Baltic Science Network

Connecting Through Science

Study on Research Cooperation in the Baltic Sea Region: Existing Networks, Obstacles and Ways Forward

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Project in brief

Baltic Science Network (BSN) serves as a forum for higher education, science and research cooperation in the Baltic Sea Region (BSR).

BSN is a policy network gathering relevant transnational, national and regional policy actors from the BSR countries. The Network is a springboard for targeted multilateral activities in the frame of research and innovation excellence, mobility of scientists and expanded participation. These joint activities are modelled with an overall aim to ensure that the BSR remains a hub of cutting-edge scientific solutions with the capacity to exploit the region´s full innovation and scientific potential. The activities are envisaged to serve as examples of best practice and as basis for the policy recommendations drafted by the Network.

The platform is tailored to provide advice on how to enhance a macro-regional dimension in higher education, science and research cooperation. Recommendations jointly formulated by the Network partners address the European, national and regional policy-making levels.

BSN is a flagship of the EU Strategy for the Baltic Sea Region under the Policy Area Education, Research and Employability, as well as one of two cornerstones of the Science, Research and Innovation Agenda of the Council of the Baltic Sea States.

Disclaimer: This working paper is based on input from stakeholders and BSN partners and does not necessarily reflect the views of all participating Member States and organisations.

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Abbreviations

AT	Austria
BE	Belgium
BG	Bulgaria
BSR	Baltic Sea Region
CZ	Czech Republic
CEEC	Central and Eastern European Countries
CIP	Competitiveness & Innovation Programme
COFUND	Co-funding of regional, national and international programmes
COST	European Cooperation in Science and Technology
CP	Collaborative projects
CSA	Coordination & Support Action
CY	Cyprus
DE	Germany
DK	Denmark
EC	European Commission
ECSEL	Electronic Components and Systems for European Leadership
EE	Estonia
EL	Greece
ERA	European Research Area
ERA-NET	European Research Area Network
ERC	European Research Council
ES	Spain
ESIF	European Structural and Investment Funds
EU	European Union
EU-13	13 EU Member States that joined the EU in 2004 and later
EU-15	15 EU Member States that joined the EU prior to 2004
EU-28	28 EU Member States
FI	Finland
FP	Framework Programme
FPs	Framework Programmes
FR	France
GERD	Gross domestic expenditure on research and development
H2020	Horizon 2020
HR	Croatia
HU	Hungary
IA	Innovation Action
ICT	Information Communication Technology
IE	Ireland
IP	Integrated Projects
IT	Italy
JTI	Joint Technology Initiative
LT	Lithuania
LV	Latvia

LU	Luxembourg
MCA	Marie Curie actions
MS	Member States
MSCA	Marie Skłodowska-Curie actions
MT	Malta
NCP	National Contact Points
NL	Netherlands
NoE	Networks of Excellence
PL	Poland
PSF	Policy Support Facility
PT	Portugal
R&D	Research and Development
R&I	Research and Innovation
REGPOT	Research potential programme
RIA	Research & Innovation Action
RO	Romania
RoK	Regions of knowledge programme
SE	Sweden
SESAR	Single European Sky ATM Research
SEWP	Spreading Excellence and Widening Participation
SGA	Specific Grant Agreement
SiS	Science with and for Society programme
SK	Slovakia
SI	Slovenia
SME Instruments	Small and Medium Size Enterprise Instruments
SSA	Specific Support Action
S3	Smart Specialisation Strategies
UK	United Kingdom

Summary

Since the early 90s, Framework Programmes (FPs) have gradually opened up and provided targeted incentives for researchers from post-communist Central and Eastern Europe to join European networks and common R&I projects. Nevertheless, participation in FPs of new Member States (EU-13) in general and of Latvia, Lithuania and Poland specifically, remains limited. The EU-13 has received less than 5% of the FP6, the FP7 and Horizon 2020 budget. In fact, all EU-13 countries have collectively secured less funding from the FP7 than the top five organisations from the EU-15. Furthermore, in contrast to initial expectations, EU-13 (with the exception of Estonia) are not catching up with the EU-15. Estonia is an exception in this group, since it has converged with the EU-15 and currently receives relatively large funding from FPs, given the size of its research and innovation (R&I) system.

