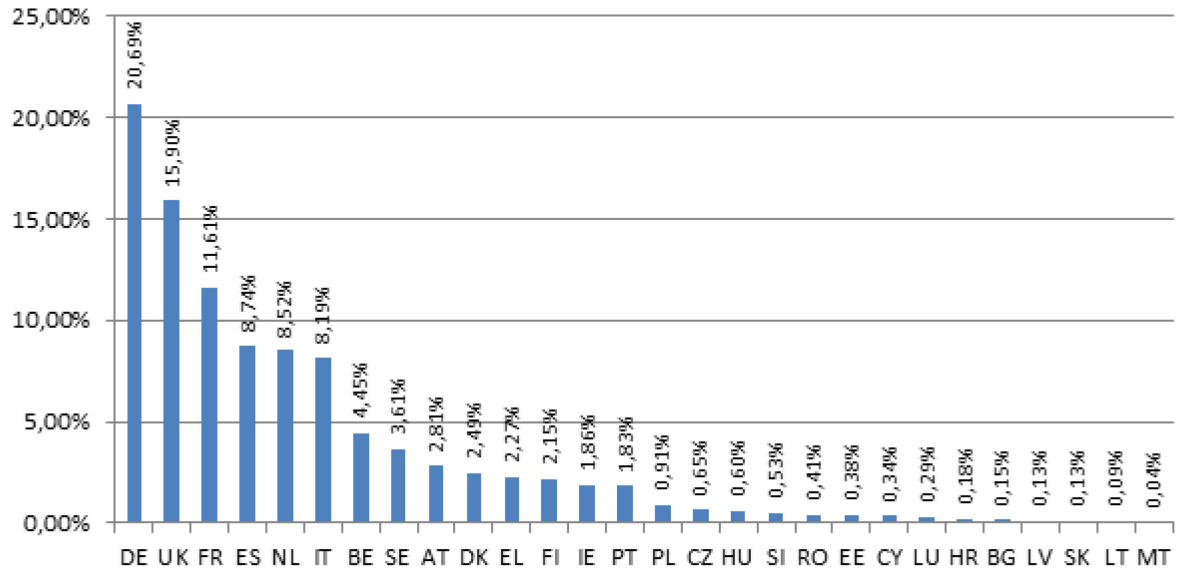
Among the EU-15 Member States, Finland, Sweden and Denmark appear in all three graphs among the Top 6 best performing Member States, while Greece, Spain, Portugal and Italy are for the three indicators among the six weakest performing EU-15 Member States. All EU-13 Member States (except Slovenia and Cyprus) score below the EU-28 average in terms of R&D Intensity as well as in terms of Innovation Output and the percentage of researchers in the active population. Among the EU-13 Member States, Bulgaria, Latvia and Croatia figure in all three graphs among the five weakest performing Member States, while the Czech Republic and Hungary are always among the Top 5 best performing EU-13 Member States.

As regards progress compared to the baseline (2013), the picture is mixed with the EU not progressing since 2013 in terms of R&D intensity, improving little in terms of researchers as a share of the active population, and progressing somewhat in terms of innovation output. As regards country groups, the top performers did not progress in 2013 in terms of R&D intensity while some EU-13 weak performers were catching up. As regards innovation output, both EU-15 high performers as well as several EU-13 weak performers were improving scores since 2013, whilst for the indicator on researchers as a share of the active population, limited progress is observed for both the strong and the weak performers.

b) EU Member States participations trends

Looking at the distribution of Horizon 2020 funding connected with grant agreements signed by participants in EU-28 Member States within the cut-off date of 1 December 2015, organisations based in Germany have received the largest amount of EU funds (20.69%), followed by those in the UK (15.90%) and France (11.61%). Together with Spain (8.74%), the Netherlands (8.52%) and Italy (8.19%), these Member States have received almost three quarters of the EU funding involved in 2014 calls. The cumulative EU contribution to EU-13 Member States is 4.57%.

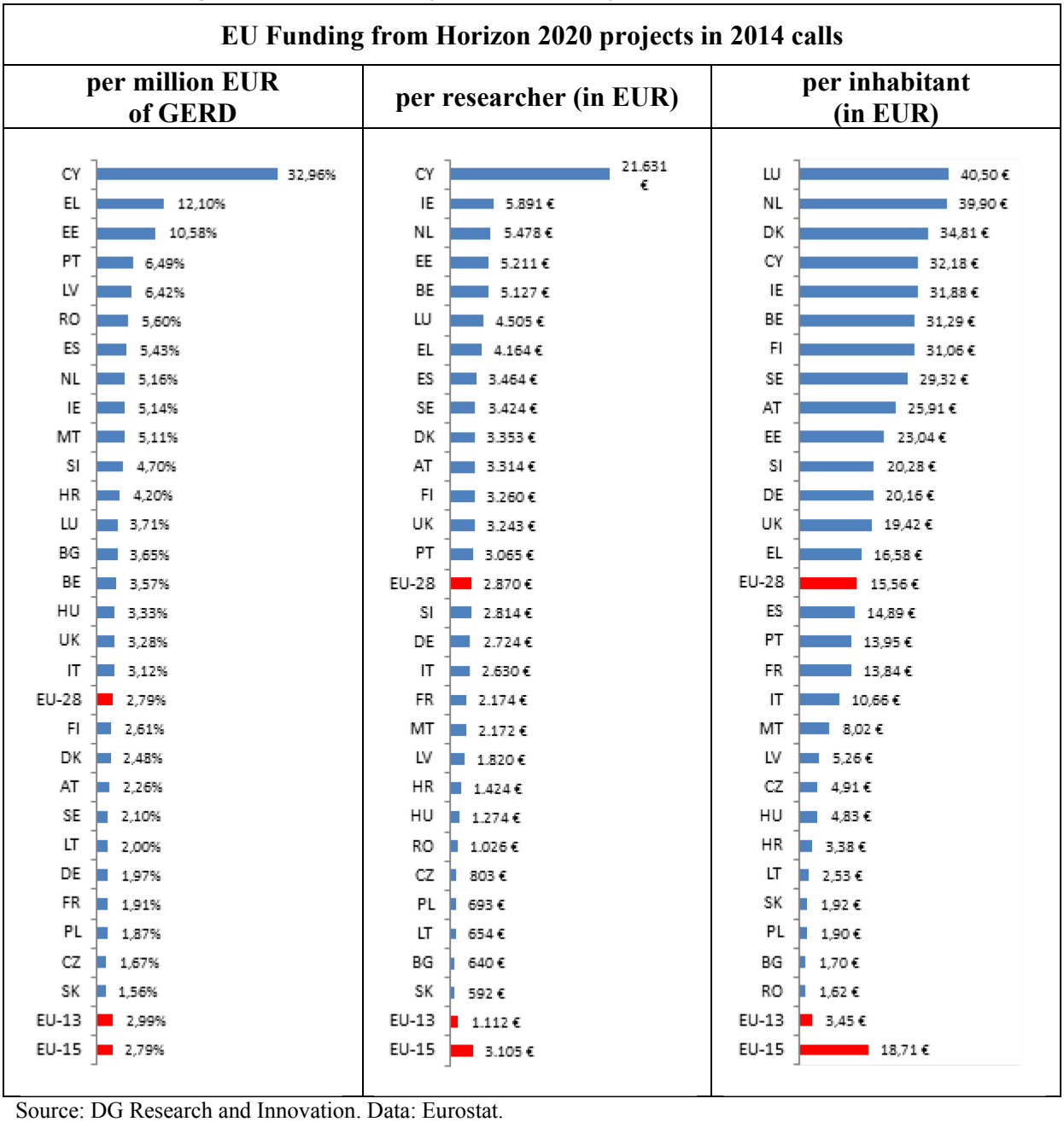
Chart 7: Share of EU contribution in signed grants deriving from 2014 calls per Member State



Source: DG Research and Innovation.

When calculated on the basis of the 2014 national Gross Domestic Expenditure on Research & Development (GERD) (chart 8 below), the 2014 contribution from Horizon 2020 projects represents less than 2% of Germany's GERD and 1.91% of France's GERD – both below the EU-28 average of 2.79%. On the other hand, the 0.04% of Horizon 2020 funds going to Malta represents more than 5% of Malta's GERD. For some countries, such as Estonia and Greece, the EU contribution is above 10% of GERD, while it is almost one third of Cyprus' GERD. Cyprus, Estonia and Slovenia have values close to or above the average in terms of EU funds per researcher and per inhabitant.

Chart 8: EU funding from Horizon 2020 projects distributed by countries (2014 data)



Source: DG Research and Innovation. Data: Eurostat.

c) Success Rates in EU Member States

With respect to success rates, EU Member State performance varies significantly across the three priorities. Thanks to successful applications in the MSCA and Research Infrastructures programmes, Malta, for example, has a relatively high success rate in Excellent Science, suggesting a certain degree of specialisation, while its success rate in LEIT and the Societal Challenges is relatively low. A similar trend can be observed for other EU-13 Member States such as Bulgaria, Hungary, Lithuania and Slovakia. Latvia has a relatively high success rate in Societal Challenges and a relatively low success rate in Excellent Science.

In EU-15 Member States, the trend is a success rate above 10% for each of the three priorities. For some countries, such as the Netherlands, the United Kingdom, Austria and Ireland the success rate is around or above 15% in all three priorities.

Chart 9: Success rate in terms of applications per Member State for the three Horizon 2020 pillars

Applications Success Rate	Excellent Science	Industrial Leadership (LEIT only)	Societal Challenges
Austria	15.0%	17.1%	17.5%
Belgium	13.7%	16.3%	21.1%
Bulgaria	17.4%	6.7%	8.8%
Croatia	11.0%	1.9%	14.1%
Cyprus	9.9%	8.4%	11.2%
Czech Republic	14.4%	12.3%	14.8%
Denmark	16.1%	10.6%	17.9%
Estonia	16.5%	12.8%	16.0%
Finland	10.7%	14.4%	14.1%
France	15.4%	18.7%	19.4%
Germany	15.7%	17.3%	18.4%
Greece	14.2%	12.2%	13.6%
Hungary	13.1%	7.9%	10.1%
Ireland	16.2%	15.9%	14.9%
Italy	10.1%	12.4%	13.0%
Latvia	8.3%	13.0%	22.1%
Lithuania	14.3%	10.7%	7.3%
Luxembourg	10.9%	16.3%	19.6%
Malta	24.1%	6.8%	9.7%
Netherlands	17.4%	16.8%	18.6%
Poland	13.9%	11.2%	11.7%
Portugal	11.9%	10.7%	15.6%
Romania	11.3%	7.1%	12.7%
Slovakia	17.4%	8.6%	11.4%
Slovenia	8.1%	11.3%	13.3%
Spain	13.7%	13.9%	14.7%
Sweden	12.5%	17.1%	18.4%

United Kingdom	16.3%	15.3%	17.4%
EU-28	**14.5%**	**14.5%**	**16.1%**

3. HORIZON 2020 OPERATIONAL IMPLEMENTATION IN 2014

This section assesses Horizon 2020 implementation aspects, focusing in particular on time-to-grant (TTG), simplification, quality assessment of proposal evaluation, redress and ethics. It also includes considerations regarding synergies with other funding schemes. It presents in particular figures on the state of implementation of the European Fund for Strategic Investments (EFSI) and it introduces the new "Seal of Excellence" policy initiative.

3.1 Time-to-grant

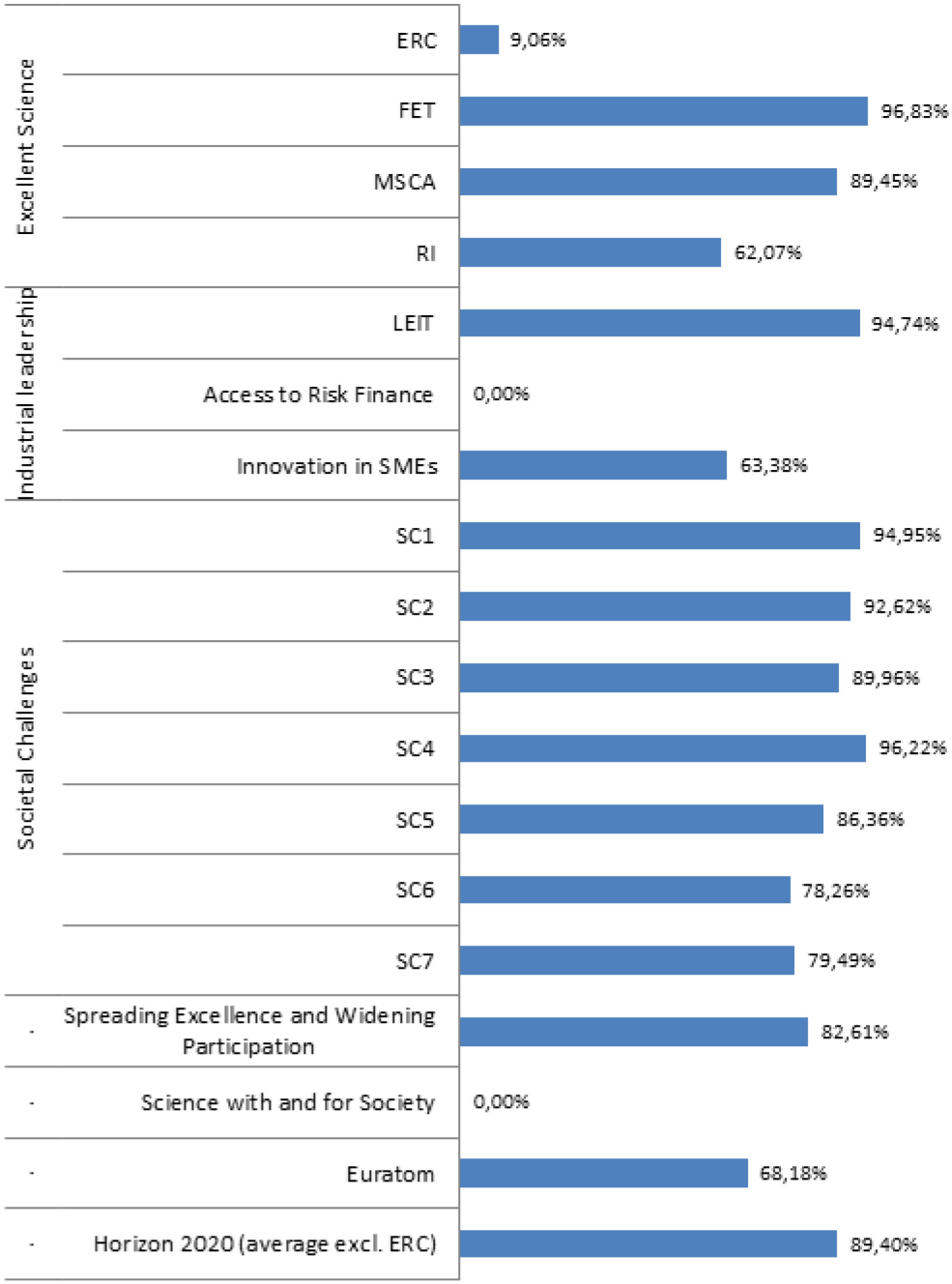
The first year of implementation of Horizon 2020 has shown a significant reduction compared to FP7 with respect to the time elapsing between the closure of a call and the signature of the Grant Agreement (time-to-grant – TTG). Under Horizon 2020, the Commission has committed itself to signing grant agreements within a period of eight months (245 days) for actions other than ERC actions.[22] By 1 December 2015, the percentage of projects (excluding ERC actions) signed within this eight month period was 89.40%, the average time-to-grant being 229.04 days. This constitutes a significant 26.82% improvement compared to the average time-to-grant for the whole of FP7 (313 days).[23]

The TTG reduction can be observed across the whole Programme. The number of grant agreements signed within eight months is above the Horizon 2020 average for calls in the majority of Societal Challenges, in LEIT, in FET and MSCA. The highest percentage was in LEIT-NMBP (99.5%) where only 1 project was signed beyond 245 days (255 days in the call H2020-SMEINST-2-2014). The exceptions to this positive trend are found in calls under Science with and for Society (23 projects with a TTG average of 279 days) and in the calls under Access to Risk Finance (2 projects with a TTG of 248 days) in which no project was signed within the TTG benchmark. 63.38% of the projects under the SME instrument were signed on time.

[22] The ERC has a different, specific, "two-step" evaluation procedure, including the interviews with applicants in Step2 (Starting grants and Consolidator grants). The ERC actions may therefore exceed the Time-to-Grant benchmark, as established in the Regulation (EU) No 1290/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2013 laying down the rules for participation and dissemination in "Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020)" and repealing Regulation (EC) No 1906/2006, Article 20.

[23] 7th FP7 Annual Monitoring Report 2013, p. 43.

