



# Member States in the EU Research and Innovation Framework Programmes

Dina Bērziņa

University of Latvia, Institute of Atomic Physics and Spectroscopy, Raiņa blvd.19, Riga, Latvia  
Corresponding author email: [Dina.Berzina@lu.lv](mailto:Dina.Berzina@lu.lv)

## Abstract

Sustainable growth is the key driver of development and it depends on research and innovation which creates investment opportunities for new and better products and services and thereby increases the competitiveness and employment. Research has a long history on our old continent: the European Union is a research think-tank, still the world's leading producer of scientific knowledge but is lagging in implementation of the results. Therefore, constitution of the Framework Programmes enabled better coordination of research among all the participating countries. The EU Framework Programmes celebrated 30 years of operation recently – they have become a key element of the research policy in Europe today. Since the First Framework Programme launched in 1984, the current Horizon 2020 has expanded in scope and scale by attracting more resources and participating countries performing research on diverse topics. This paper provides an overview of the EU Member States' engagement with emphasis on the two last Framework Programmes. It outlines the current disproportion with respect to different country group performance and provides links to various data sources for further studies.

**Keywords:** European Research programmes, Horizon 2020, IT tools, Research and Innovation, Success rates.

## 1. Introduction

Permanent improvement of living conditions is a natural desire of a person. Simple 'Eureka!' is no longer enough for our technological age; therefore researchers, engineers, designers and other professions combine efforts for the improvement of our well-being. However, some financing would be needed for implementation of the planned research and innovation activities. This paper provides an insight into the first step – where to get funding for research and how successful these attempts are.

There are plenty of funds and possibilities around. WelcomeEurope portal (<https://www.welcomeurope.com>) provides information on all the available funding opportunities for the particular moment of search. Resources available for research activities exceed 100 options – easy to get lost. However, by applying search tools, anyone can come up with the largest EU funds available for researchers:

- **Horizon 2020** – the most visible instrument for consolidating the research and innovation activities across Europe and beyond at the same time generating the added-value for each participating country (<https://ec.europa.eu/programmes/horizon2020/>);
- **Structural funds** – European Structural and Investment Funds for supporting economic, social and territorial cohesion for smart, sustainable and inclusive growth ([http://ec.europa.eu/regional\\_policy/en/funding/](http://ec.europa.eu/regional_policy/en/funding/));
- **Life** – financial instrument for the environment, nature conservation and climate action promoting demonstration and implementation of new techniques and methods after the research phase thus contributing to EU environmental and climate policy and legislation (<http://ec.europa.eu/environment/life/funding/life.htm>);

- **Interreg** – European Territorial Cooperation consisting of several programmes with specified eligible countries and regions for each of them (<https://interreg.eu/about-interreg/>);
- **Erasmus+** – programme supporting education, training, youth and sport in Europe providing opportunities for a wide variety of individuals and organisations (<https://ec.europa.eu/programmes/erasmus-plus/>).

On 11 January 2018 the European Commission published Horizon 2020 Interim Evaluation and accompanying documents [1]. Further outline is dedicated to analysis of the results and their comparison by means of IT tools from different perspectives for opting – where and with whom to propose next?

## 2. Overview of the Horizon 2020 participation

The Horizon 2020 Framework Programme (Horizon 2020) is structured around 'three pillars': Excellent science, Industrial leadership, and Societal challenges, each having their own specific objectives. Furthermore, it has several additional priorities and implementing institutions: 'Spreading excellence and widening participation', 'Science with and for society' and EurAtom programmes, as well as Joint Research centre (JRC) and European Institute of Technology (EIT) with their own broad lines of actions. Horizon 2020 has significant advantages over the national and regional support for research and innovation (R&I) as in addition to the financial support, it contributes also to the international cooperation for addressing European and global challenges.

Horizon 2020 is opened for participation to all countries, but funding eligibility depends on the country group – funding can be obtained by all legal entities established in Member States of the European Union, including Overseas Countries and Territories; associated countries (the list is permanently updated at

([http://ec.europa.eu/research/participants/data/ref/h2020/grants\\_mannual/hi/3cp/h2020-hi-list-ac\\_en.pdf](http://ec.europa.eu/research/participants/data/ref/h2020/grants_mannual/hi/3cp/h2020-hi-list-ac_en.pdf); accessed 18.04.2018) and 'third' countries (the list is available at [http://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2018-2020/annexes/h2020-wp1820-wp1820-annex-a-countries-rules\\_en.pdf](http://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2018-2020/annexes/h2020-wp1820-wp1820-annex-a-countries-rules_en.pdf); accessed 18.04.2018). Further, Horizon 2020 complies also with EU Restrictive measures (sanctions) in force ([http://ec.europa.eu/dgs/fpi/documents/Restrictive\\_measures-2017-08-04-clean\\_en.pdf](http://ec.europa.eu/dgs/fpi/documents/Restrictive_measures-2017-08-04-clean_en.pdf); accessed 18.04.2018).