Chart 10: % of projects signed within Time-to-Grant benchmark



3.2 Simplification

2014 was the first year of implementation of Horizon 2020. Compared to FP7, the design of Horizon 2020 brought a number of important simplifications:

- A radically simplified funding model, with a single reimbursement rate per project and a single flat rate for covering indirect costs;

- Under the MSCA, the use of simplified forms of grants (unit costs) was radically extended, the funding schemes were streamlined from 11 to 4 and the rules and framework conditions for mobility were unified.

- Streamlined ex-ante checks, including fewer ex-ante financial capacity checks (only on private coordinators) and fewer certificates on financial statements (only one at the project end);

- Reduced requirements for work time recording: no need to complete time sheets for staff working 100% on the project; simplified time recording for other staff;

- Reduced audit burden: the period in which audits can be initiated was shortened from five to two years after the end of the project; a single audit service covering all implementing services was established and the audit strategy is focused on risks and fraud detection;

- An acceleration of the granting processes: the time from call deadline to signature of grant agreement is reduced to 8 months (for the last grant to be signed in a call – compared to the average time to grant of nearly twelve months in FP7);

- Fully paperless proposal and grant management, with the Participant Portal as the single online entry point for all exchanges with applicants and beneficiaries.

In September 2015, the Commission launched an online survey on the perception of the simplification measures by stakeholders, addressed to all contacts in ongoing Horizon 2020 grants. The overall feedback was very positive. There is broad agreement that the simplification measures introduced in Horizon 2020 are useful, the e-signature and the Participant Portal being the front runners (about 90% consider these to be "very beneficial" or "fairly beneficial"). Also for the single reimbursement rate and the single flat rate for indirect costs, the agreement is overwhelming (71% consider the single flat rate to be very beneficial or fairly beneficial, 19% are neutral and only 9% consider it to be not very or not at all beneficial). Broad agreement was also expressed on the 8 months TTG benchmark (85% in favour) and the no-negotiation approach (69% in favour). Less than 20% of the respondents indicate that other funding programmes are simpler than Horizon 2020. When it comes to suggestions for further simplification, only a minority pleads for changing the rules on reimbursement in general or the indirect cost flat rate.

3.3 Synergies with other funding schemes

a. European Fund for Strategic Investments (EFSI)

The European Fund for Strategic Investments (EFSI) aims to overcome the current investment gap in the EU by mobilising private funding for both strategic investments in infrastructure and innovation and also risk finance for small businesses. The Commission expects EFSI to mobilise at least EUR 315 billion in additional investments in Europe over the next three years (i.e. from 2015 up to 2018).

To achieve those results, the Union is providing EUR 21 billion in initial funding, made up of a EUR 16 billion guarantee under the EU budget and EUR 5 billion from the European Investment Bank's (EIB) own resources. EFSI is composed of 2 main windows: an Infrastructure/Innovation window (implemented by the EIB) and a Small and Medium-sized Enterprises (SME) window (implemented by the European Investment Fund).

As research, development and innovation is one of the priority sectors targeted by EFSI, and as the EU Research and Innovation policy has contributed to the financing of the EU guarantee through a redeployment of Horizon 2020 budget (i.e. EUR 2,2 billion), it is important to take stock of EFSI results after one year of implementation regarding research, development and innovation.

As of January 2016[24], 42 projects have been approved by the EIB Board of Directors for financing under the infrastructure and innovation window. Some of these EIB-approved projects are still under assessment by the Commission to grant the EU guarantee coverage under the transitional rules of Regulation (EU) 2015/1017. These projects represent a total investment value of around EUR 25 billion, with EIB funding under the EFSI amounting to EUR 5,7 billion. These projects are situated in Austria, Belgium, Croatia, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Poland, Slovakia, Spain, Sweden and the UK. 5% of lending capacity is fully dedicated to 5 RDI-related projects, while at least 16 operations have been identified as having an RDI dimension[25]. One project is co-financed by both EFSI and Horizon 2020 InnovFin Large Projects.

As regards the SME window, as of January 2016, 84 operations have been signed by the European Investment Fund for a total investment value of EUR 25 billion, benefiting SMEs and midcaps in Belgium, Bulgaria, the Czech Republic, Denmark, Estonia, France, Germany, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Poland, Portugal, Slovenia, Spain and the UK. More specifically, three products have been implemented until now:

- An increase of the Risk Capital Resources (RCR) mandate of the EIB to the EIF (i.e. an increase of 2.5 billion): This mandate has as purpose to support technology and industrial innovation and targets early to lower mid-market funds that specifically focus on SMEs and midcaps. It is therefore benefitting to target R&I constituencies/stakeholders (innovative SMEs and midcaps);

- A frontloading on 2 existing EU guarantee schemes, due to the unexpectedly high level of market demand on those 2 schemes:

[24] For more information, please refer to the general, country- and sector-specific factsheets made available by the Commission on 15 January 2016 (available at http://ec.europa.eu/priorities/jobs-growth-investment/plan/index_en.htm). For more detailed information on EIB-approved projects, such as location, investment and funding amounts, reference is made to the following website of the EIB: http://www.eib.org/efsi/project-list/index.htm#projects.

[25] For an overview of the actions of EFSI in the area of research, development and innovation, please refer to the sector-specifc factsheet (available at http://ec.europa.eu/priorities/sites/beta-political/files/sector-factsheet-rdi_en.pdf).

- COSME Loan Guarantee Facility (i.e. a frontloading of EUR 500 million). Innovative SMEs requesting loans of a volume of up to EUR 150 000 can benefit from this scheme.

- Horizon 2020 InnovFin SME Guarantee (i.e. a frontloading of EUR 750 million). It implies full direct support benefitting Horizon 2020 programme and R&I constituencies/stakeholders (innovative SMEs and small midcaps).

Under the SME Window, as of December 2015, thanks to EFSI, at least EUR 18,39 billion (i.e. EUR 14,5 from RCR mandate and 3,89 from InnovFin SME Guarantee) of estimated mobilized investments are already relating to R&I constituencies.

b. The Seal of Excellence

The "Seal of Excellence" certificate introduced in October 2015 is awarded to the applicants of excellent proposals that could not be funded under the available call budget. The seal identifies promising project proposals that merit funding from alternative sources (private or public regional, national, European, international). A holder of the certificate can approach these alternative funding sources and present the certificate as a label of a high-quality project proposal. The "Seal of Excellence" offers a unique opportunity for regions and Member States (and any other interested actor) to fully exploit the high-quality Horizon 2020 evaluation process: it makes it possible to easily identify and possibly support high-impact proposals coming from promising innovative companies, with an ambition to grow and compete internationally.

In the current initial pilot phase, the action concerns only proposals applying for the SME instrument and in particular all those SME instrument proposals evaluated above the quality threshold but not receiving Horizon 2020 funding. Later on, it could be extended to cover more areas of Horizon 2020. The Horizon 2020 "SME instrument" has been selected for the introduction of the "Seal of Excellence" because of its relevance to regional and national funders, as the project proposals are mostly led by a single SME and address small-scale R&I actions close to the market with a clear territorial impact. Regions/Member States interested in funding these types of proposals could use European Structural and Investment Funds (ESIF) resources (in line with ESIF priorities and in compliance with national and relevant EU rules) or their own national/regional resources to grant funding without carrying out an additional qualitative evaluation.

Since its introduction in October 2015, the number of certificates awarded under the Seal of Excellence more than doubled between December 2015 (554 certificates awarded) and January 2016 (1 282 certificates awarded). The Members of the Community of Practice, exploring the best possible ways to implement funding schemes in support of high-quality projects with the "Seal of Excellence" through ESIF or other sources, increased from 52 Members in October 2015 to 104 in January 2016.

3.4 Quality Assessment of Proposal Evaluation

In order to receive independent experts' opinion on the quality of the proposal evaluation process and the procedures applied, an anonymous on-line survey of all experts who participated in the evaluation of proposals was carried out.[26] Similar surveys were conducted in FP7. The data collected in the first year of Horizon 2020 confirms that the quality of the evaluation process continues to be rated highly overall. Key figures are presented in Table 2 below. Evaluators were very satisfied with the way in which evaluations were conducted with respect to impartiality, confidentiality and fairness. In particular the level of efficiency of the evaluation task has been rated as 'excellent', 'good' or 'satisfactory' by 96.59% of respondents.

Table 2: Results of the Evaluators' Survey

Evaluators' Survey[27]	2014
Experts invited to participate	8543
Responses received	3278
Respondents finding the quality of the evaluation overall *satisfactory* to *excellent*	96.59%
Respondents rating the quality of the evaluation overall *excellent*	30.02%
Respondents, having previously evaluated research proposals for national or international research funding schemes, and rating the EU evaluation process as *good* or *excellent*	79.16%

3.5 Redress

The Horizon 2020 Rules for Participation (Article 16) stipulate that the Commission shall provide an evaluation review procedure for applicants. In line with these requirements, a procedure has been set up that aims to be both efficient and consistent with the principles of transparency and equal treatment that underpin all Commission evaluations. The Commission or funding body is responsible for examining a request for review but the examination will only cover the procedural aspects of the evaluation and not the technical content of the proposal. The evaluation review committee is composed of Commission staff or staff of the relevant funding body who meet in various configurations according to the different calls for proposals. The configurations work independently, and deliver their advice to the responsible authorising officers.

[26] The survey is not applicable to ERC experts and therefore the figures in the tables below do not include ERC.

[27] The phrasing of the questions in the Horizon 2020 experts' survey vary from that in FP7, therefore, a comparison with FP7 will not be made.

Table 3 below shows the results of the redress procedure for Horizon 2020 calls closed in 2014:

Table 3: Results of the review procedure for Horizon 2020 calls closed in 2014

Redress procedure[28]	2014
Redress request received	730
Redress cases upheld but not leading to re-evaluation	61
Redress cases leading to re-evaluation	21
Redress cases leading to re-evaluation (% of submitted proposals (34 485))	0.061%

3.6 Ethics

Ethics is of high priority in Horizon 2020[29]: all activities carried out under Horizon 2020 must comply with ethical principles and relevant national, EU and international legislation such as the Charter of Fundamental Rights of the European Union and the European Convention on Human Rights. The most common ethical issues include the involvement in research and innovation projects of children, patients and/or vulnerable populations; privacy and data protection issues; research on animals; and dual use/misuse. The avoidance of any breach of research integrity is also of the highest priority. This means in particular avoiding data fabrication and falsification, plagiarism or other research misconduct.

All activities funded in Horizon 2020 are assessed through the Ethics Appraisal Procedure, illustrated in Figure 1 below. When preparing a proposal, it is required to conduct an Ethics Self-assessment starting with the completion of an Ethics Issues Table. When the proposers identify (potential) ethics issues, they also have to describe how they propose to address them and provide, whenever available, the supporting documents. All proposals above threshold and considered for funding undergo an Ethics Review carried out by independent ethics experts working in a panel. The Review starts with an Ethics Screening and if appropriate, for complex and/or serious cases, a further analysis called the Ethics Assessment is conducted.

After the Grant signature, following the recommendations of the ethics review experts or at the initiative of the Commission services, Ethics Checks will be undertaken for some of the

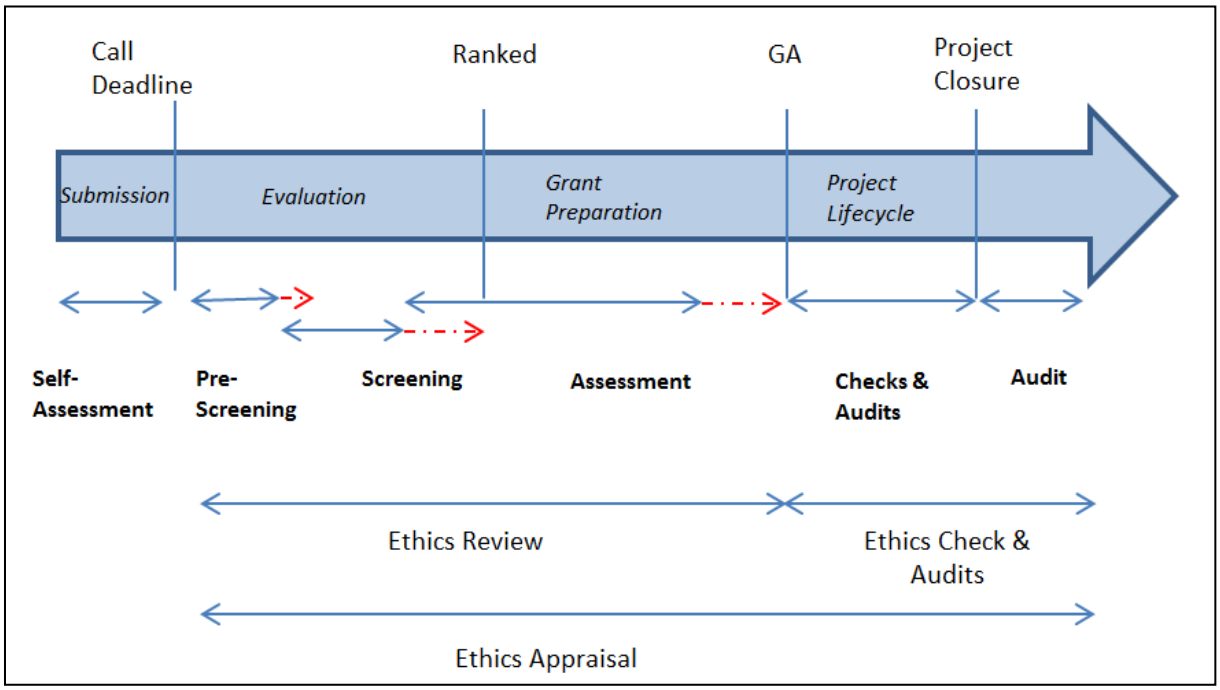
[28] The figures presented in Table 3 include figures for redress cases related to ERC. This was not the case in previous monitoring reports.

[29] See Horizon 2020 Rules for Participation: Ethics Reviews, Article 14; Horizon 2020 - Regulation of Establishment: Ethical principles, Article 19; and the Model Grant Agreement: Ethics, Article 34.

proposals. This has as a main objective to ensure a proper implementation of the above mentioned ethics requirements. In case of substantial breach of ethical principles, research integrity or relevant legislation, the Commission can also carry out an Ethics Audit following the provisions and procedures laid down in the grant agreement (Article 22).

In 2014, 27 proposals went through an Ethics Assessment. No project was stopped at this stage, as they have been all 'cleared' or conditionally 'cleared' (meaning that some ethical requirements have been added in the Grant Agreement). Out of these 27 assessed proposals, 20 were flagged for Ethics Check (follow-up), which will be carried out during the life-time of the project unless the implementation of the concerned actions does not anymore justify it.

Figure 1: The Ethics Assessment Process



The SATORI project, launched in 2014, aims to develop a common European framework for the ethical assessment of research and innovation. SATORI is a platform for the consolidation and advancement of ethical assessment in research and innovation. The 4-year project aims to develop a common framework of ethical principles and practical approaches so as to strengthen shared understandings among actors involved in the design and implementation of research ethics.

In 2014, the Ethics and Research Integrity Sector of DG RTD organised a number of specialised workshops and focused training activities in order to facilitate the uptake of the ethics review procedures by all research-related Commission and Executive Agency staff.

4. IMPLEMENTATION OF PRIORITIES AND SPECIFIC OBJECTIVES

4.1 Excellent Science

4.1.1 The European Research Council

This Programme Part was implemented by the European Research Council Executive Agency (ERCEA), a dedicated implementation structure[30] that handles the operational management of the specific objective "Strengthening Europe's science base in frontier research" of Horizon 2020. The ERCEA executes the scientific strategy established by the ERC Scientific Council and supports the latter in fulfilling its tasks through the management of ERC funding instruments and by enabling the financing of investigator-driven research of the highest quality.

Compared to the average for Horizon 2020 (89.40% excluding ERC projects), the ERC-specific time-to-grant indicator is very low (9.06%), indicating that a significant number of projects have been signed beyond the TTG benchmark. However, as mentioned before, the ERC is not bound by the respect of the TTG benchmark.[31]

The ERC-specific success rates are 11.86% in terms of eligible proposals and 11.87% in terms of EU funding (EU average: 13.39% and 14.51% respectively). The success rates are low in particular for the Advanced Grant and Starting Grant calls (including more than half of the proposals received under ERC calls).

The Key Performance Indicator that is particularly relevant for ERC actions is "Share of publications from ERC funded projects which are among the top 1% highly cited". This KPI is expected to produce results under Horizon 2020 only as of 2018, given the considerable time lag between the start of the project and its resulting output in terms of scientific publications and their respective citations. An indicative value for this indicator based on FP7 ERC publications is however very encouraging, as it shows that 7% of ERC publications are among the top 1% highly cited worldwide.

4.1.2 Future and Emerging Technologies (FET)

This Programme Part was implemented by the Directorate-General for Communication Networks, Content and Technology (DG CONNECT) for the calls FETHPC, FETPROACT and FETFLAG, as well as by the Research Executive Agency (REA) for the calls FETOPEN-RIA and FETOPEN-CSA.

[30] Commission Decision 2013/779/EU establishing the European Research Council and the European Research Council Executive Agency. The latter succeeds the Executive Agency established by Decision 2008/37/EU.

[31] Regulation (EU) No 1290/2013 of the European Parliament and of the Council of 11 December 2013 laying down the rules for participation and dissemination in "Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020)" and repealing Regulation (EC) No 1906/2006, Article 20.

The FET-specific time-to-grant indicator is 96.83%, above the Horizon 2020 average (89.40% excluding ERC projects), indicating that almost all projects have been signed within the TTG benchmark. The exception to this is the FETFLAG projects, which, due to their large size and highly complex nature, can hardly fulfil the TTG requirements and 2 FET Proactive project proposals from a reserve list which have been included in the Grant Agreement signature process at a later stage, implying a delay.

The FET-specific success rates are 6.54% in terms of eligible proposals and 7.46% in terms of EU funding (EU average: 13.39% and 14.51% respectively). The success rates are low in particular for the FETOPEN-RIA call, because of a high oversubscription, which can be explained by (1) the success of the FETOPEN programme with researchers, (2) the openness of the programme to all disciplines, (3) the low entry ticket to apply (1 stage call; 15 page proposals; resubmission allowed).

The Key Performance Indicators that are particularly relevant for FET are "FET Publications in peer-reviewed high impact journals" and "Patent applications and patents awarded in FET". Both are output indicators and results are only expected as from 2018 given that the projects only started in 2015.

4.1.3 Marie Skłodowska-Curie Actions

This Programme Part was implemented by the Research Executive Agency (REA)) and, to a much lesser extent, by DG Education and Culture (EAC). The initial REA mandate was extended until 2024, covering the whole grant management lifecycle of Horizon 2020 projects and the management of the MSCA predecessor actions in FP7. REA was also tasked to assist the Commission in collecting information about the results of projects and in communicating funding opportunities and success stories.

The MSCA-specific time-to-grant indicator is 89.45%, hence slightly above Horizon 2020 average (89.40% excluding ERC projects), while the MSCA-specific success rates are 17.62% in terms of eligible proposals and 14.14% in terms of EU funding (EU average: 13.39% and 14.51% respectively). The success rates are brought down in particular due to the very low success rate for the call H2020-MSCA-ITN-2014, which accounts for nearly half of the MSCA budget and had in 2014 a success rate of 10%.

This low success rate is due to the fact that ITN, the main EU instrument supporting structured doctoral training thereby maximising the employability of PhD candidates through high-quality research, interdisciplinary approaches, exposure to industry and international mobility, is a recognised best practice in Europe and enjoys a continuous high demand.

The Key Performance Indicator for the MSCA actions refers to cross-sector and cross-country circulation of researchers. The indicator shows progress towards the targets for Horizon 2020: it is estimated that with the 2014 funding, nearly 9 000 fellowships have been offered under MSCA in support of cross-country and cross-sector mobility.

4.1.4European Research Infrastructures (RI)

This Programme Part was implemented by Directorate-General for Research and Innovation (DG RTD) for the calls INFRADEV, INFRAIA and part of INFRASUPP, and by DG CONNECT for the calls EINFRA and the remaining part of INFRASUPP.

The time-to-grant indicator for Research Infrastructures is 62.07%, hence below the average of Horizon 2020 calls (89.40% excluding ERC projects), indicating that a number of projects have not been signed within the TTG benchmark. While EINFRA and INFRASUPP calls have a TTG of nearly 100%, the average TTG for Research Infrastructures is affected by some projects including access provision activities or involving international beneficiaries under INFRAIA and INFRADEV calls that had formally required more time to finalise the Grant Agreement Preparation (GAP), in order to correct financial inconsistencies frequently appearing in the proposals for the access component or to have the international partners validated. If these formal extensions are taken into account, the TTG rises to 81.67%.

The success rates for Research Infrastructures are 23.33% in terms of eligible proposals and 28.77% in terms of EU funding requested (EU averages: 13.39% and 14.51% respectively).

The Key Performance Indicator which is particularly relevant for Research Infrastructures actions is the number of researchers who have access to research infrastructures through Union support. Data for this indicator will be collected with the periodic reports, i.e. every 12 or 18 months after the beginning of the project. This indicator is expected to produce results in 2016.

4.2 Industrial Leadership

4.2.1 Leadership in Enabling and Industrial Technologies (LEIT)

This Programme Part was implemented jointly by DG RTD for the NMBP parts, by DG CONNECT for the LEIT-ICT part, and by DG GROW for the LEIT-Space part. The implementation of the LEIT-Space calls has been delegated to two agencies (the Research Executive Agency (REA) for the calls EO, COMPET, PROTEC; and the European GNSS Agency (GSA) for the call Galileo), while the NMBP and the ICT parts of LEIT are managed by DG RTD and DG CONNECT respectively.

The LEIT-specific time-to-grant indicator is 94.74% (EU average: 89.40% excluding ERC projects), indicating that only a few projects have been signed beyond the TTG benchmark (in particular all projects belonging to the ECSEL Joint Undertaking). The LEIT-specific success rates are 10.10% in terms of eligible proposals and 15.11% in terms of EU funding (EU averages: 13,39% and 14,51% respectively). The success rates are particularly low for the calls H2020-EO-2014 and H2020-NMP-GV-2014.

The Key Performance Indicators (KPIs) that are relevant for LEIT actions aim to measure the innovative performance and the output in terms of:

- Number of patent applications and the number of patents awarded in enabling and industrial technologies per EUR 10 million funding by theme;
- Share of private companies introducing innovations in the total number of project participants validated as private companies;
- Number and share of joint public-private publications out of all LEIT publications.

These KPIs are reported by Horizon 2020 beneficiaries after the end of a project and will be available only after the critical mass of finished projects has been reached. First relevant data available are expected as from 2018. Their current value is therefore not available in this Annual Monitoring Report.

4.2.2 Access to Risk Finance (ARF)

The EU delegates to EIB and EIF, as entrusted entities, the implementation and management of its financial contribution to financial instruments. This notably includes activities of product development, selection of financial intermediaries (for indirect products, based on call for expression of interest) or final recipients (for direct products), marketing, monitoring and reporting activities.

The contribution of Horizon 2020 to ensure Access to Risk Finance is measured through the following Key Performance Indicators:

- Total investments mobilised via Venture Capitals Investments: this instrument has been implemented as from 2015 after amendment to the Delegation Agreement between the Commission, the EIB and the EIF. The value for this indicator is therefore not available in this Annual Monitoring Report.
- Risk Finance: Total investments mobilised via debt financing: the EU contribution of EUR 713 million to the EIB and the EIF contribution helped mobilising EUR 13 015 million via debt financing.
- Risk Finance: Number of organisations funded and amount of private funds leveraged: 358 organisations funded and EUR 5 303 million of private funds leveraged.[32]

4.2.3 Innovation in SMEs (SME)

The SME Instrument was implemented by the Executive Agency for Small and Medium-sized Enterprises (EASME), which is running the process of proposal evaluation and preparation and monitoring of grant agreements. EASME is also implementing coaching activities for the SME Instrument beneficiaries. In line with the EU regulation establishing Horizon 2020, over 5% of the total combined budgets for the specific objective LEIT and the priority 'Societal challenges' was allocated to the dedicated SME instrument in 2014-2015.

According to the Work Programme 2014-15,[33] the SME-instrument-specific time-to-grant (TTG) benchmark is 3 months for Phase 1 projects and 6 months for Phase 2 projects. For the

[32] EIB/EIF operational reports of 30/06/2015.

successful projects for cut-offs with 2014 deadlines, 2.03% of grants in Phase 1 and 37.31% of grants for Phase 2 were signed on time, i.e. within the above TTG benchmarks. In 2015, EASME put in place some improvements in order to comply better with the specific SME-instrument targets for TTG. It should be noted that in that year, 63.38% of grants within Phase 1 and Phase 2 have been signed within 8 months.

The success rates for the SME-instrument are 9.04% in terms of eligible proposals and 10.95% in terms of EU funding requested (Horizon 2020 average: 13.39% and 14.51% respectively), varying from the lowest in LEIT-ICT (5.67%) to the highest in LEIT-Space (above 50%).

In addition, the budget of the specific objective 'Innovation in SMEs' supported:

a) Eurostars-2, a Joint Programme Initiative (under Article 185), via an EU contribution of EUR 23,7 million, the equivalent of 33% of the participating states' contribution, as foreseen in the Eurostars-2 Annual Work Plan 2014. The remaining EU commitments to Eurostars-2 were carried over to 2015. The Signature of the Delegation Agreement between the Eureka Secretariat (ESE) and the European Commission for the implementation of the Eurostars-2 joint-Programme took place on 18 December 2014.
b) The call *'Enhancing SME innovation capacity by providing better innovation support'* (EUR 9,18 million) and other actions (EUR 24,42 million), in particular new services by the Enterprise Europe Network to enhance innovation management capacities of SMEs.

Particularly relevant for SME actions is the fact that in 2014, 5.55% of the combined budget of the 'Societal Challenges' and the specific objective 'Leadership in Enabling and Industrial Technologies (LEIT)' was committed through the SME instrument call, which is higher than the initial target outlined in the EU Regulation establishing Horizon 2020. In addition, 23% of the total budgets of the 'Societal Challenges' and the specific objective 'Leadership in Enabling and Industrial Technologies' was allocated to SMEs, which is above the 20% target set in the Regulation.

Regarding the contribution of Horizon 2020 to Innovation in SMEs, this is measured through the following Key Performance Indicators (KPIs):

- Share of participating SMEs introducing innovations new to the company or the market;
- Growth and job creation in participating SMEs.

Both KPIs are reported by Horizon 2020 beneficiaries after the end of a project as from 2016, though data is expected to vary significantly in the early stage of the programme. Relevant

[33] Commission Implementing Decision C(2013) 8631 final of 10 December 2013 adopting the 2014-2015 work programme in the framework of the Specific Programme Implementing Horizon 2020 – The Framework Programme for Research and Innovation (2014-2020), C(2014) 1509 final.

data are expected for 2017. Their current value is therefore not available in this Annual Monitoring Report.

4.3 Societal Challenges

4.3.1 Health, Demographic Change and Well-Being

Societal Challenge 1 (SC1)

This Programme Part was implemented by DG RTD and DG CONNECT. The SME actions were implemented by the Executive Agency for SMEs (EASME).

The Health Societal Challenge time-to-grant indicator is 94.95% (Horizon 2020 average: 93.53%, excluding ERC projects), with similar figures for projects financed through the SME instrument (95.83%).

The success rates for the Health Societal Challenge are 11.76% in terms of eligible proposals and 11.13% in terms of EU funding requested (Horizon 2020 average: 13.39% and 14.51% respectively). The success rates of the SME instrument are higher than the average of the Health Societal Challenge (13.31% and 12.16%). The success rates are particularly low for the calls H2020-PHC-2014 (Personalising Health Care).

The Key Performance Indicators which are particularly relevant for the Societal Challenges are:

- Number of publications in peer-reviewed high impact journals;
- Number of patent applications and patents awarded;
- Number of prototypes and testing activities;
- Number of joint public-private publications.

These KPIs are reported by Horizon 2020 beneficiaries after the end of a project and will be available only after the critical mass of finished projects has been reached. First relevant data available are expected as from 2018. Their current value is therefore not available in this Annual Monitoring Report.

4.3.2 Food Security, Sustainable Agriculture and Forestry, Marine, Maritime and Inland Water Research, and the Bioeconomy

Societal Challenge 2 (SC2)

This Programme Part was implemented by DG RTD in the case of certain projects with policy relevance (e.g. dissemination and exploitation projects) and the following Executive Agencies:

- REA
- INEA (for the Blue Growth call – Energy and Transport)

- EASME (for activities related to the SME instrument and for the Blue Growth call – Environment)
- BBI JU (for the BBI-related projects).

The specific time-to-grant indicator for Societal Challenge 2 is 92.62% (Horizon 2020 average: 89.40% excluding ERC projects), with higher figures for projects financed through the SME instrument (98.04%).

The success rates for Societal Challenge 2 are 12.83% in terms of eligible proposals and 18.71% in terms of EU funding requested (Horizon 2020 averages: 13.39% and 14.51% respectively). The success rates of the SME instrument are significantly lower than the average of the Societal Challenge 2 (8.62% and 8.79%): in fact, the success rates of Societal Challenge 2 excluding the SME instrument are 19.83% and 19.91%.

The Key Performance Indicators which are particularly relevant for the Societal Challenges are:

- Number of publications in peer-reviewed high impact journals;
- Number of patent applications and patents awarded;
- Number of prototypes and testing activities;
- Number of joint public-private publications
- New products, processes, and methods launched into the market.

These KPIs are reported by Horizon 2020 beneficiaries after the end of a project and will be available only after the critical mass of finished projects has been reached. First relevant data available are expected as from 2018. Their current value is therefore not available in this Annual Monitoring Report.

4.3.3 Secure, Clean and Efficient Energy

Societal Challenge 3 (SC3)

This Programme Part was implemented by the Commission services when particularly relevant for policy-making (e.g. ERA-NET Cofund actions, support to Stakeholder Platforms) and the Executive Agencies in other cases:

- EASME (for activities in the area of energy efficiency as well as regards the SME instrument);
- INEA (for activities in the LCE and SCC call not carried out by the Commission services).

Within this Societal Challenge, DG CONNECT has been closely involved in some topics and projects for which the centre of gravity of the activities is ICT[34].

[34] Involvement through sub-delegation.

The time-to-grant indicator for the Energy Societal Challenge is 89.96% (Horizon 2020 average: 89.40% excluding ERC projects), with high figures for projects financed through the SME instrument (100%).

The success rates for the Energy Societal Challenge are 12.35% in terms of eligible proposals and 16.14% in terms of EU funding requested (Horizon 2020 averages: 13.39% and 14.51% respectively). The success rates of the SME instrument are lower than the average of the Energy Societal Challenge (10.00% and 12.86%).

The Key Performance Indicators which are particularly relevant for the Societal Challenges are:

- Number of publications in peer-reviewed high impact journals;
- Number of patent applications and patents awarded;
- Number of prototypes and testing activities;
- Number of joint public-private publications;
- Share of the overall Energy challenge funds allocated to non-fossil-fuel-related activities and market-uptake of sustainable energy solutions.

The first 4 KPIs are reported by Horizon 2020 beneficiaries after the end of a project and will be available only after the critical mass of finished projects has been reached. First relevant data available are expected as from 2018. Their current value is therefore not available in this Annual Monitoring Report.

For the 5th KPI, only around 6% of the budget in the Energy Societal Challenge has been dedicated directly to fossil-fuel-related activities in 2014, thus well below the maximum of 15%[35]. As regards market uptake activities, 15.2% of the budget in the Energy Societal Challenge has been dedicated to such activities thus well in line with the Commission's commitment.

4.3.4 Smart, Green and Integrated Transport

Societal Challenge 4 (SC4)

Following the handover to the Innovation and Network Executive Agency (INEA) in December 2014, this Programme Part is being implemented primarily by INEA. Certain projects with particularly relevant policy content were retained and are being managed in-house by DG RTD, DG MOVE and DG CONNECT.

Within this Societal Challenge, DG CONNECT is responsible for some topics and projects for which the centre of gravity of the activities is ICT[36].

[35] The budgetary contributions to the Fuel Cells and Hydrogen Joint Undertaking (FCH JU) have not been counted as 'fossil fuels related'.

[36] Involvement through sub-delegation.

The time-to-grant indicator for the Transport Societal Challenge is 96.22% (Horizon 2020 average: 89.40 excluding ERC projects), with slightly lower figures for projects financed through the SME instrument (94.68%).

The success rates for the Transport Societal Challenge are 16.39% in terms of eligible proposals and 29.77% in terms of EU funding requested (Horizon 2020 averages: 13.39% and 14.51% respectively). The success rates of the SME instrument are lower than the average of the Transport Societal Challenge (10.67% and 22.86%).

The Key Performance Indicators which are particularly relevant for the Societal Challenges are:

- Number of publications in peer-reviewed high impact journals;
- Number of patent applications and patents awarded;
- Number of prototypes and testing activities;
- Number of joint public-private publications;

These KPIs are reported by Horizon 2020 beneficiaries after the end of a project and will be available only after the critical mass of finished projects has been reached. First relevant data available are expected as from 2018. Their current value is therefore not available in this Annual Monitoring Report.