The results for all Framework Programmes are available and permanently updated (for running/completed projects) on the European Commission Community Research and Development Information Service (CORDIS, <http://ec.europa.eu/research/participants/portal/desktop/en/projectresults/index.html>; accessed 18.04.2018).

However, researchers have varied views on applying for funding options – ones prefer national funding for less bureaucracy, others look for Horizon 2020 (for less bureaucracy, as well). One is clear:

being a coordinator of the Horizon 2020 research project – is prestigious and a key reference for the recognition outside the European Union.

On overall, the participants have acknowledged that Horizon 2020 has higher added value than any other national and/or regional programme as 83% of projects would not have gone ahead without the Horizon 2020 funding [2]. However, not all the countries use an opportunity for shaping the future of Framework Programmes through stakeholders' consultations. The involvement of some underrepresented countries in the Horizon 2020 (e.g.: Bulgaria, Check Republic, Hungary, Latvia Lithuania, Poland, Romania, and Slovakia) could be more enthusiastic as every stakeholder answer counts without competition for excellence or recognition of expertise. It should be noted that most stakeholder respondents represent industry including small and medium-sized enterprises (SME), although most of the participants are from the Higher Education Establishments (HES) [2].

**Table 1:** Survey on EU Member States' Horizon 2020 performance

Country	Share of particip. 2018, %	Appl. success 2018, %	Coord. success 2018, %	Share of coord. 2018, %	Share of H20 contrib. 2018, %	Population 2017, %	Share of res. FTE 2016, %	H20 contrib. per thous. res. FTE	GERD 2016	H20 contrib. per thous. GERD
AT	2.8 =	16.9	15.3	2.5 =	2.7 ↓	1.7	2.4	17.6 ↓	3.9 ↑	55
BE	4.6 ↑	17.5	15.4	3.5 ↑	4.7 =	2.2	2.9	25.6 ↓	2.5 ↑	96
BG	0.5 ↓	9.6	3.0	0.2 =	0.2 ↑	1.4	0.9	3.6 ↓	0.8 ↓	69
HR	0.4 ↓	11.9	4.7	0.1 =	0.2 =	0.8	0.4	6.7 ↓	0.8 ↓	86
CY	0.5 ↑	11.7	9.7	0.4 =	0.4 ↑	0.2	0.05	124.7 ↑	0.5 =	769
CZ	1.1 ↓	14.1	7.2	0.5 ↑	0.7 ↑	2.1	2.0	5.1 ↓	1.7 ↓	40
DK	2.3 ↑	14.7	13.6	3.1 ↑	2.5 ↑	1.1	2.3	16.7 ↓	2.9 ↓	62
EE	0.5 ↓	13.0	10.9	0.5 ↓	0.3 =	0.3	0.2	21.2 ↑	1.3 ↓	218
FI	2.1 ↑	13.7	8.8	2.0 ↑	2.2 ↑	1.1	1.9	17.7 ↑	2.8 ↓	71
FR	9.1 ↑	17.2	13.8	9.2 ↑	10.6 ↑	13.1	15.2	11.5 ↓	2.2 =	43
DE	12.6 ↑	16.3	14.5	11.2 ↓	16.2 ↓	16.2	21.4	11.8 ↑	2.9 =	40
EL	3.0 ↑	12.8	9.7	2.0 ↑	2.3 ↑	2.1	1.6	22.4 ↓	1.0 =	258
HU	0.9 ↓	11.0	5.3	0.7 =	0.6 ↑	1.9	1.4	7.0 ↓	1.2 ↓	72
IE	1.7 ↑	14.7	13.6	2.2 ↓	1.8 ↑	0.9	1.4	19.5 ↓	1.2 ↓	122
IT	9.5 ↓	12.2	7.9	8.9 ↓	8.3 ↓	11.8	6.8	19.0 ↓	1.3 =	76
LV	0.3 ↓	12.3	5.4	0.2 =	0.2 ↑	0.4	0.2	14.7 ↑	0.4 ↓	142
LT	0.4 ↓	12.0	10.0	0.3 ↑	0.1 =	0.6	0.4	4.3 ↓	0.7 ↓	54
LU	0.3 ↑	15.5	14.4	0.2 =	0.3 =	0.1	0.1	28.6 ↑	1.2 ↓	81
MT	0.2 =	13.5	11.9	0.1 =	0.1 =	0.1	0.04	21.3 ↑	0.6 ↓	231
NL	6.4 ↑	16.4	15.2	6.9 =	7.7 =	3.3	4.4	27.1 ↓	2.0 =	115
PL	1.7 ↓	12.3	6.2	1.1 ↑	1.0 ↑	7.4	4.5	3.4 ↓	1.0 =	43
PT	2.2 ↓	12.8	10.2	1.8 ↓	1.6 ↓	2.0	2.2	11.5 ↑	1.3 =	150
RO	0.9 ↓	12.0	4.3	0.3 =	0.4 =	3.8	1.0	5.6 ↑	0.5 =	99
SK	0.4 ↓	12.8	5.5	0.2 ↓	0.3 ↑	1.1	0.8	5.5 ↑	0.8 ↓	54
SI	0.9 ↓	10.8	6.1	0.6 =	0.6 ↑	0.4	0.4	21.1 ↑	2.0 ↓	128
ES	10.4 ↓	14.0	11.5	12.3 ↑	9.1 ↑	9.1	6.7	21.0 ↑	1.2 =	138
SE	3.1 ↑	15.6	11.2	2.8 ↑	3.5 ↑	2.0	3.8	14.3 ↓	3.3 =	48
UK	12.5 ↑	14.8	14.6	18.7 ↓	14.6 ↓	12.9	15.6	14.5 ↓	1.7 =	70
<b>EU-13</b>	<b>8.5 ↓</b>	<b>12.0</b>	<b>6.3</b>	<b>5.2 ↑</b>	<b>4.8 ↑</b>	<b>20</b>				<b>68</b>
<b>EU-15</b>	<b>82.5 ↑</b>	<b>14.9</b>	<b>12.4</b>	<b>87.1 ↓</b>	<b>87.9 ↓</b>	<b>80</b>				<b>63</b>
<b>EU-28</b>	<b>91.0</b>	<b>14.6</b>	<b>11.8</b>	<b>92.4 ↓</b>	<b>92.7 ↓</b>			<b>14.4</b>	<b>2.03</b>	<b>63</b>