4.3.5 Climate Action, Environment, Resource Efficiency and Raw Materials

Societal Challenge 5 (SC5)

This Programme Part was implemented by DG RTD and DG GROW, except the second stage evaluations which were conducted by EASME. Almost all funded projects are managed by EASME. The 11 exceptions are projects selected under topics that explicitly mentioned the exclusion from implementation by EASME in the Work Programme 2014-2015.

Within this Societal Challenge, DG CONNECT is responsible for some topics and projects for which the centre of gravity of the activities is ICT[37].

The time-to-grant indicator for the Climate Action Societal Challenge is 86.36% (Horizon 2020 average: 89.40% excluding ERC projects), with high figures for projects financed through the SME instrument (100%).

The success rates for the Climate Action Societal Challenge are 12.37% in terms of eligible proposals and 21.30% in terms of EU funding requested (Horizon 2020 averages: 13.39% and 14.51% respectively). The success rates of the SME instrument are lower than the average of the Climate Action Societal Challenge (8.73% and 13.27%).

[37] Involvement through sub-delegation.

The Key Performance Indicators which are particularly relevant for the Societal Challenges are:

- Number of publications in peer-reviewed high impact journals;
- Number of patent applications and patents awarded;
- Number of prototypes and testing activities;
- Number of joint public-private publications;

These KPIs are reported by Horizon 2020 beneficiaries after the end of a project and will be available only after the critical mass of finished projects has been reached. First relevant data available are expected as from 2018. Their current value is therefore not available in this Annual Monitoring Report.

4.3.6 Europe in a changing world – Inclusive, Innovative and Reflective Societies

Societal Challenge 6 (SC6)

This Programme Part was implemented mainly by DG RTD and by DG CONNECT. The implementation of the Research and Innovation Actions has been delegated to the Research Executive Agency (REA) while the ERA-NET and Coordination and Support Actions (CSA) were kept in the parent DGs (DG RTD and DG CONNECT).

The time-to-grant indicator for Societal Challenge 6 is 78.26% (Horizon 2020 average: 89.40% excluding ERC projects). The success rates for Societal Challenge 6 is 8.86% in terms of eligible proposals and 9.62% in terms of EU funding requested (Horizon 2020 averages: 13.39% and 14.51% respectively).

The Key Performance Indicators which are particularly relevant for the Societal Challenges are:

- Number of publications in peer-reviewed high impact journals;
- Number of patent applications and patents awarded;
- Number of prototypes and testing activities;
- Number of joint public-private publications;

These KPIs are reported by Horizon 2020 beneficiaries after the end of a project and will be available only after the critical mass of finished projects has been reached. First relevant data available are expected as from 2018. Their current value is therefore not available in this Annual Monitoring Report.

4.3.7 Secure Societies – Protecting freedom and security of Europe and its citizens

Societal Challenge 7 (SC7)

This Programme Part was implemented by the Directorate-General for Migration and Home Affairs (DG HOME), responsible for the calls BES (Border and External Security), DRS (Disaster-resilience) and FCT (Fight against Terrorism and Crime), and DG CONNECT, responsible for the DS (Digital Security) call.[38]

The time-to-grant indicator for Societal Challenge 7 is 79.49% (Horizon 2020 average: 89.40% excluding ERC projects), with slightly high figures for projects financed through the SME instrument (80%).

The success rates for Societal Challenge 7 are 11.41% in terms of eligible proposals and 9.64% in terms of EU funding requested (Horizon 2020 averages: 13.39% and 14.51% respectively). The success rates of the SME instrument are higher than the average for the Societal Challenge 7 (17.01% and 16.13%). The success rates are particularly low (below 10%) for the following calls: H2020-DRS-2014 (Disaster Reliance), H2020-DS-2014-1 (Digital Security), and H2020-FCT-2014 (Fight against Terrorism and Crime).

The Key Performance Indicators which are particularly relevant for the Societal Challenges are:

- Number of publications in peer-reviewed high impact journals;
- Number of patent applications and patents awarded;
- Number of prototypes and testing activities;
- Number of joint public-private publications;

These KPIs are reported by Horizon 2020 beneficiaries after the end of a project and will be available only after the critical mass of finished projects has been reached. First relevant data available are expected as from 2018. Their current value is therefore not available in this Annual Monitoring Report.

4.4 Spreading Excellence and Widening Participation (SEWP)

This Programme Part was implemented by DG RTD in collaboration with the Research Executive Agency (REA). The communication and evaluation activities related to the calls "Teaming" (H2020-WIDESPREAD-1-2014) and "ERA Chairs" (H2020-WIDESPREAD 2-2014: ERA Chairs) were carried out by DG RTD and, once completed, their implementation was transferred to the Research Executive Agency (REA). The communication and evaluation activities of the call "Transnational network of national contact points" (H2020-WIDESPREAD-3-2014) were managed by DG RTD, which currently carries on its implementation.

The time-to-grant indicator for the SEWP actions is 82.61% (Horizon 2020 average: 89.40% excluding ERC projects). The success rates for the SEWP actions are 16.33% in terms of

[38] See Annex III.

eligible proposals and 17.71% in terms of EU funding requested (Horizon 2020 averages: 13.39% and 14.51% respectively).

The Key Performance Indicator to measure progress towards Spreading Excellence and Widening Participation is:

- Evolution of the publications in high impact journals in the given research field

The measurement of this indicator will be possible at the end of the projects and will be collected by the dedicated project report. First relevant data available are expected as from 2018. The aggregated data will be available at the completion of all projects. Its current value is therefore not available in this Annual Monitoring Report.

4.5 Science with and for Society (SWAFS)

This Programme Part was implemented by DG RTD with the REA support.

None of the 23 grants signed within SWAFS actions have been signed within the time-to-grant benchmark (Horizon 2020 average: 89.40% excluding ERC projects). The success rates for SWAFS actions are 8.50% in terms of eligible proposals and 10.57% in terms of EU funding requested (Horizon 2020 averages: 13.39% and 14.51%). These overall rates are particularly affected by the low success rates of the call H2020-SEAC-2014-1 (5.71% and 6.82% respectively), which attracted more than half of the SWAFS eligible proposals.

The Key Performance Indicator to measure progress towards Science With And For Society (SWAFS) is:

- Number of institutional change actions promoted by the programme

These KPIs will be reported by the Horizon 2020 beneficiaries, particularly through the projects funded under the Topics ISSI.5.2014.2015 - *Supporting structural change in research organisations to promote Responsible Research and Innovation*, and GERI.4.2014-2015 - *Support to research organisations to implement gender equality plans.* This information will be made available by Horizon 2020 beneficiaries only at the end of their respective projects. First relevant data available are expected as from 2016; hence at this stage the indicator cannot be measured.

4.6 European Institute of Innovation and Technology (EIT)

This Programme Part was implemented by the EIT.

Under the Work Programme 2014-2015, the following priorities have been identified: the consolidation and fostering of the growth and impact of the three first-wave KICs established in 2009, the creation of two new KICs in 2014, the extension of the impact of the EIT beyond KICs by making good practices and experiences of KICs available new stakeholders, including the EIT's Regional Innovation Scheme for areas in Europe with low innovation capacity.

The first wave of the EIT's Knowledge and Innovation Communities (KICs) has steadily grown in terms of budget, activities, and results. The EIT Community was further enlarged through the creation of two new KICs in the areas of healthy living and active ageing (EIT Health) and sustainable exploration, extraction, processing, recycling and substitution of raw materials (EIT Raw Materials), creating a new momentum for and a scaling up of the EIT's contribution to Europe's innovation landscape, sustainable growth and global competitiveness.

In 2014, 632 institutions participated in the three first wave KICs designated in 2009. The total budget requested was EUR 215,3 million. After discussions and revisions of the business plans EUR 218,5 million was allocated, the budget actually consumed in 2014 by the first wave KICs was EUR 187,3 million.

In addition, the EIT Regional Innovation Scheme was introduced in order to enable EIT activities to reach out to regions in Europe with weaker innovation capacity.

4.7 Euratom Research and Training Programme 2014-2018

The European Commission is the executive institution under the Euratom Treaty, and it retains overall responsibility for Community research and innovation policy in the nuclear field, for all related programme and project management, as well as for the coordination of international cooperation with key third countries. The majority of these tasks are undertaken by DG RTD.

The time-to-grant (TTG) indicator for Euratom indirect actions is 68.18% (Horizon 2020 average: 89.40% excluding ERC projects). In some cases with more complicated grant preparation procedure, grants were signed after the imposed maximum TTG period due to the complexity of issues to be solved in the course of the Grant Agreement Preparation (GAP) procedure.

The success rates for Euratom indirect actions are 33.33% in terms of eligible proposals and 37.63% in terms of Euratom funding requested (Horizon 2020 averages: 13.39% and 14.51% respectively). Overall, the Euratom-specific success rates are significantly higher than the average Horizon 2020 success rates, due to the high degree of consolidation of research efforts in this domain.

5. PROGRESS ON CROSS-CUTTING ISSUES

Horizon 2020 pays particular attention to cross-cutting issues, which are promoted across all specific objectives of the three priorities. The cross-cutting issues are necessary to develop new knowledge, key competences and major technological breakthroughs and to translate knowledge into economic and societal value.

In the Council Decision establishing the Specific Programme implementing Horizon 2020,[39] the co-legislators agreed on 14 cross-cutting issues that the Commission has to pay special attention to and monitor in the framework of Horizon 2020. Given the monitoring requirements in the legal basis, the Commission has also developed a list of indicators for measuring progress with respect to these cross-cutting issues.

5.1 Contribution to the realisation of the European Research Area (ERA)

Horizon 2020 provides support to Member States and the main stakeholders in implementing the ERA reform agenda across the following key priorities:

1. More effective national research systems (Policy Support Forum)
2. Optimal transnational co-operation and competition on common research agendas, grand challenges and infrastructures (P2P's, ESFRI and ERIC[40])
3. An open labour market for researchers facilitating mobility, supporting training and ensuring attractive careers (Euraxess and Resaver)
4. Gender equality and gender mainstreaming in research. Encouraging gender diversity to foster science excellence and relevance (Integrating gender, Science for Society)
5. Optimal circulation and transfer of scientific knowledge to guarantee access to and uptake of knowledge by all (communication and dissemination of programme results, demonstration and pilot projects)

In order to measure the contribution of Horizon 2020 to the realisation of the ERA, the following indicators have been identified:

- Annual number of research positions advertised on EURAXESS Jobs;
- Number of national research infrastructures networked (in the sense of being made accessible to all researchers in Europe and beyond through Union support);
- Number and share of Open access articles published in peer-reviewed journals;
- Number of projects that make scientific data accessible and re-usable and number of scientific datasets made accessible and re-usable;

[39] Council Decision 2013/743/EU of 3 December 2013 establishing the specific programme implementing Horizon 2020 – the Framework Programme for Research and Innovation (2014-2020) and repealing Decisions 2006/971/EC, 2006/972/EC, 2006/973/EC, 2006/974/EC and 2006/975/EC, Annex III.

[40] ESFRI: European Strategy Forum on Research Infrastructures; ERIC: European Research Infrastructure Consortium.

- Number of Multiannual Implementation Plans adopted by Joint Programming Initiatives.

The number of research positions advertised on EURAXESS Jobs between 1 January and 31 December 2014 comprised 47 841 job vacancies and 12 384 fellowships.

Preliminary results show that the number of national research infrastructures networked thanks to Horizon 2020 support in the calendar year 2014 was 28 559.

Since Horizon 2020 projects have yet to produce a significant number of scientific publications or datasets, no specific quantitative data on the indicators related to scientific publications can yet be provided in the Annual Monitoring Report 2014.

In 2014, the following 6 out of 10 Joint Programming Initiatives (JPIs)[41] had adopted annual implementation plans:

- A Healthy Diet for a Healthy Life (HDHL)
- Agriculture, Food Security and Climate Change (FACCE)
- Connecting Climate Knowledge for Europe (Climate)
- EU Joint Programme - Neurodegenerative Disease Research (JPND)
- More Years, Better Lives - The Potential and Challenges of Demographic Change (MYBL)
- Water Joint Programming Initiative: Water Challenges for a Changing World (Water)

5.2 Widening Participation

Despite some recent convergence, the research and innovation performance of the Member States remains very different, with large gaps between "innovation leaders" and "modest innovators".[42] Activities under the Spreading Excellence and Widening Participation specific objective are aimed at unlocking excellence in low performing regions, thereby widening participation in Horizon 2020 and contributing to the realisation of the ERA. In a complementary way, synergies with the European Structural and Investment Funds (ESIF) are supported as a way to increase the impact of investments in low performing regions in terms of research and innovation, thereby widening participation in Horizon 2020.

[41] The remaining four (Antimicrobial Resistance, Cultural Heritage, Oceans, Urban Europe) are in the process of developing their implementation plans.

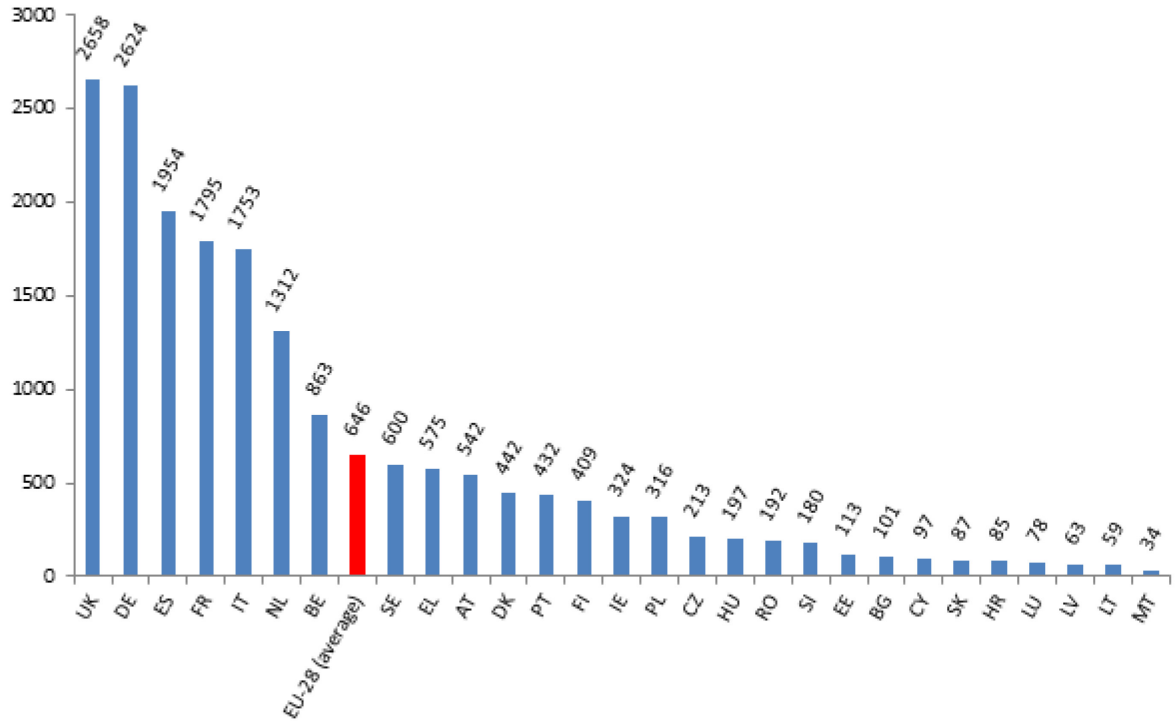
[42] See charts 6, 7 and 8 in section 2.4 above concerning participation of EU Member States.

Widening participation is measured through the following indicators:

- Total number of participations by EU-28 Member State;
- Total amount of financial contribution by EU-28 Member State (EUR million).

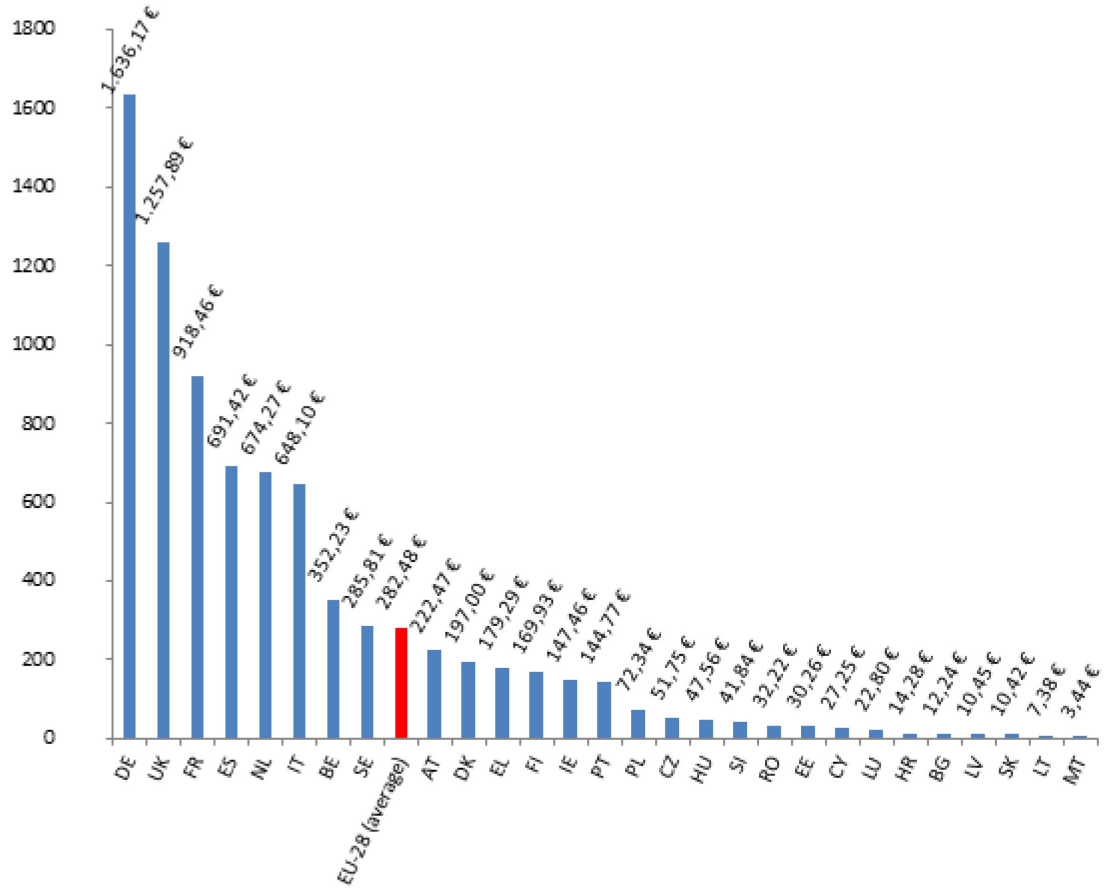
The number of participations in grants signed before 1 December 2015 disaggregated by EU-28 Member States is presented in Chart 11 below:

Chart 11: EU Member States' participations in grants signed before 1 December 2015



The amount of financial contribution by EU-28 Member States for grant agreements signed before 1 December 2015 is presented in chart 12:

Chart 12: EU contribution to grants signed before 1 December 2015 by EU Member States



5.3 SME Participation

In Horizon 2020, SMEs are encouraged to participate across all activities, in particular in the LEITs and Societal Challenges priorities. In line with the target set by the EU Parliament and the Council, SMEs are expected to receive funding amounting to 20% of the total combined budgets of the Societal Challenges and the specific objective LEIT.

Moreover, the co-legislators established that within the target of allocating a minimum of 20 % of the total combined budgets for the Societal Challenges and LEIT, a minimum of 5% of those combined budgets will be initially allocated to the dedicated SME instrument. A minimum of 7% of these total budgets will be allocated to the dedicated SME instrument averaged over the duration of Horizon 2020.

The following two indicators are used to monitor progress with respect to SME participation:

- Share of the EU financial contribution to LEIT and Societal Challenges going to SMEs;

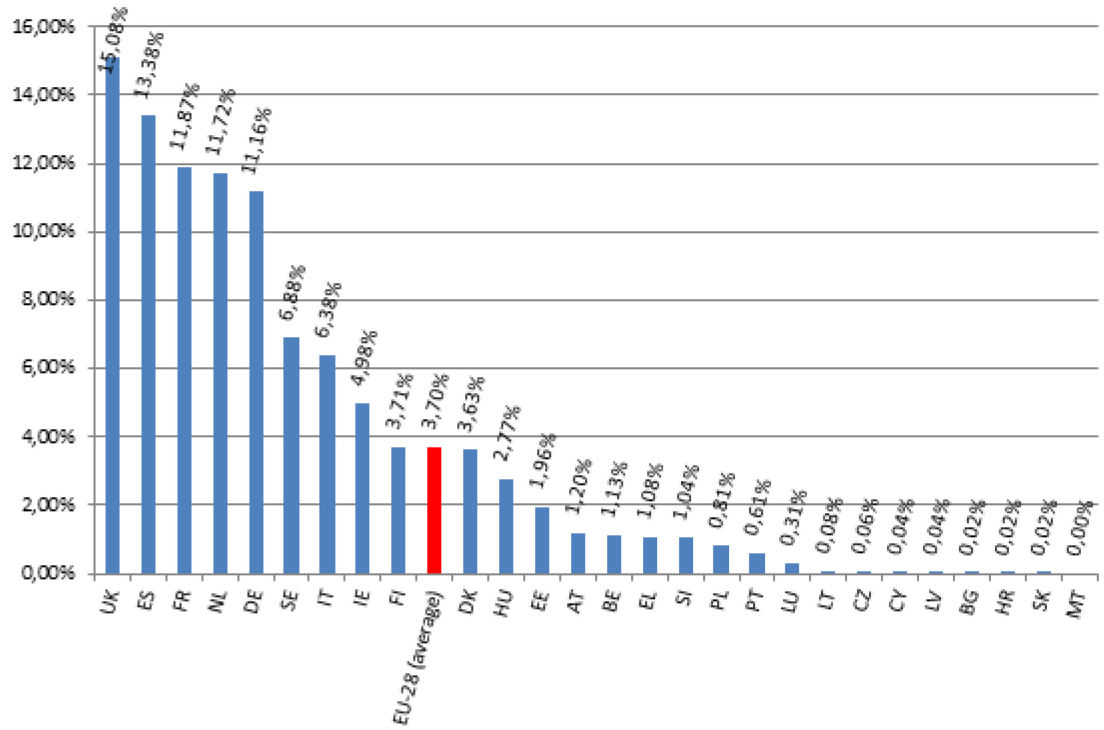
- Share of the EU financial contribution to LEIT and Societal Challenges going to the SME Instrument[43].

Statistics for 2014 show that 23.09% (EUR 1 068 million) of the 2014 budget allocated to LEIT and Societal Challenges (EUR 4 624 million) is allocated to SMEs. This demonstrates that the 20% target has been reached in 2014.

5,51% (EUR 255 million) of the total combined budgets for the specific objective LEIT and the priority 'Societal challenges' was allocated to signed grants from the dedicated SME instrument in 2014. Progress towards meeting the 7% target is therefore well on track.

[43] On average over the duration of Horizon 2020, within the above-mentioned 20% target.

Chart 13: Share of EU funding allocated to Member States through the SME instrument



5.4 Social Sciences and Humanities

Horizon 2020 has integrated Social Sciences and Humanities (SSH) as a cross-cutting issue across the Framework Programme, in addition to being a key component of Societal Challenge 6.

The integration of SSH is measured through the following indicator:

- Percentage of SSH partners[44] in selected projects in all Horizon 2020 priorities (LEITs and Societal Challenges parts) and percentage of EU financial contribution allocated to them.

According to the Commission Report on the integration of SSH in Horizon 2020 published on 15 October 2015,[45] and based on the estimated total funding for the calls for proposals in the

[44] An SSH partner is a legal entity (participant) with background in one of the following disciplines: sociology, psychology, economics, law, political science, public and business administration, demography, anthropology (except physical anthropology), geography (except physical geography), peace and conflict studies, human rights, education science, journalism and communication, cultural studies, religion, linguistics, literature, cultural studies, history, archaeology, philosophy, ethics, arts and crafts (list adapted from the UNESCO International Standard Classification of Education, ISCED 2011).

[45] Integration of Social Sciences and Humanities in Horizon 2020: participants, budget and disciplines. Monitoring Report on SSH-flagged projects funded in 2014 under the Societal Challenges and Industrial Leadership. European Commission, 2015 (ISBN 978-92-79-50762-5).

LEIT and Societal Challenges parts of the Work Programme 2014 (amounting to EUR 4 billion), EUR 1,1 billion was dedicated to topics flagged for SSH in the calls for proposals. Under these topics, EUR 236 million (i.e. 21%) went to SSH partners. Overall, the share of the budget going to SSH partners amounted to 6% of the estimated total budget of EUR 4 billion. SSH partners account for 26% of the total number of consortia partners in projects funded under topics flagged for SSH (including SC6, which represents 7% of the total).

5.5 Science and Society (Responsible Research and Innovation)

Responsible Research and Innovation (RRI) comprises an inclusive approach to research and innovation, to ensure that societal actors work together during the whole research and innovation process. It aims to better align both the process and outcomes of Research and Innovation with the values, needs and expectations of European society.

In Horizon 2020, RRI is measured through the following cross-cutting issue indicator:

- Share of projects where citizens, Civil Society Organisations and other societal actors contribute to the co-creation of scientific agenda and scientific content.

Information regarding this indicator is currently not available. The completion of data sets will occur in the first half of 2016 and updated data will be published in the next edition of the Annual Monitoring Report. However, estimates based on the experience acquired by the Commission's services suggest that the situation is very uneven across Horizon 2020 lines and that the overall result is lower than expected (3.3%). Nonetheless, the work undertaken in 2014 to mainstream and fully embed this concept in Commission policy points to potential progress in the years to come.

5.6 Gender

Three main objectives underpin the strategy on gender equality as a cross-cutting issue in Horizon 2020:

1. Fostering equal opportunities and gender balance in research teams, in order to close the gaps concerning the participation of women;
2. Ensuring gender balance in decision-making, in order to reach the targets of 40% of the under-represented sex in evaluation panels and expert groups and 50% in advisory groups;
3. Integrating the gender dimension in research and innovation content, taking account of relevant biological characteristics as well as social and cultural features of both women and men in research (sex and gender analysis).

The indicators currently used for monitoring Gender equality as a cross-cutting issue in Horizon 2020 are the following ones:

- Percentage of women participants in Horizon 2020 projects;

- Percentage of women project coordinators in Horizon 2020;
- Percentage of women in EC advisory groups[46], expert groups, evaluation panels, individual experts, etc.;
- Percentage of projects taking into account the gender dimension in research and innovation content.

The first two indicators are based on input coming from Horizon 2020 beneficiaries at the level of project reporting and will be available only after a critical mass of projects has been reached as from mid-2016. Their current value is therefore not available in this Annual Monitoring Report.

Within the total of 19 336 experts registered in the expert database for evaluation panels and expert groups, the proportion of women experts is 35.56%. In terms of actual expert contracts signed, the proportion of women experts participating in evaluation panels and expert groups is 36.27%. Regarding gender balance in Horizon 2020 advisory groups in 2014, women participation is 52%.

Information regarding the last indicator is currently not available. Data are collected at the level of project reporting and will be available only after a critical mass of projects has been reached. Preliminary results show that the gender dimension was explicitly mentioned in 63 topics to inform the potential applicants about the importance of taking account of the biological characteristics and/or the social/cultural features of both women and men in their proposals.

5.7 International Cooperation

International cooperation as a cross-cutting issue is expected to achieve, in particular, the objectives of: strengthening the Union's excellence and attractiveness in research and innovation as well as its economic and industrial competitiveness; effectively tackling common societal challenges; and supporting the Union's external and development policy objectives.

The EU contribution for grants signed before 1 December 2015 to non-EU-28 countries participating in Horizon 2020 is EUR 453,97 million, which represents 5.43% of the EU financial contribution allocated to signed grants. This represent a significantly lower figure compared to the 10.39% funding allocated to organisations outside the EU in FP7.[47]

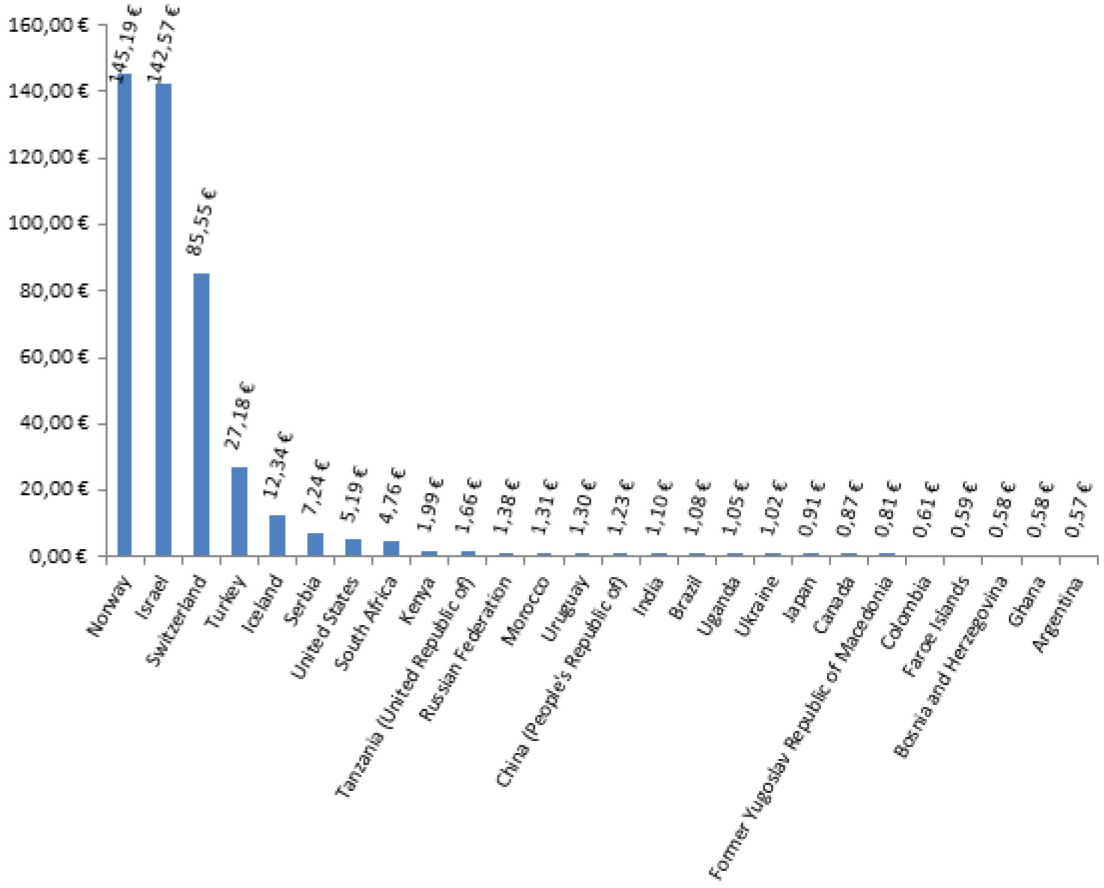
Almost two thirds of this EU contribution to non-EU-28 countries went to the associated countries Norway and Israel (one third each). The Horizon 2020 funding to Switzerland, which is only partially associated to Horizon, represents less than one fifth. Among the non-

[46] Advisory group provide high quality advice to the Commission services during the preparation of the Horizon 2020 work programmes.

[47] 7th FP7 Annual Monitoring Report 2013: data from Table B9, p. 101.

associated third countries, the United States have the highest share (1.14% of the EU contribution to non-EU countries), immediately followed by South Africa (1.04%).

Chart 14: EU Funding to non-EU-28 countries for signed projects in 2014 calls (in EUR million)



International Cooperation as a cross-cutting issue is also measured through the following specific indicators:

- Share of third-country participations in Horizon 2020;
- Percentage of EU financial contribution attributed to third country participants;
- Share of budget of topics in the Work Programme mentioning at least one third-country or region.

Participations from non-associated third countries (excluding Switzerland)[48] in 2014 calls corresponded to 2% of the total number of participations, decreasing from the FP7 baseline calculated over the 7 years of FP7 (4.7%).

[48] Following the International Agreement associating Switzerland to parts of Horizon 2020 signed on 5th December 2014, Switzerland has an associated third-country status for actions under these parts, while it remains a non-associated third country for the rest.

The EU financial contribution to non-associated third countries (excluding Switzerland) was 0.5% of the overall EU contribution, also below the FP7 baseline of 1.9%.

Identifying suitable themes and partners for targeted international cooperation activities was an important part of the preparation of the first Horizon 2020 work programmes. The impact of this approach is reflected in the increase from 12% (FP7 baseline) to 22% (October 2015) in the indicator on the budget share of Work Programme topics mentioning international cooperation or a specific third-country or region.

5.8 Sustainable Development, Climate Change and Biodiversity

At least 60% of the overall Horizon 2020 budget should be related to sustainable development. Climate-related expenditure should exceed 35% of the overall Horizon 2020 budget, including mutually compatible measures improving resource efficiency.[49] The Commission is tracking information on the financial contribution for biodiversity, in line with the Aichi Biodiversity Target 20, adopted at the 12th meeting of the Conference of the Parties to the Convention on Biological Diversity, held on 6-17 October 2014 in the Republic of Korea[50].