Elucidation:

AT - Austria, BE - Belgium, BG - Bulgaria, HR - Croatia, CY - Cyprus, CZ - Czech Republic, DK - Denmark, EE - Estonia, FI - Finland, FR - France, DE - Germany, EL - Greece, HU - Hungary, IE - Ireland, IT - Italy, LV - Latvia, LT - Lithuania, LU - Luxembourg, MT - Malta, NL - Netherlands, PL - Poland, PT - Portugal, RO - Romania, SK - Slovakia, SI - Slovenia, ES - Spain, SE - Sweden, UK - United Kingdom, EU-13 - countries acceded EU after 2004, EU-15 - countries acceded EU by 1995;

Share of particip. 2018, % – share of 'country's' participation by 1.01.2018 compared to 1.01.2017;

Appl. success 2018, % – applicants' success rate: project participants from a 'country' to all the applicants from the 'country';

Coord. success 2018, % – coordinators' success rate: project coordinators from a 'country' to all the applicants-coordinators from the 'country';

Share of coord. 2018, % – share of 'country's' coordinators by 1.01.2018 compared to 1.01.2017;

Share of H20 contrib. 2018, % – share of 'country's' H20 funding by 1.01.2018 compared to 1.01.2017;

Population 2017, % – 'country's' population to EU population by 1.01.2017;

Share of res. FTE 2016, % – share of 'country's' researchers in full time equivalent by 1.01.2016;

H20 contrib. per thous. res. FTE – EC contribution (H20 funding) to 'country' per thousand researcher full time equivalent;

GERD 2016 – share of 'country's' GDP (public and private) invested in R&I by 1.01.2016 compared to 1.01.2015;

H20 contrib. per thous. GERD – EC contribution (H20 funding) per EUR thousand spent on 'country's' GERD

Outline on the EU member states' (MS / EU-28) participation to the Horizon 2020 is summarised in Table 1 (including comparison with earlier releases of the Horizon 2020 and FP7 evaluations). Calculations are based on publicly available data [2-10]. The Horizon 2020 Interim Evaluation is based on the implementation status after three years of operation (2014-2016) as of January 2017, but online databases are updated regularly and the current study includes results as of January 2018 – a year after the Interim Evaluation. By publication of this paper databases will be updated and will reflect other figures. Alterations with respect to previous assessments are indicated by ↑ or ↓. It allows observing that the share of EU-28 funding is about the same of 93% after 3-years and 4-years of implementation, but has slightly added in comparison to the Seventh Framework Programme (FP7, 88%). Encouraging trend – the increase in share of EC funding goes mainly for EU-13 group and could be explained by special activities devoted to less developed regions within 'Spreading excellence and widening participation' activity – in 2017 it added to EU-13 budget 100 EUR million funding and has attracted a lot of attention and policy implications at national level as Horizon 2020 funding for these projects should be cupped with respective national or regional resources. The trend for EU-13 participation to the Horizon 2020 over years is vague since [5] quotes different values on different tables; however, it has improved in comparison to the FP7. Share of the EU-13 coordinators remains invariable. Alerting trend is the reduced expenditures of GDP invested in research (gross domestic expenditure on R&I as a percentage of GDP, GERD) for half of the EU member states in 2016 compared to 2015. When analysing the results, one should consider that there exist different terms and therefore checking for the exact indicator included in databases is essential: applicant/ proposal, participant /project, success rate for applications/ proposals/ EU financial contribution. For example: [3] provides information on all applicants, [4] deals with proposals, [5] utilises both in different tables, etc.

Table 2 accounts average success rates per country [4]. The numbers across the Horizon 2020 thematic programmes can differ a lot for a particular country. For example, the best for average Horizon 2020 success rate Belgium (17.5%) is below programme average for Excellent Science pillar (12.7% - 11.7%) as well as for Spreading excellence and widening participation programme (15.2% - 13.3%). On contrary, one of the countries with low average success rate Hungary (11.0%) is above programme average for Spreading excellence and widening participation (25.6% - 15.2%) & Science with and for Society programmes (10.1% - 9.8%). Austria, France, and Netherlands are above average success rates for all the Horizon 2020 sub-programmes; but Denmark and United Kingdom for almost all programmes. Although Slovenia is among the less successful according to the average Horizon 2020 proposal success rates (10.8%), it is mentioned among the three EU-13 countries performing better than EU-15 average considering normalised data with respect to the size of the population, the number of researchers, and national investments in R&I [5].

Worth analysing are coordinators' success rates against average country's success in the Horizon 2020. Performance of Bulgaria, Croatia, Czech Republic, Hungary, Latvia, Poland, Romania, Slovakia, and Slovenia strongly depends on other countries' success as local coordinators are the least performing. Again, Slovenia is among the mentioned. Best proposers-coordinators come from the Netherlands, United Kingdom, Germany, Luxembourg, France, and Ireland; eventually worth considering accession to consortia led by coordinators from these countries. Like previously, the table lists average numbers and any country is represented by highly competitive coordinators as well as by weaker ones.

Size matters. When analysing normalised indicators accounting country's size / population, smaller are the ones performing better: for EU-13 – Cyprus, Estonia, and Malta; but for EU-15 – Netherlands, Luxembourg, Belgium, and Ireland. Further, some countries with small share (e.g.: Cyprus, Luxembourg, Malta,

Estonia, and Slovenia) have high EC contribution per researcher FTE – they have reached some 'saturation' and further enhancement of performance would be achieved by enlarging the number of researchers or other structural changes. Being the biggest country according to the size of population, Germany is the leader in absolute terms – 16.2% of the Horizon 2020 budget and 12.6% of all the participants account for Germany. The five countries with the highest share of participants (Germany, United Kingdom, Spain, Italy and France) represent about 2/3 of contributions the Horizon 2020 budget, but their return is lower – about 59%; thereby these are the Member States supporting participation of 'third' countries which are exempt from participant fees. The most successful MS with respect to return are Belgium, Cyprus, Denmark, Finland, and Netherlands. One of the smallest countries – Cyprus (ranking 26<sup>th</sup> according to the size of the population) lies 19<sup>th</sup> according to the accumulated Horizon 2020 funding and is ahead of such big countries like Bulgaria and Romania.