The following indicators have been defined to measure these commitments. Their calculation is based on the so-called "Rio Markers" methodology[51].

- Share of EU financial contribution that is climate-related in Horizon 2020 (EUR);
- Share of EU financial contribution that is sustainability-related in Horizon 2020 (EUR);
- Share of EU financial contribution that is biodiversity-related in Horizon 2020 (EUR).

The contribution of Horizon 2020 to Sustainable Development, Climate Change and Biodiversity is assessed:

– For programmable actions, at the level of the Work Programme's topics.

– For bottom-up actions (e.g. ERC, MSCA), at the level of individual projects.

[49] Regulation (EU) No 1291/2013 of the European Parliament and the Council establishing Horizon 2020 – the Framework Programme for Research and Innovation (2014-2020), whereas n.10.

[50] https://www.cbd.int/doc/decisions/cop-12/full/cop-12-dec-en.pdf

[51] Originally developed to calculate the contribution of development co-operation activities to the environment and the Rio Conventions, the Rio markers methodology uses a scoring system of three values, in which activities are “marked” as targeting the environment or the Rio conventions as the “principal" objective (100%) or a “significant" objective (40%), or as not targeting the objective (0%). The contribution of Horizon 2020 is assessed: for programmable actions, at the level of the Work Programme's topics; for bottom-up actions (e.g. ERC, MSCA), at the level of individual projects; for some parts of the programme (e.g. Financial Instruments, EIT), on an ad-hoc basis.

– For some parts of the programme (e.g. Financial Instruments, EIT), on an ad-hoc basis.

For Horizon 2020 calls closed in 2014, the EU financial contribution for climate-related research and innovation amounted to EUR 1 995 million, corresponding to 24% of the tracked budget, compared to a target of 35%. The financial contribution to Sustainable Development was EUR 3 493 million, corresponding to 46% of the tracked budget, compared to a target of 60%. And the financial contribution to Biodiversity was EUR 317 million, corresponding to 4% of the tracked budget (no target).

In 2014, the targets were not reached, therefore, even if programmable actions were very close to the climate target (32% compared to 35%) and relatively close to the sustainable development target (50% compared to 60%). The Commission has developed a comprehensive and detailed approach to improve these figures, in particular for tracking the contribution of non-thematic buttom-up actions, and will align the tracking methodology to the UN's newly adopted Sustainable Development Goals.[52]

5.9 Bridging from discovery to market application

Horizon 2020 puts special emphasis on innovation under the second and third priorities (Industrial Leadership and Societal Challenges), which involve the broad use of new instruments that are available under Horizon 2020, in particular innovation actions/projects, innovation procurement and inducement prizes.

The contribution of Horizon 2020 to Bridging from Discovery to Market Application is measured through the following indicators:

- Share of projects and EU financial contribution allocated to innovation actions in Horizon 2020;
- Within the innovation actions, share of EU financial contribution focussed on demonstration and first-of-a-kind activities.

Overall, 202 innovation action projects have been signed in 2014, with a requested EC contribution of EUR 1 071 million. This represents 4.20% of the total number of successful projects signed related to calls closed in 2014 (4 809) and 12.65% of the total EC contribution allocated to these successful projects (EUR 8 467,83 million).

In addition, 12 more Innovation Actions projects have been signed under some of the Joint undertaking calls launched in 2014: 3 projects under FCH2[53] (overall requested contribution of EUR 39,4 million), 6 under ECSEL[54] (overall requested contribution of EUR 106,7

[52] http://www.undp.org/content/dam/undp/library/corporate/brochure/SDGs_Booklet_Web_En.pdf

[53] Fuel Cells and Hydrogen 2.

[54] Electronic Components and Systems for European Leadership.

million) and 3 under the BBI JU[55] (overall requested contribution of EUR 36,7 million). Innovation Actions projects in Joint Undertaking calls represent 4.33% of the total EU contribution allocated to successful projects in 2014.

Information regarding the last indicator is currently not available. The completion of data sets will occur in the first half of 2016 and updated data will be published in the next edition of the Annual Monitoring Report.

5.10 Digital Agenda

The Digital Agenda for Europe, one of seven EU2020 flagship initiatives, has established 'digital' as a policy brand in its own right, by aspiring to make every European digital. The EU's Digital Single Market Strategy, launched in May 2015, builds on these foundations, aiming to remove regulatory barriers and move from 28 national markets to a single one, to unlock online opportunities and make the EU's single market fit for the digital age.

ICT R&I is key to the realisation of the Digital Single Market. ICT R&I has dedicated topics in all Horizon 2020 pillars:

- Excellent Science: advanced research to uncover radically new technological possibilities and ICT contributions to support research and innovation are addressed respectively under the parts "Future and Emerging Technologies" and "Research Infrastructures" (eInfrastructures);
- Leadership in Enabling and Industrial Technologies (LEIT): research and innovation of activities on generic ICT technologies either driven by industrial roadmaps or through a bottom-up approach are mostly addressed under the part "Information and Communication Technologies";
- Societal challenges: multi-disciplinary application-driven research and innovation leveraging ICT are addressed in the different "Societal Challenges".

This cross-cutting issue is monitored through the following indicator:

- Share of EU financial contribution that is ICT Research & Innovation related in Horizon 2020 (EUR).

This indicator will allow tracking spending devoted to digital R&I throughout the Programme and will be an important input to the assessment of progress made towards the Digital Single Market objectives. Information regarding the EU financial contribution to ICT R&I outside specific topics is currently missing. The completion of data sets will occur in the first half of 2016 and updated data will be published in the next edition of the Annual Monitoring Report.

[55] Bio-based Industries.

5.11 Private Sector Participation

Private Sector Participation is strongly present in all Programme parts, in particular in relation to public-private partnerships, SME participation (most notably through the SME instrument), Access to Risk Finance and Societal Challenges.

The following indicators have been identified for measuring achievements towards Private Sector Participation.

- Percentage of Horizon 2020 beneficiaries from the private for profit sector;
- Share of EU financial contribution going to private for profit entities (LEIT and Societal Challenges).

As mentioned above, Private-for-Profit entities (PRC) represent more than 60% of the applicants in retained proposals accounting for 6 130 participations or 31% of the total number of participations in signed grants. Private sector participation in the EIT actions is 64%.

Private-for-Profit entities (PRC) received EUR 2 193 million or 26.22% of the total EU contribution to signed grants. Within the LEIT and Societal Challenges cumulative budgets, the share of the EU financial contribution going to private entities is 43.66% (EUR 2 019 million).

Private Sector Participation continues to be important in Horizon 2020. The trend established under FP7, where private for profit organisations accounted for a quarter of the total number of applicants and a third of the total amount of requested EU contribution in retained proposals[56], is confirmed.

5.12 Funding for PPPs and P2Ps

In certain strategic areas, formal partnerships with the private sector and/or Member States are the most effective way to meet the objectives of Horizon 2020 in terms of major societal challenges and industrial leadership. That is why a series of Public-Private Partnerships (PPPs)[57] and Public-Public Partnerships (P2P)[58] under Horizon 2020 with industry and with Member States have been established.

[56] 7th FP7 Annual Monitoring Report 2013.

[57] Seven institutionalised PPPs were launched in 2014: Clean Sky 2, Fuel Cells and Hydrogen 2 (FCH 2), Innovative Medicines Initiative 2 (IMI 2), Electronic Components and Systems for European Leadership (ECSEL replacing ARTEMIS and ENIAC), Bio-based Industries (BBI), Single European Sky Air Traffic Management Research (SESAR) and Shift2Rail. In addition, nine contractual PPPs were already fully operational in Horizon 2020 in 2014. They are: Factories of the Future (FoF), Energy-efficient Buildings (EeB), European Green Vehicles Initiative (EGVI) and, Sustainable Process Industry (SPIRE), Advanced 5G Network

The Commission has developed the following indicators to monitor this cross-cutting issue:

- EU financial contribution for PPP-P2Ps;
- PPP leverage: total amount of funds leveraged through Article 187 initiatives, including additional activities, divided by the EU contribution;
- P2Ps leverage: total amount of funds leveraged through Article 185 initiatives.

For calls closed in 2014, the EU financial contribution to retained proposals for PPPs under Article 187 of the Treaty on the Functioning of the European Union (TFEU) amounted to EUR 286,22 million[59] for 47 retained proposals. The EU financial contribution to retained proposals for contractual PPPs (cPPPs) was EUR 818,6 million for 158 retained proposals. The EU financial contribution to the 207 successful projects in Art. 185 initiatives was EUR 58,5 million while the full public funding to these retained proposals amounted to EUR 178,1 million.

2015 was the first year of actual implementation of the calls launched by Article 187 initiatives. As no grants were signed in 2014, it is not possible to report on the actual investments from industry partners and other sources (e.g. Member States contributions). The first results on the funds leveraged through Art. 187 initiatives will be published in the next Annual Monitoring Report.

The leverage effect resulting from the Article 185 initiatives and ERA-NET Cofund actions for 2014 can be estimated as follows:

- The investment (public funding only) from participating states for successful projects resulting from Art. 185 initiatives calls closed in 2014 is estimated to be EUR 178,1 million, of which the Union contribution is EUR 58,5 million. This corresponds to a leverage effect of 2:1: each euro of EU contribution resulting in the allocation of 2 additional euros from participating states.
- The investment (public funding only) from the participating states in the 11 ERA-NET Cofund actions of 2014 is estimated at EUR 250 million, of which the Union contribution is up to EUR 92,4 million. This corresponds to a leverage effect of 1.7:1. In addition, it is expected that the participating states will mobilise additional funds of

Infrastructure (5G), Robotics, Photonics, High Performance Computing (HPC) and Big Data Value (this latter started fully in 2015).

[58] The four Art.185 initiatives launched in 2014 are the Active and Assisted Living R&D Programme (AAL 2), the European and Developing Countries Clinical Trials Partnership 2 (EDCTP 2), the European Metrology Programme for Innovation and Research (EMPIR) and Eurostars 2 (for SMEs).

[59] This contribution derives from 4 calls launched by Fuel Cells and Hydrogen 2 (FCH 2), Bio-based Industries (BBI) and Electronic Components and Systems for European Leadership (ECSEL replacing ARTEMIS and ENIAC). Calls under Innovative Medicines Initiative 2 (IMI 2) are excluded given that IMI2 integration with the CORDA database is currently incomplete.

at least EUR 200 million in additional calls they organise without Union co-funding, increasing the expected leverage to 3.9:1.

5.13 Communication and Dissemination

Horizon 2020 requires that the Commission implements information and communication actions in support of the programme and identifies a number of specific actions to be supported, awareness-raising of funding opportunities; increasing participation; providing assistance and promoting the dissemination of results, including raising public awareness of the benefits of research and innovation.

Dissemination and exploitation of research results are strongly encouraged in Horizon 2020. Dissemination is making the new knowledge available for others, while exploitation is making use of it – i.e. by the private sector (for commercial exploitation) and the public sector (for policies, regulation and the like).

This cross-cutting issue is measured through the following indicator:

- Dissemination and outreach activities other than peer-reviewed publications.

This is an output indicator, which is based on information reported by Horizon 2020 beneficiaries after the end of a project. Therefore, information is not available in this Annual Monitoring Report.

The legal basis of Horizon 2020 (Article 28) provides also that the programme will contribute to the corporate communication of the Union's political priorities to the extent that they are related to its general objective.

In 2014, Horizon 2020 contributed to a corporate communication pilot campaign, led by DG COMM, with a view to properly highlight, among other EU policies, the role of research, development and innovation in people's everyday life as well as its contribution to growth and jobs. The campaign was launched in 2014 ("EU Working for you") and continued until mid-2015. Through mainstream media it showed the EU's added value in a tangible and lively way, reaching citizens directly. The campaign is part of a general effort to deliver a clearer message about how the EU, through its programmes and policies, helps to achieve economic growth and create jobs.

The campaign was measured through output (115 million people reached during the campaign) and short-term result (28 million people aged 15+ recall seeing at least one ad) indicators.[60]

[60] European Union, Working for you campaign.

5.14 Participation patterns of independent experts

In line with the Horizon 2020 Rules for Participation, independent experts are selected for the evaluation of proposals following an open call for applicants, to individuals, and to organisations. Individuals are selected from the database on a call-by-call basis.

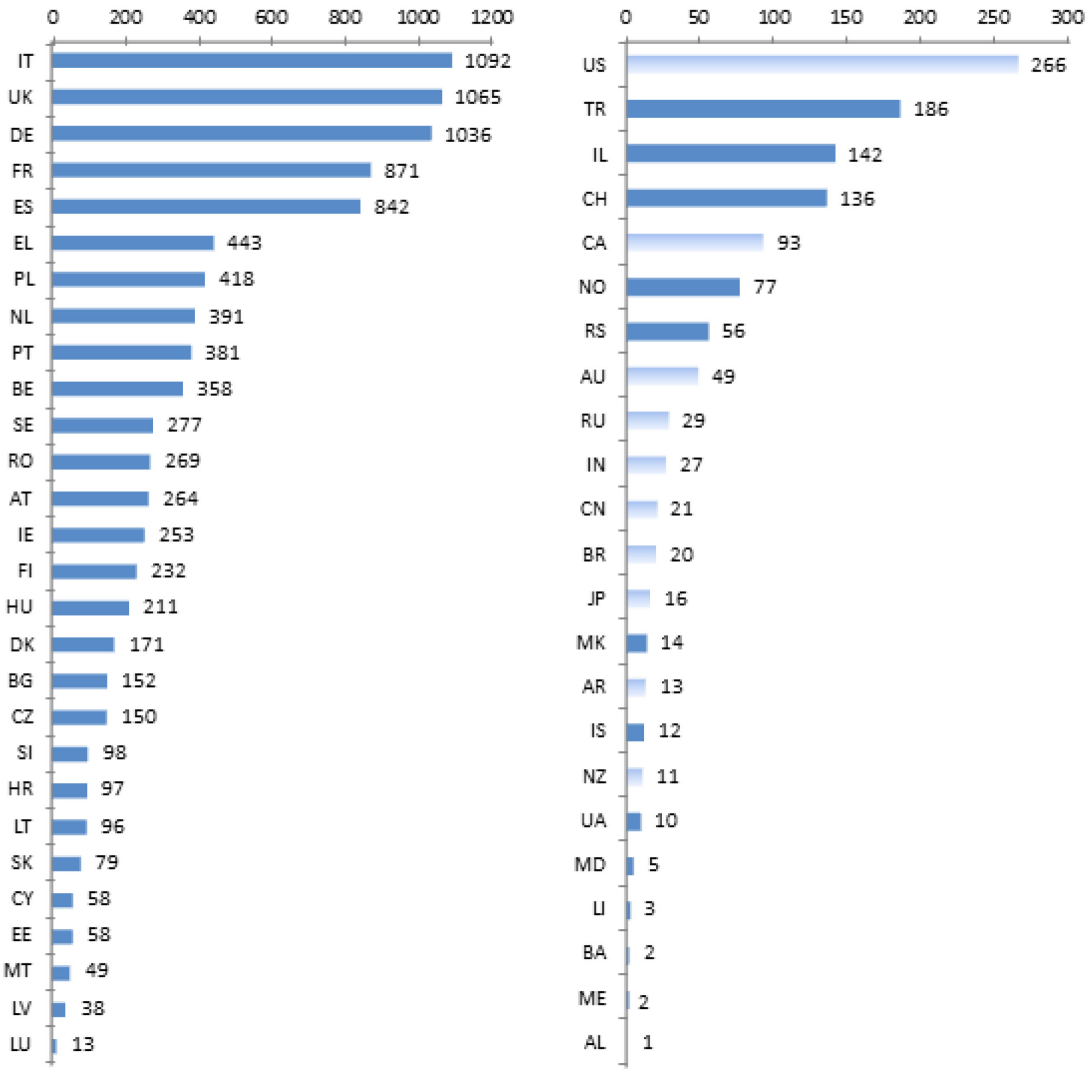
When appointing independent experts, the Commission seeks a balanced composition within the expert groups and evaluation panels in terms of various skills, experience, knowledge, geographical diversity and gender, and taking into account the situation in the field of the action. Where appropriate, a private-public sector balance is sought. Measures are also in place to ensure a healthy turnover of experts.

This cross-cutting issue is measured through the following indicators:

- Proposal evaluators by country;
- Proposal evaluators by organisational type of activity.