**Table 2:** Proposal success rates for MS participation to Horizon 2020

Country	Excellent Science	Industrial Leadership	Societal Challenges	Spreading excellence and widening participation	Science with and for Society	EurAtom	Average	Coordinators' Average
AT	13.5	18.6	19.3	15.2	14.9	50.0	16.9	15.3
BE	11.7	18.8	21.7	13.3	11.6	51.5	17.5	15.4
BG	15.9	6.1	9.4	14.1	6.5	38.9	9.6	3.0
HR	8.0	7.5	15.4	11.3	7.6	44.4	11.9	4.7
CY	10.1	9.9	11.3	35.9	11.0	50.0	11.7	9.7
CZ	11.4	13.8	15.7	17.5	8.8	37.1	14.1	7.2
DK	12.0	15.0	18.4	16.7	13.2	50.0	14.7	13.6
EE	12.4	12.7	13.6	25.0	7.4	37.5	13.0	10.9
FI	11.6	13.9	15.1	16.4	9.6	43.0	13.7	8.8
FR	13.0	18.7	21.6	15.5	12.6	51.6	17.2	13.8
DE	13.0	17.6	19.7	14.7	11.4	44.9	16.3	14.5
EL	11.4	13.5	13.8	11.3	9.8	45.5	12.8	9.7
HU	11.5	10.5	10.5	25.6	10.1	34.8	11.0	5.3
IE	13.5	14.5	17.1	13.9	10.2	50.0	14.7	13.6
IT	10.2	12.9	13.5	14.7	8.3	37.6	12.2	7.9
LV	10.3	10.3	14.6	18.3	4.3	100	12.3	5.4
LT	9.8	12.6	12.8	17.0	7.1	37.5	12.0	10.0
LU	10.2	15.1	18.6	40.0	13.9	0.0	15.5	14.4
MT	20.0	16.9	10.5	17.9	15.7	---	13.5	11.9
NL	13.7	17.3	19.3	15.1	12.7	40.3	16.4	15.2
PL	11.6	13.7	12.0	13.3	9.5	40.0	12.3	6.2
PT	11.0	12.5	14.6	21.1	6.6	63.6	12.8	10.2
RO	9.4	13.2	13.2	8.6	4.0	41.3	12.0	4.3
SK	14.4	11.2	13.5	10.1	6.5	31.3	12.8	5.5
SI	8.5	10.8	12.2	14.4	6.9	30.6	10.8	6.1
ES	11.6	15.1	15.5	9.4	9.7	50.4	14.0	11.5
SE	11.8	15.9	20.1	13.9	6.9	33.6	15.6	11.2
UK	13.4	14.6	17.3	15.5	9.4	48.8	14.8	14.6
<b>EU-13</b>	<b>11.1</b>	<b>11.7</b>	<b>12.5</b>	<b>17.5</b>	<b>7.8</b>	<b>37.3</b>	<b>12.0</b>	<b>6.3</b>
<b>EU-15</b>	<b>12.4</b>	<b>15.6</b>	<b>17.3</b>	<b>15.3</b>	<b>10.3</b>	<b>46.2</b>	<b>14.9</b>	<b>12.4</b>
<b>EU-28</b>	<b>12.3</b>	<b>15.2</b>	<b>16.7</b>	<b>16.0</b>	<b>9.7</b>	<b>44.2</b>	<b>11.8</b>	<b>11.8</b>
<b>Progr. average</b>	<b>12.7</b>	<b>15.2</b>	<b>16.7</b>	<b>15.2</b>	<b>9.8</b>	<b>43.4</b>	<b>11.7</b>	

### 3. EU-13 versus EU-15

EU member states, which joined the Community in 2004, 2007 and 2013 (referred as EU-13) participate to the EU Framework Programmes on equal basis since FP5. Worth mentioning, more experienced EU member states (EU-15) contribute more to the EU and Horizon 2020 budget and their return is larger. The share of EU-15 applicants is 80%, but for EU-13 – 10%; in terms of requested funding the difference is larger for understandable reasons: EU-15 applicants request 85% of the funding, while EU-13 – only 7% [5]. The gap enlarges for funded projects: the success rates for EU-13 applicants are lower (12% versus 14.9%) but Horizon 2020 contribution to EU-13 participants drops dramatically – 4.8% versus 87.9% (Table 1).

There is a number of objective and subjective factors for varied success of the EU-13 countries. Some reasons are mentioned in the Interim Evaluation of the Horizon 2020 pointing towards strong ‘old boys’ clubs’ cooperation patterns (Fig. 1), poorer visibility of EU-13 excellence and weak involvement of EU-13 in testing the new technologies resulting from Horizon 2020 projects [5]. An indirect cause could be invitation of experts for the Horizon 2020 evaluations: although EC complies with diverse mandatory equality criteria in selection of the evaluators, the share of EU-13 evaluators is disproportionately lower ([http://ec.europa.eu/research/participants/portal/desktop/en/funding/reference\\_docs.html#h2020-expertslists](http://ec.europa.eu/research/participants/portal/desktop/en/funding/reference_docs.html#h2020-expertslists); accessed 18.04.2018). Probably, the researchers from EU-13 countries have fewer possibilities to meet like-minded, promote their excellence and penetrate established cooperation patterns. Another point for discussion is country’s involvement in the programme design (stakeholders’ involvement, see above).

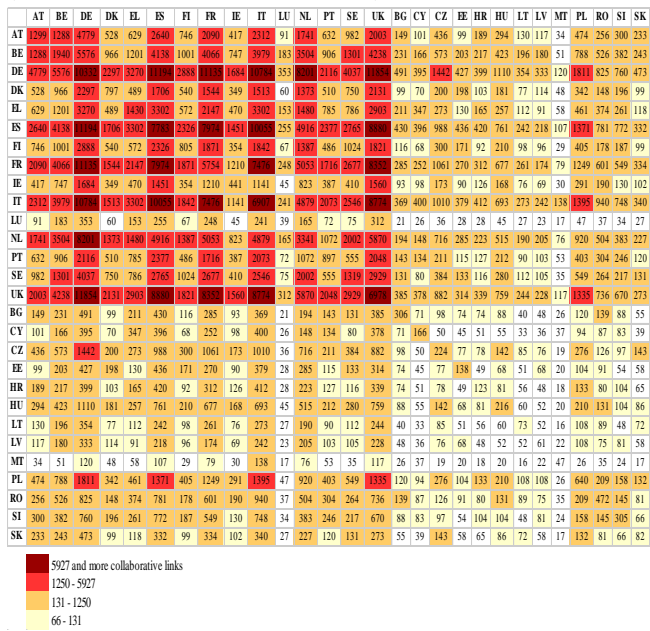


Fig. 1: Cooperation patterns - ‘old boys’ clubs’ in Horizon 2020

Although variations in the Horizon 2020 funding could be explained by differences of national investments in R&I, analysis of the key indicators (Table 1) signalise that the GERD value is not the main contributor to the country’s success. For example, from top-10 countries with the highest R&I intensity (Austria, Sweden, Denmark, Germany, Finland, Belgium, France, Slovenia, Netherlands, and Czech Republic) only Slovenia and Netherlands rank among top-10 for EC contribution per EUR-thousand spent on R&I. The front-runners here are the ones with low investments (Latvia, Cyprus, Malta, and Greece). Further, some EU-13 countries (Slovenia, Cyprus, and Estonia) are performing better than the EU-15 average considering the size of the population, the number of researchers, and national investments in R&I [5].

Worth analysing is the performance of EU-13 countries Cyprus, Estonia, Lithuania and Malta. Success rates for coordinators and

the share of accumulated Horizon 2020 funding by them is increasing (Table 1); thereof one could expect further improvement for the Framework Programme performance for these countries.

### 4. Trends of participation to the Framework Programmes

The development of the EU Framework Programmes and respective country participation is enlightening. The European Commission analyses 30-years of Framework Programmes performance in special edition of the Horizon 2020 Magazine [11].

Up till now there have been 8 cycles / Framework Programmes:

- FP1 – 1984-1987, 5-years’ programme with budget of 3.3 Billion EUR;
- FP2 – 1987-1991, 5.4 B€;
- FP3 – 1990-1994, 6.6 B€;
- FP4 – 1994-1998, 13.2 B€;
- FP5 – 1998-2002, 14.9 B€;
- FP6 – 2002-2006, 19.3 B€;
- FP7 – 2007-2013, 7-years’ programme with budget of 55.9 Billion EUR;
- Horizon 2020 – 2014-2020, 77 B€.

After establishment of the current EU as European Economic Community in 1957, there have been six enlargements:

- 1957, the founders – Belgium, Germany, France, Italy, Luxembourg, Netherlands;
- 1973 – Denmark, Ireland, United Kingdom;
- 1981 – Greece;
- 1986 – Portugal, Spain;
- 1995 – Austria, Finland, Sweden;
- 2004 – Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia;
- 2007 – Bulgaria, Romania;
- 2013 – Croatia.

Member States’ participation to the EU Framework Programmes is illustrated on Fig. 2 and Fig. 3. It should be noted that current Baltic and Balkan countries did not exist as independent states before 1990-ties and their participation can be discussed starting only from FP4. More detailed analysis of the EU-13 and EU-15 participation trends over EC Framework programmes FP5 - Horizon 2020 is discussed in [12].

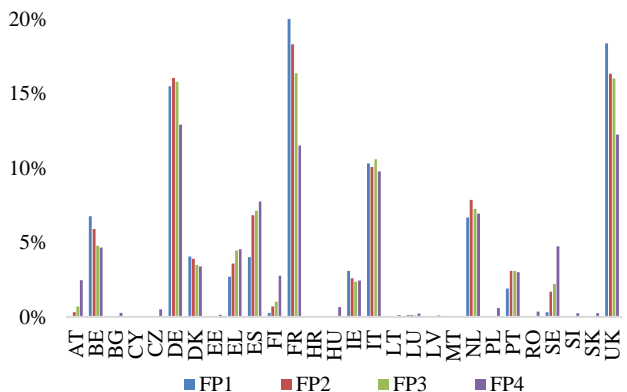
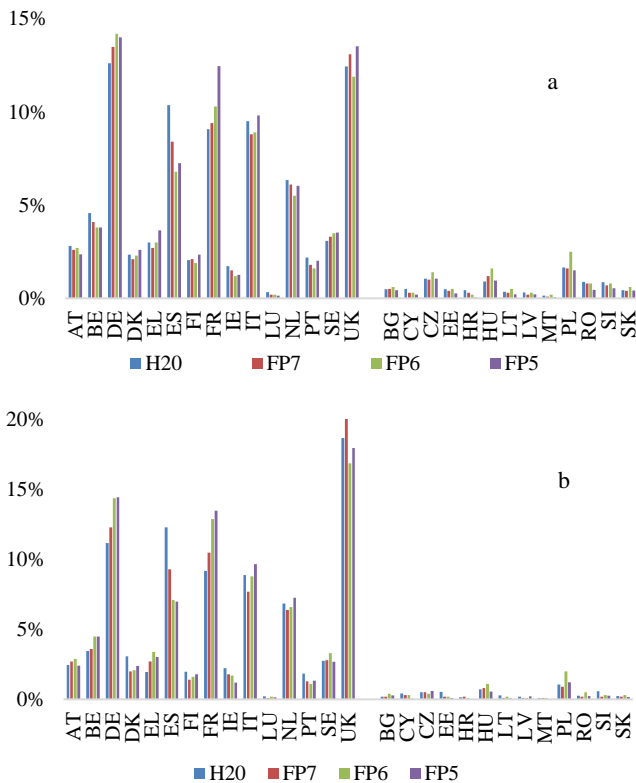