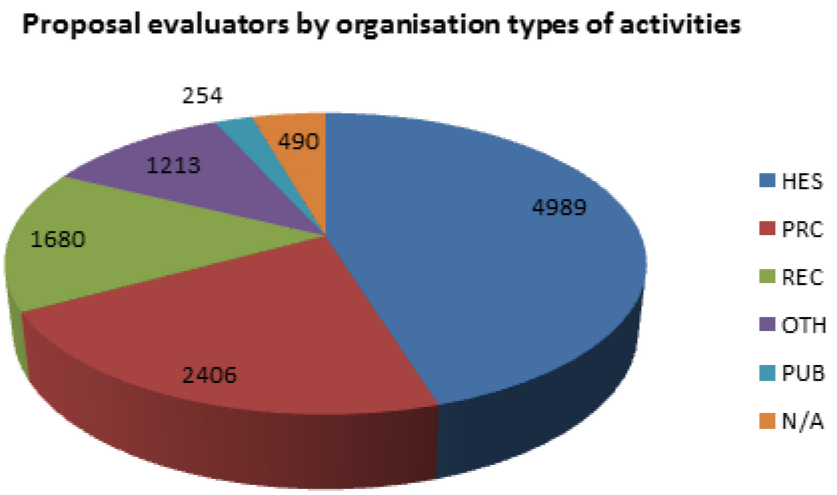
Just above 11 000 evaluators have been implicated in the evaluation of proposals. The graphs below show their distribution both in the EU and in third countries (chart 15).

Chart 15: Proposals' evaluators per country (grand total: 11 032) from the EU-28 (left) and third countries (right)



Evaluators with an academic background (HES) make up a relative majority (45.2%) of the 11.032 evaluators, with more than one fifth of the evaluators (21.8%) coming from the private sector (PRC). 15.2% are from research centres (REC) and 11% from other entities (OTH), while only 2.3% are from public entities.

Chart 16: Proposals' evaluators by organisations' type of activities (grand total: 11 032)



6. EXAMPLES OF PROJECTS FUNDED HORIZON 2020

At this stage of the implementation of Horizon 2020, relatively few projects financed by 2014 calls in Horizon 2020 have been started and the majority of funding is yet to be spent. For illustrative purposes, an exercise was carried out by Commission services to select a number of examples of projects funded that have the potential to bring major technological breakthroughs, in particular with reference to the new strategic focus for Horizon 2020 in order to maximize its contribution to "Open innovation", "Open Science" and "Open to the world".[61] Annex III provides an overview of the most promising stories per specific Work Programme part.

6.1 Examples of projects funded in the area of Open innovation

The CO-PILOT[62] project aims to develop an open access infrastructure for SMEs interested in the production of high quality (multi-)functional nanocomposites on a pilot scale. The field of nanocomposites has made significant progress in recent years (compound annual growth rate of 18%) with many different types of nanocomposites exhibiting radically enhanced properties for a wide range of industrial applications.

[61] Communication on the Response to the Report of the High Level Expert Groups on the Ex Post Evaluation of the Seventh Framework Programme, COM (2016) 5 final, p.5.

[62] CO-PILOT - Flexible pilot scale manufacturing of cost-effective nanocomposites through tailored precision nanoparticles in dispersion (H2020-NMP-PILOTS–2014). More information on: http://www.h2020copilot.eu

The development of the pilot plant infrastructure will be achieved by including different types of nano-composites as model systems. CO-PILOT aims to set new standards for high-quality nanoparticle production with the assistance of in-line nanoparticle dispersion quality monitoring. The project started in January 2015 and will last for three years.

The P4SB project[63] aims at a sustainable and environmentally friendly bioconversion of oil-based plastic waste into fully biodegradable counterparts by means of deeply engineered, whole-cell bacterial catalysts. This addresses the market need for novel routes to valorise the gigantic plastic waste streams in the European Union and beyond, with direct opportunities for SME partners of P4SB spanning the entire value chain from plastic waste via Synthetic Biology to biodegradable plastic. The expected result is a full biobased process which will reduce the environmental impact of plastic waste and create a second generation carbon source for industrial biotechnology. This could generate new opportunities for the European plastic recycling industry and help to achieve the ambitious recycling targets set by the European Union for 2020.

The key objectives of CPVMatch project[64] are to realise solar cells and modules working at a concentration level with a high efficiency. The combination of ultra-high efficient cells and optical concentration will allow to significantly reduce the costs of solar electricity and to reduce the environmental impact.

6.2 Examples of projects funded in the area of Open science

GEANT 2020[65] is a framework partnership agreement (FPA) that is expected to deliver the most advanced and reliable backbone network in the world for supporting 50 million researchers and students in 10 000 institutions across 40 countries in Europe and with an additional global reach of 65 countries. It is also expected to pioneer federated access to informatics resources as a ba sis for Open science.

50 partners, from all EU countries and beyond, collaborate under OpenAIRE2020[66], a large-scale initiative aiming at promoting open scholarship and substantially improving the discoverability and reusability of research publications and data. It combines networking capacities and technical capabilities in order to deliver a robust infrastructure to support the European Open Access policies and to increase the impact of European public research funding.

[63] P4SB - From Plastic waste to Plastic value using Pseudomonas putida Synthetic Biology (H2020-LEIT-BIO-2014-1) More information on: http://www.p4sb.eu

[64] CPVMatch - Concentrating Photovoltaic modules using advanced technologies and cells for highest efficiencies (H2020-LCE-2014-1). More information on the project's website: https://cpvmatch.eu/

[65] H2020-EINFRA-2014-2

[66] Open Access Infrastructure for Research in Europe 2020 (H2020-EINFRA-2014-1).

The overall objective of PLOTINA[67] is to enable the development, implementation and assessment of self-tailored Gender Equality Plans (GEPs) with innovative and sustainable strategies for the Research Performing Organizations (RPOs) involved. This objective will be achieved by: (i) stimulating a gender-aware culture change; (ii) promoting career-development of both female and male researchers to prevent the waste of talent, particularly for women; (iii) ensuring diversification of views and methodologies (in this case by taking into account the gender/sex dimension and analysis) in research and teaching.

In context of the European economic crisis, ADEMEU project[68] is at the frontier of dynamic macroeconomic research, and the project is expected to generate new knowledge that will be used to provide a rigorous assessment of the current institutional framework, and detailed proposals for improving it. It is expected tp also be a focal point in debates among academics, policymakers and other stakeholders regarding the implementation of new policies. The scope of the project will include a full consideration of political economy and legal dimensions to alternative institutional reforms.

6.3 Examples of projects funded in the area of Openness to the world

The BODEGA project[69] will investigate and model Human Factors in border control to provide innovative socio-technical solutions for enhancing border guards' performance of critical tasks, support border management decision-making, and optimize travellers' border crossing experience. BODEGA will develop a toolbox which integrates the solutions for easy adoption of the BODEGA's results by stakeholders in border control. This toolbox will integrate ethical and societal dimensions to enable a leap of border control towards improved effectiveness and harmonisation across Europe.

The EVIDENT project[70] highlights the opportunity Horizon 2020 provides in reacting to public health emergencies with appropriate and ad-hoc mobilisation of research funding. EVIDENT is one of the five projects funded under the Ebola Emergency Procedure. The project aims to study interactions between the Ebola virus and the host which will provide answers regarding the pathophysiology and transmissibility of the disease, and will help better guide the planned clinical trials on vaccines and potential treatments, as well as the management of patients. EVIDENT has also identified novel biomarkers of outcome with potential to be used in clinical management, to inform current vaccine trials, and to develop post-exposure immunotherapy against Ebola.

[67] PLOTINA - Promoting gender balance and inclusion in research, innovation and training (H2020-GERI-2014-1)

[68] ADEMEU - Resilient and sustainable economic and monetary union in Europe (EURO-1-2014).

[69] BODEGA – BordDErGuArd: Proactive Enhancement of Human Performance in Border Control" (H2020-BES-2014)

[70] EVIDENT – Ebola Virus Desease (H2020-Adhoc-2014-20). More information on: http://evident-project.eu/

The goal of the TRUST Project[71] is to catalyse a global collaborative effort to improve adherence to high ethical standards around the world. TRUST will open up new horizons in improving adherence to high ethical standards in research globally. The project's strategic output are three sets of tools based on participatory engagement covering all continents: (i) a global code of conduct for funders, (ii) a fair research contracting on-line tool and (iii) a compliance and ethics follow-up tool, which takes limited resources into account.

7. RESULTS OF THE STAKEHOLDERS' SURVEY

In September 2015, the Commission services carried out the annual survey of Horizon 2020 National Contact Points (NCPs) of EU Member States and third countries. NCPs provide highly professional support services for potential beneficiaries and are an essential component of Horizon 2020 implementation. The annual survey of National Contact Points is one of the key elements of the Annual Monitoring Report, as it focusses on the achievements of the overall objectives of Horizon 2020 as perceived and observed at national and/or regional level. However, the views expressed in this survey are limited to NCPs and cannot be considered as representative of the whole stakeholder community.

The aim of this NCP survey was to collect views, comments and suggestions on Horizon 2020 participation and implementation issues. In particular, the survey covered questions on the attractiveness of the Programme for stakeholders; on the relevance of Horizon 2020 objectives with Research and Innovation needs and in relation to the EU-2020 strategy; on the coherence with other EU funding sources and on the added value of the EU intervention.

The questionnaire was sent to 1 050 NCP from all 28 Member States, 14 associated countries and 86 third countries. 349 answers were received which means a response rate of 33,2 %. The highest number of answers came from France 44 (12.6 % of the total) followed by Spain 23 (6.5%) and Germany 22 (6.3 %), Norway and Italy with 12 (3.4 %), while non-associated third countries have contributed collectively with 14 answers (4,01%).

The survey has helped to identify some interesting trends.

According to the respondents, cooperation between science and society (71%) and between science and business (86%) is well addressed. The majority of respondents expressed a positive opinion on Horizon 2020 ensuring a right balance between participation from universities, business-oriented and other research institutes (61%). There is a strong agreement that Horizon 2020 improves participation from the private sector (73%) and SMEs (75%). 60.7% recognize that Horizon 2020 ensures adequate opportunities for public-private

[71] TRUST - Creating and enhancing TRUSTworthy, responsible and equitable partnerships in international research - H2020-GARRI-2014-1

partnership, though participation from newcomers (32%) and young researchers (51%) is not adequately stimulated.[72]

In relation to the cross-cutting issues, Horizon 2020's perceived contribution to the ERA is fairly positive ('agree' and 'strongly agree' above 60% of the replies on average for three questions). The gender balance is seen positively or very positively by almost 70% of the respondents as well as the integration of the gender dimension in research context (62%). Less than 50% think that Horizon 2020 adequately supports Social Science and Humanities (SSH) and Responsible Research and Innovation (RRI) (45% and 47% respectively).

The NCPs have also been asked to express their opinion on the contribution of Horizon 2020 to growth and jobs, which are part of the Juncker Commission's political priorities. NCPs are, however, one specific group of stakeholders in the Horizon 2020 context and cannot be considered as expressing a representative opinion on the political priorities. The NCPs have given a medium-to-low rate to the ability of Horizon 2020 to support jobs, growth and investment (35% of respondents 'agree' or 'strongly agree') and to develop the Digital Single Market (32%), while figures are stronger in relation to boosting the Energy Union and fighting Climate Change (51%), as well as in making Europe a stronger global actor (60%).

Regarding the complementarity with other EU activities, Horizon 2020 is seen as matching well the Europe 2020 priorities (66% of respondents rate it 'high' or 'very high' and less than 3% 'low' or 'very low') but the relations with ESIF and EFSI are perceived significantly less well (22% had a 'high' or 'very high' perception of this complementarity), with a strong component perceiving it 'low' or 'very low' (24% for ESIF and 21% for EFSI) while the majority have 'average' (31% and 26% respectively) or 'no opinion' at all (22% and 30%). Again it should be reminded that these views, limited to NCPs, cannot be considered as representative of the whole stakeholder community.

The majority of the respondents (73%) 'agrees' or 'strongly agrees' that Horizon 2020 has widened participation of all Member States (10% 'disagree' or 'strongly disagree') while 58% have a positive perception of Horizon 2020's role in promoting participation of regional actors (with a more uncertain 30% that 'neither agree nor disagree') or international participation (50% 'agree' or 'strongly agree'). The NCPs attribute a significant role to Horizon 2020 in shaping national and regional R&I policy in 55.7% of the replies, with an additional 33.5% that rate this role as 'average'. The EU added value of Horizon 2020 is 'high' or 'very high' for 68% of the respondent and for only 4% it is 'low' or very 'low'.

A full overview of the survey results can be found in Annex II.

[72] The percentages indicate the share of positive ('agree' and 'high') and very positive ('strongly agree' and 'very high') values.

8. FP7 RESULTS

While Horizon 2020 is up and running, the projects financed through the FP7 are still producing results. The Commission is no longer under legal obligation to publish an annual monitoring report of FP7. However, given the significant results and impacts that FP7 projects can still produce, the Commission services will continue to report on FP7 in the Annual Monitoring Reports of Horizon 2020.

This section will focus on participation patterns related to FP7 projects whose grant agreements were signed in 2014, based on e-CORDA extraction date of 11 November 2015. It also presents updated figures regarding the 9 FP7 indicators.

8.1. FP7 Participation Patterns in 2014

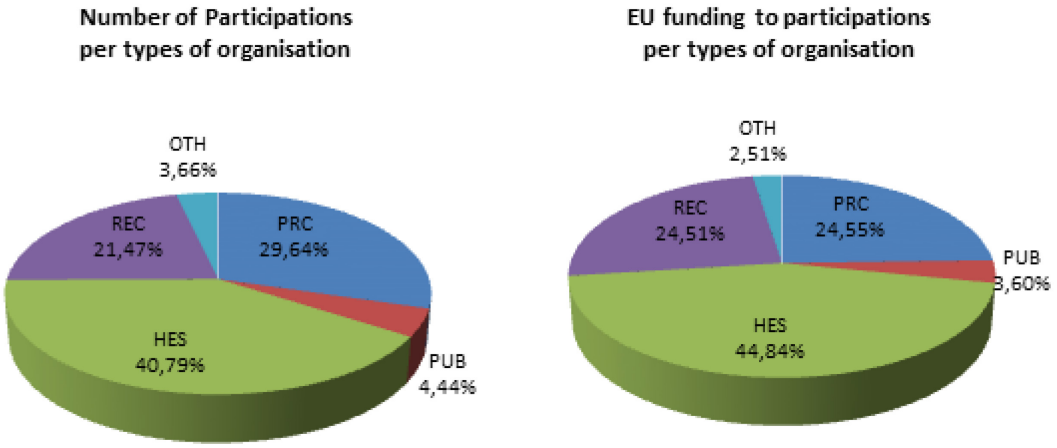
The number of FP7 projects signed in 2014 was 2 274, including 5 817 participations. The EU financial contribution to these projects amounted to EUR 2 939,41 million. As shown in table 4 below, the PEOPLE Programme accounted for over half of the signed grants in 2014 (1 375), followed by the IDEAS Programme (531). COOPERATION Programme included more than half of the number of participations (2 993 grant holders) in these signed grants. More than 80% of the EU contribution to grants signed in 2014 went to COOPERATION and IDEAS Programmes, with projects under Cooperation Programme receiving the highest share of EU funding to signed grants on average, while projects in Ideas Programme had the highest share on of EU funding per grant holders on average.

Table 4: FP7 grants signed in 2014

SPECIFIC PROGRAMME	NUMBER OF SIGNED AGREEMENT	NUMBER OF GRANT HOLDERS	EU FUNDING TO SIGNED GRANTS (million EUR)	AVERAGE EU FUNDING TO SIGNED GRANTS (million EUR)	AVERAGE EU FUNDING TO GRANT HOLDERS (million EUR)	TOTAL PROJECT COST (million EUR)	EU FUNDING IN % OF PROJECT COST
COOPERATION	283	2993	1351,54	4,78	0,45	3199,95	42,24%
IDEAS	531	661	1056,62	1,99	1,60	1.057,46	99,92%
PEOPLE	1375	1500	415,20	0,30	0,28	564,16	73,60%
CAPACITIES	82	631	111,54	1,36	0,18	146,68	76,04%
EURATOM	3	32	4,50	1,50	0,14	6,66	67,57%
TOTAL	2274	5817	2937,41	1,29	0,50	4974,91	59,04%

More than one third (2 373) of all participations were from Secondary and Higher Education Establishments Organisations (HES), who also received the most significant share (EUR 1317,97 million) of the EU funding to grants signed in 2014. Private for profit (PRC) entities had a higher number of participations (1 724) compared to non-profit Research Organisations (REC) (1 249) though the EU contribution to PRC and REC was almost equivalent (EUR 721,50 million and EUR 720,36 million respectively). The SMEs participations were 1 010 or 17.36% of the total grant holders and the EU contribution to SMEs was EUR 331,02 million (the average funding to SME grant holder is 0,33 million).