Fig. 2: Share of current EU-28 participation over FP1 – FP4

The frontrunners in terms of participation for earlier FPs (FP1-FP4) are the EU founders France, Germany and later acceded United Kingdom (Fig. 2) with majority of coordinators coming from the United Kingdom. For more recent programmes (FP5-Horizon 2020) majority of participants come from Germany, but majority of coordinators – still from the United Kingdom (Fig. 3). However, the commitment of smaller founders Belgium and Netherlands is notable throughout all the Framework Programmes.

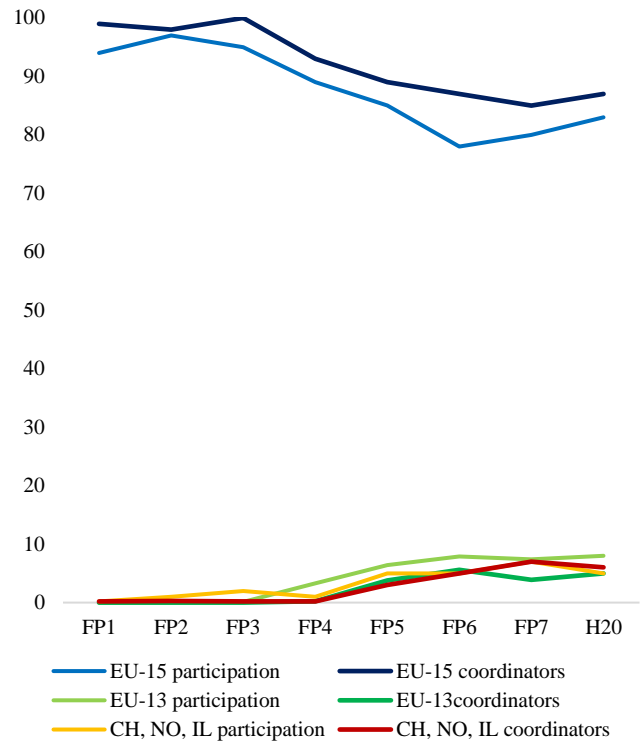


**Fig. 3:** Share of current EU-28 participation over FP5 – Horizon 2020: a) all participants, b) coordinators

Integration of the former 'new' member states (Austria, Finland, and Sweden; 1995) into the EU research programmes starting from FP4 is of particular interest to the EU-13. These three countries are visible within European research since the establishment of the Framework Programmes in 1984, but joining to the EU generated a splash of participation: Austria doubled its performance, but Finland and Sweden – even tripled. If compared to the EU-13 participation to FP5 (as Candidate Countries, Croatia enlisted) and FP6 (full members since mid-programme, Croatia enlisted), the difference is formidable. The FP5 was the most successful one and the best performing EU-13 countries Estonia, Latvia and Slovenia retained more funding than participant fees paid. However, the FP6 for the EU-13 was not as successful as FP4 was for the previous newcomers. Change of rules (no bonuses for inclusion in consortia), change of the project types (2/3 of all the funding dedicated to Integrated projects and Networks of Excellence involving only best-known players in the field) was devastating for researchers from poorly known countries.

Consolatory, the ratio between EU-15 / EU-13 participants and coordinators smoothens over the years. Thanks to the Framework Programme strands like dedicated Call for facilitation the participation of New Member States in FP6, 'Research potential of Convergence Regions' in FP7 and 'Spreading excellence and widening participation' in Horizon 2020, the difference in EU-13 / EU-15 participation begins to recoup (Fig. 4). However, the total participation of the EU-13 countries to the Horizon 2020 is still low of 8.5%, while for coordinators – just 5.2% (Table 1).

Further, there is another significant group embodying countries expressing interest to be a part of the EU research – the Associated Countries (AC) currently are represented by 6% of all the Horizon 2020 participants and accumulate 6% of the Horizon 2020 budget – this is above the share of EU-13 accumulated funding of 4.8%. Switzerland (CH), Norway (NO) and Israel (IL) are the most visible players in this group – performance indicators for each of the three countries are above those of any EU-13. Therefore, the reduced impact of EU-15 coordinators could be mostly because of increasing AC participation and not due to significantly better performance of the EU-13 countries.



**Fig. 4:** Current EU-28 and CH+NO+IL involvement over FP1 – H2020

## 5. Conclusions

European Commission portals provide vast information and versatile analysis on EU Framework Programmes for Research and Innovation; by help of IT tools one can perform a variety of studies depending on the interests. However, it should be reminded that there exist different terms for data included in the databases and therefore it is essential to check the exact indicator: applicants and applications/proposals, participants and projects, success rate for applications/ proposals/ coordinators/ EU financial contribution.

There is number of open data bases one can conduct further studies on countries' and organisations' participation accordingly choosing the most suitable programme and appropriate partner for joining the future projects:

- **Participant Portal**
  - *H2020* *dashboards:*  
<http://ec.europa.eu/research/participants/portal/desktop/en/projectresults/index.html> (accessed April 18, 2018);
  - *Partner* *search:*  
[https://ec.europa.eu/research/participants/portal/desktop/en/organisations/partner\\_search.html](https://ec.europa.eu/research/participants/portal/desktop/en/organisations/partner_search.html) (accessed April 18, 2018);
- **CORDIS**
  - *EU Open Data portal* – EU research projects under Horizon 2020 (2014-2020):  
<https://data.europa.eu/euodp/en/data/dataset/cordisH2020> projects (accessed April 18, 2018);
  - *Advanced* *search:*  
[http://cordis.europa.eu/search/advanced\\_en?projects](http://cordis.europa.eu/search/advanced_en?projects) (accessed April 18, 2018);
- **Framework programme monitoring and assessment** including lists of top-50 participants for various sectors:  
<https://ec.europa.eu/research/evaluations/index.cfm> (accessed April 18, 2018);

- **Framework programme facts and figures**
  - *Horizon 2020 country participation:*  
[http://ec.europa.eu/research/horizon2020/index\\_en.cfm?pg=country-profiles](http://ec.europa.eu/research/horizon2020/index_en.cfm?pg=country-profiles) (accessed April 18, 2018);
  - *FP7 country participation:*  
[https://ec.europa.eu/research/fp7/index\\_en.cfm?pg=country-profile](https://ec.europa.eu/research/fp7/index_en.cfm?pg=country-profile) (accessed April 18, 2018);
- **Research and Innovation Observatory:**
  - *Horizon 2020 Policy Support Facility:*  
<https://rio.jrc.ec.europa.eu/en/country-analysis> (accessed April 18, 2018);
  - *Key indicators and European Innovation Scoreboard:*  
[https://ec.europa.eu/info/research-and-innovation/statistics/performance-indicators\\_en](https://ec.europa.eu/info/research-and-innovation/statistics/performance-indicators_en) (accessed April 18, 2018).

## References

- [1] European Commission webpage. *Horizon 2020 Evaluation*. <https://ec.europa.eu/research/evaluations/index.cfm?pg=h2020evaluation>. Accessed April 18, 2018.
- [2] European Commission. *Commission staff working document: Interim evaluation of Horizon 2020. Annex 1*. Brussels, 29.5.2017, SWD(2017) 221 final.
- [3] Publications Office of the EU webpage. *EU Open Data portal*. <https://data.europa.eu/euodp/en/data/>. Accessed April 18, 2018.
- [4] European Commission webpage. *Participant Portal - Projects & Results*. <https://webgate.ec.europa.eu/dashboard/sense/app/93297a69-09fd-4ef5-889f-b83c4e21d33e/sheet/erUXRa/state/analysis>. Accessed April 18, 2018.
- [5] European Commission. *Interim Evaluation of Horizon 2020*. Luxembourg: Publications Office of the European Union, 2017.
- [6] European Commission. *Commission staff working document: In-depth interim evaluation of Horizon 2020*. Brussels, 29.5.2017, SWD(2017) 220 final.
- [7] European Commission. *Horizon 2020 in full swing – Three years on – Key facts and figures 2014-2016*. Luxembourg: Publications Office of the European Union, 2018.
- [8] European Commission. *Commitment and Coherence – Ex-Post Evaluation of the 7<sup>th</sup> EU Framework Programme*. Publications Office of the European Union, 2015.
- [9] European Commission. *Commission staff working document, accompanying the document: Ex-Post Evaluation of the Seventh Framework Programme*. Brussels, 19.1.2016, SWD(2016) 2 final, Part 3/3.
- [10] European Commission webpage. *Eurostat Database*. <http://ec.europa.eu/eurostat/data/database> Accessed April 18, 2018.
- [11] Horizon Magazine, Special issue, March 2015. *30 years EU Research Framework Programmes, 1984-2014*. Luxembourg: Publications Office of the European Union, 2015.
- [12] A. Geske, D. Bērziņa, “A Two-speed Europe in the Area of Research”, *Proceedings of the 21<sup>st</sup> World Multi-Conference on Systemics, Cybernetics and Informatics - WMCSI 2017*, Vol. II, p. 43-48.