Chart 17: Distribution of participations and EU contribution to participations by types of organisation



Regarding the distribution of participations per country, the cumulative number of participations from entities based in one of the EU-28 Member States was 5 187. Associated and candidate countries obtained 508 participations (mainly from Switzerland, Norway, Israel and Turkey) and third countries had 122 participations (of which 12 from the United States and Ukraine, 9 from China).

In terms of EU funding received by entities per EU Member States, the table 5 below provides figures on the total EU funding from FP7 projects signed in 2014, as well as a comparative figure of EU funds received per inhabitant and as a percentage of the Member States' Gross Domestic Expenditure in R&D (GERD) (2014 data):

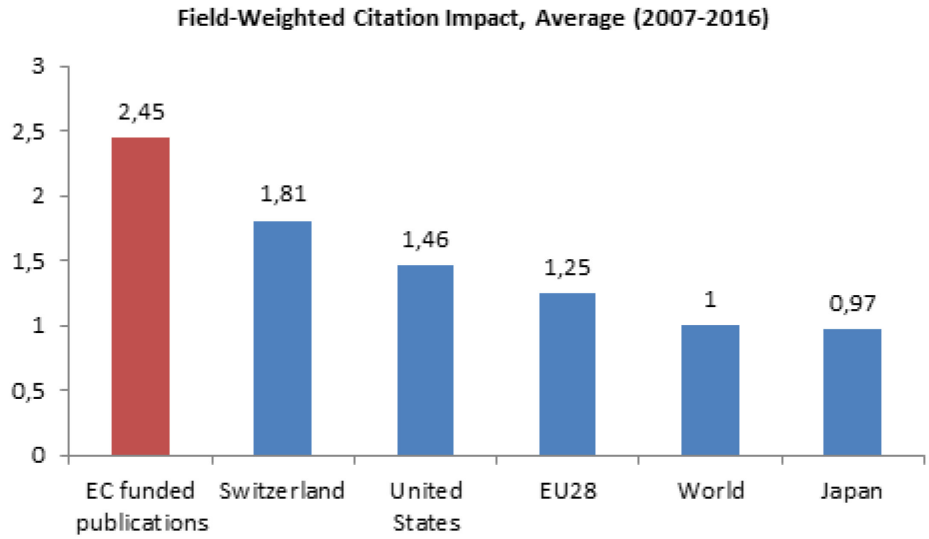
Table 5: Distribution of EU funding per Member State (2014 data)

EU Funding from FP7 projects signed in 2014					
	Total (in EUR million)	**per inhabitant (in EUR)**	**Number of inhabitants**	**per million EUR of GERD**	**GERD (in EUR million)**
EU-28	**2.615,17**	**5,15**	**508.191.116**	**0,92%**	**283.009**
Austria	69,82	8,13	8.584.926	0,71%	9.833
Belgium	147,01	13,06	11.258.434	1,49%	9.875
Denmark	72,74	12,85	5.659.715	0,91%	7.952
Finland	45,83	8,38	5.471.753	0,70%	6.512
France	412,28	6,21	66.352.469	0,86%	48.108
Germany	331,47	4,08	81.174.000	0,40%	82.866
Greece	40,03	3,70	10.812.467	2,70%	1.482
Ireland	39,02	8,43	4.625.885	1,36%	2.871
Italy	222,56	3,66	60.795.612	1,07%	20.770
Luxembourg	4,55	8,09	562.958	0,74%	614
Netherlands	262,82	15,55	16.900.726	2,01%	13.075
Portugal	33,60	3,24	10.374.822	1,51%	2.229
Spain	223,54	4,81	46.439.864	1,76%	12.725
Sweden	118,42	12,15	9.747.355	0,87%	13.612
United Kingdom	496,17	7,66	64.767.115	1,29%	38.323
EU-15	**2.519,86**	**6,24**	**403.528.101**	**0,93%**	**270.847**
Bulgaria	1,92	0,27	7.202.198	0,57%	335
Croatia	5,34	1,26	4.225.316	1,57%	340
Cyprus	7,36	8,69	847.008	8,90%	83
Czech Republic	8,63	0,82	10.538.275	0,28%	3.091
Estonia	10,61	8,08	1.313.271	3,71%	286
Hungary	18,68	1,90	9.849.000	1,31%	1.429
Latvia	1,10	0,56	1.986.096	0,68%	163
Lithuania	1,76	0,60	2.921.262	0,48%	370
Malta	1,09	2,55	429.344	1,62%	67
Poland	12,56	0,33	38.005.614	0,33%	3.864
Romania	11,63	0,59	19.861.408	2,02%	575
Slovakia	8,26	1,52	5.421.349	1,23%	670
Slovenia	6,37	3,09	2.062.874	0,72%	890
EU-13	95,31	0,91	104.663.015	0,78%	12.162

8.2. FP7 publications added value

Excellence was the overarching aim of FP7.

The effectiveness of the programme and its EU added value is demonstrated by the fact that the Field-Weighted Citation Impacts[73] of FP7 funded publications is almost two times higher than the one of an average EU publication and higher than the one observed in Switzerland, USA and Japan.



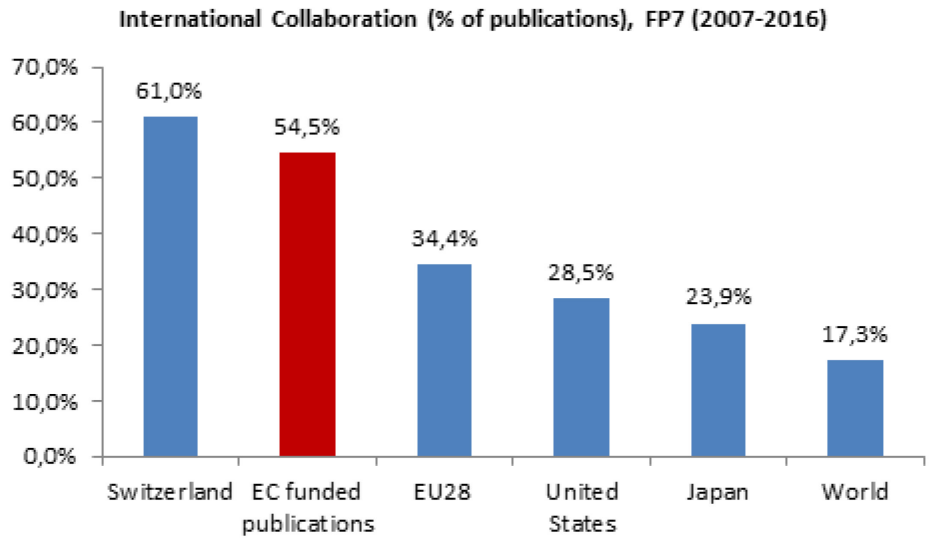
Source: SciVal based on Corda-Sesam-Respir data[74]

FP7 also strongly supported International Collaboration[75] which resulted in significantly more publications co-authored at international level (54.5%) than the EU and world averages (34.4% and 17.3% respectively).

[73] Field-weighted citation impact divides the number of citations received by a publication by the average number of citations received by publications in the same field, of the same type, and published in the same year.

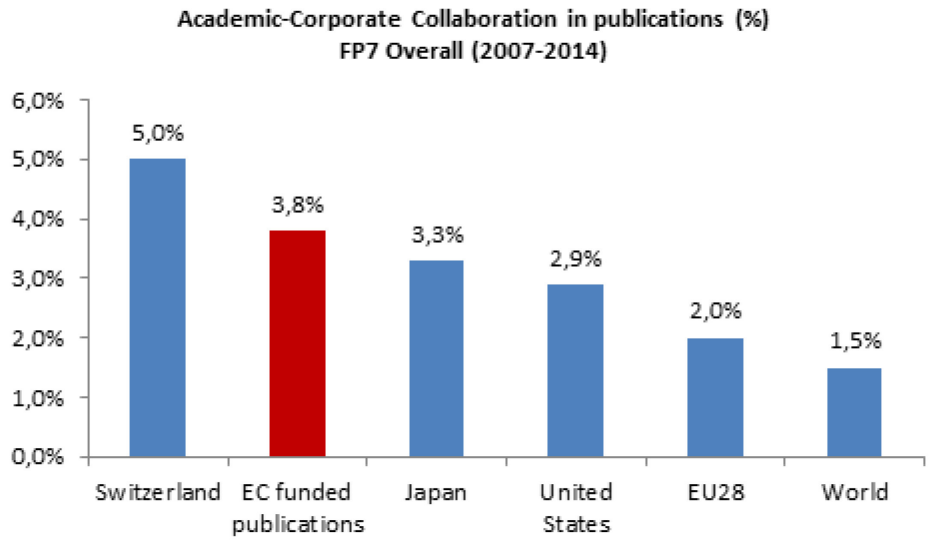
[74] The analysis was made with SciVal using Scopus database. The Scopus database maintained by Elsevier covers around 51 million records from 22 000 peer- reviewed journals "in the fields of science, technology, medicine, social sciences, and arts and humanities" going back to 1995. Only those publications which were validated by a digital object identifier (DOI) and identified in the Scopus database are counted. This represents about 80 % of all publications which have been reported.

[75] The International Collaboration is defined as international co-authorship in publication.



Source: SciVal based on Corda-Sesam-Respir data

Finally, FP7 publications score higher than the rest of the world in terms of share of Academic-Corporate Publications[76] demonstrating FP7's capacity to attract authors from the private sector.



Source: SciVal based on Corda-Sesam-Respir data

[76] Academic-Corporate Collaboration indicates publications with both academic and corporate affiliations.

8.3. State of play on FP7 indicators

Indicator		Target	Results/latest state of play
1	Projects that achieved all or most of their objectives…	90% (by 2013)	98 %[77]
2	... of which projects that achieved all of their objectives	75% (by 2013)	47 %[68]
3	Share of EU financial contribution to Industry (*)	The target depends on the specific thematic area under the Specific Programme "Cooperation" (between 40% for NMP and 3 % for SSH) (by 2013)	24.6 %[78]
4	Share of EU financial contribution to SMEs	15% (by 2013)[79]	17.4 %[80]
5	Projects producing specific outputs disseminated to policy makers	75% (by 2013)	95%[81]
6	Number of international prizes and awards to ERC grant holders	200 (by 2020)	134[82]
7	Number of scientific publications by ERC grant holders	~40,000-60,000 (by 2020)	~20,000[83]
8	Number of international scientific users having benefited from access to Research Infrastructures	30,000 (by 2013)	18,300[72]
9	Percentage of users satisfied with services offered by research infrastructures participating in Integrating Activities (good to very good overall appreciation)	>97% (by 2013)	97%[72]

[77] Source: CORDA/SESAM, Sep 2015.

[78] Source: CORDA, Oct 2014.

[79] For the budget of the Cooperation SP, the following activities are not included: grants to the European Space Agency (ESA), JTIs, General Activities such as the CORDIS services, the horizontal ERA-NET scheme, research organisations in the EU, strengthened coordination with EUREKA, scientific and technological cooperation activities carried out in the COST and the European Metrology Research Programme.

[80] Source: AAR 2013, Oct 2013.

[81] Source: AAR 2013, Nov 2013.

[82] Source: AAR 2013, July 2013.

[83] Source: AAR 2013, Dec 2013.

9. CONCLUDING REMARKS

The first Annual Monitoring Report under Horizon 2020 is a comprehensive publication encompassing the analysis of the implementation of Horizon 2020 through its calls closed in 2014. It helps identifying the most important issues related to performance as measured by the Key Performance Indicators, implementation aspects and participation trends.

Regarding **performance**, the first Report only covers the results on a limited number of Key Performance Indicators, given that it is too early to report on most of these output and results indicators. At this very early stage of implementation of Horizon 2020, the focus of this exercise has been mainly based on input indicators, while output and results of the Programme will build on the outcome of completed projects. 2014 has also been a year of transition from FP7 to Horizon 2020 and the Report presents achievements of some of the key improvements established by Horizon 2020, notably in terms of simplification.

Implementation aspects have shown the good result achieved in terms of reduction in Time-to-Grant compared to FP7, but it also shows that further effort is needed in order to ensure **data quality and gathering processes**, in line with a more strategic and professional monitoring and evaluation system that the Commission is currently building.

Special attention has been paid to the following participation trends:

a) **Oversubscription**: Horizon 2020 is a very attractive programme, as demonstrated by the high number of eligible proposals (33 792) and applications (122 713). The success rate of Horizon 2020 is 13.39%. The oversubscription is particularly evident when looking at the success rate in FP7, where this percentage was 19% on average over the seven years.

b) **EU-28 participation rates**: Legal entities based in one of the EU Member States (EU-28) have submitted 86.7% of the total number of applications in eligible proposals. In terms of EU funding for signed grants allocated to Member States, almost 75% of the total financial contribution resulting from calls for proposals went to 6 EU-15 countries (Germany, the United Kingdom, France, Spain, the Netherlands and Italy), while the cumulative contribution to EU-13 countries is 4.57%. If calculated on the basis of the 2014 national Gross Domestic Expenditure in Research & Development (GERD), the contribution of Horizon 2020 constitute a significant share of EU-13 countries investment in R&D.

c) **Public-Private and Public-Public Partnerships**: While it has not been possible to report on the actual investments from industry partners and other sources in PPPs, the investment from participating states in Art. 185 initiatives is estimated in EUR 178,1 million, of which the Union contribution is EUR 58,5 million. This corresponds to a leverage effect of 2:1: each euro of EU contribution resulting in the allocation of 2 additional euros from participating states; in the 11 ERA-NET Cofund actions of 2014, the investment from participating states is estimated at EUR 250 million, of

which the Union contribution is up to EUR 92,4 million. This corresponds to a leverage effect of 1.7:1. In addition, it is expected that the participating states will mobilise additional funds of at least EUR 200 million in additional calls they organise without Union co-funding, increasing the expected leverage to 3.9:1.

Progress on the **cross-cutting issues** has been assessed, with a particular focus on Sustainable Development, Climate Change and Biodiversity. For Horizon 2020 calls closed in 2014, the EU financial contribution for Sustainable Development, Climate Change and Biodiversity amounted respectively to EUR 3 493 million (46% of the tracked budget), EUR 1 995 million (24% of the tracked budget) and EUR 317 million (4% of the tracked budget). In 2014, the targets were therefore not reached, even if programmable actions were very close to the climate target (32% instead of 35%) and relatively close for sustainable development (50% instead of 60%). The Commission is already measures to improve these figures, and will align the tracking methodology to the UN's newly adopted Sustainable Development Goals.

This first Annual Monitoring Report of Horizon 2020 shows that the implementation of Horizon 2020 contributes to the new strategic focus for Horizon 2020 in order to maximize its contribution to "Open innovation", "Open Science" and "Open to the world".

Horizon 2020 has fostered **Open Innovation**: Private-for-Profit entities (PRC) represent more than 60% of the applicants in retained proposals and have tabled 6 130 participations, or 31% of the total number of participations in signed grants, receiving EUR 2 193 million or 26.22% of the total EU contribution to signed grants. Within LEIT and Societal Challenges cumulated budget, the share of EU financial contribution going to private entities is 43.66% (EUR 2 019 million).

Statistical results for 2014 show that 23.09% (EUR 1 068 million) of the 2014 budget allocated to LEIT and Societal Challenges (EUR 4 624 million) is allocated to SMEs, meaning that the 20% target has been reached. In line with Horizon 2020, 5,51% (EUR 255 million) of the total combined budgets for the specific objective LEIT and the priority 'Societal challenges' was allocated to signed grants from the dedicated SME instrument in 2014. Progress towards meeting the 7% target is therefore well on track.

Horizon 2020 has promoted **Open Science** with frontier research under the European Research Council (ERC), amounting to a financial contribution of EUR 1 734 million, EUR 220 million for Future and Emerging Technologies (FET), **Marie Skłodowska-Curie Actions** (MSCA) have received funding for EUR 864 million and Research Infrastructures projects for EUR 391 million.

Overall, 6% of the budget went to SSH partners and SSH partners account for 26% of the total number of consortia partners in projects funded under topics flagged for SSH. The gender dimension was explicitly mentioned in 63 topics to inform the potential applicants about the importance of taking into account the biological characteristics and/or the social/cultural features of both women and men in their proposals.

Horizon has contributed for the EU to remain **Open to the World**. Common global societal challenges, like health, food, energy, transport, climate change, make international

cooperation an increasingly important dimension because science and innovation can present technological solutions for sectoral policies and foreign affairs. While the overall third country participation is lower compared to FP7, Horizon 2020 themes are more suitable and targeted to international cooperation activities compared to the FP7: the share of budget of topics where international cooperation or a specific third-country or region was specifically mentioned in the call text has increased from 12% (FP7 baseline) to 22% in October 2015.

The next edition of the Annual Monitoring Report will keep analysing these trends, focussing in particular on changes occurred compared to previous Horizon 2020 implementation years.