Previous studies have argued that successful participation in FPs depends on the size and excellence of national R&I systems. Our study corroborates these results, but also finds that Latvia, Lithuania and Poland should secure marginally higher share of FP funding, given the size and excellence of their R&I system (this does not apply to Estonia, which already performs relatively well). The main obstacles preventing more intensive participation in FPs are as follows:

- *Number and quality of proposals*. Researchers from Latvia, Lithuania and Poland submit fewer proposals to FPs than they should, given the relative size of respective national R&I systems (and researchers from Estonia submit more). On average most proposals are "good enough" to pass the quality threshold, but only small share are "excellent enough" to receive the funding (and researchers from Estonia on average submit higher quality proposals than researchers from Latvia, Lithuania and Poland). Relatively small number of proposals can be explained by perceived lack of resources and skills to draft high quality proposal and/or perceived lack of prerequisites to secure funding (R&I excellence, networks infrastructure, etc.). Furthermore, very low success rates in FPs imply that investments into the capacities necessary for the coordination of proposal writing are very risky and therefore not highly attractive. Quality of proposals to a large extent depends on experience with FPs and competitive R&I funding in general: the success of Estonia can be to an extent attributed to the long history of allocating large bulk of national research funding through competitive schemes.
- *Access to networks*. A number of participants from Estonia, Latvia, Lithuania and Poland have joined large European networks during the FP6 (or earlier) and have since collaborated in a number of successive projects with the same consortium. This route to participation in FPs has a number of benefits for the insiders. However, well-established networks hamper the participation of outsiders. Prospective project coordinators from EU-13 face immense difficulties in setting up their own networks with renowned centres of excellence and/or when competing with established networks. Furthermore, individual organisations reportedly face difficulties in joining established networks that reduces their chances of successful participation even further.
- *Funding per successful participant* from Estonia, Latvia, Lithuania and Poland comprises 38-55% of the average funding per participant from the EU-15. This is due to the following factors:

- Researchers from Estonia, Latvia, Lithuania and Poland are usually partners rather than coordinators of projects and tend to carry out peripheral tasks, which entail a lower share of the project budget.
- Project coordinators from Estonia, Latvia, Lithuania and Poland more frequently apply to calls with lower budgets and on average receive better evaluation scores for these types of proposals.
- Rules for calculating project costs matter. Most FPs use actual salaries of researchers to calculate personnel costs. Since researchers from EE, LV, LT and PL are underfunded compared to their peers in the EU-15, their personnel costs are proportionally lower. Furthermore, calculations of indirect costs as a percentage from direct costs (that include personnel costs) further amplify the differences. In addition to direct financial implications, this also creates a sense of unfair treatment among researchers, because remuneration for similar work differs beyond differences in price levels of European Union (EU) regions and countries.

These findings may be interpreted through a prism of the Matthew effect. Early success of established centres of excellence in competitive R&I programmes leads to accumulation of comparative advantage (know-how, funding, talent, reputation, etc.) at a rate that increases or maintains the distance between "leaders" and "followers". This can explain the large (and growing) concentration of FP funding: the top-500 organisations in the FP7 made up only 1.7% of successful participants, but received 60% of the total funding; similarly, the top-3 organisations from Estonia, Latvia, Lithuania and Poland received over 10 % of FP7 funding for their respective countries.

It is clear that a limited number of centres of excellence cannot guarantee future competitiveness of the EU. Instead, European Research Area (ERA) should be populated with a critical mass of interlinked metropolises of excellence that could emerge from the current geographically concentrated centres and dispersed islands of excellence. Crucially, this implies the challenge of multiplying the number and fostering growth of the current islands of excellence.

Macro-regional cooperation in the Baltic Sea Region (BSR) could serve as a test-bed for new approaches to tackling the above discussed strategic challenges as well as specific obstacles to greater R&I cooperation in Europe. Available evidence suggests that BSR as an integrated research area has not yet emerged; previous bottom-up, project-by-project cooperation proved to be short-lived. To address this, there is a need for macro-regional governance structures that could set and fund joint R&I priorities building on related variety of competences in the region. A truly integrated BSR research area could contribute to deepening integration within the ERA by:

- Contributing to network building and knowledge spill-overs between centres of excellence in leading regions and islands of excellence in the periphery.
- Tackling the asymmetric relationships between leading and catching-up regions and facilitating a two-way flow of people, ideas and good practices.
- Structuring existing cooperation into sustainable partnerships and networks.

1. Introduction

What are the main barriers for more intensive research cooperation in the Baltic Sea Region (BSR) and participation in the Framework Programmes (FPs)? – this is an overarching question addressed in the present report. Geographically, the study focuses on cooperation between the following two groups of countries: (a) Estonia (EE), Latvia (LV), Lithuania (LT) and Poland (PL); and b) Denmark (DK), Finland (FI), Germany (DE) (Hamburg, Berlin, Brandenburg, Schleswig-Holstein and Mecklenburg-Western Pomerania Länder in particular) and Sweden (SE). Particular focus is on the participation patterns of researchers from EE, LV, LT and PL in FPs and on the analysis of underlying mechanisms of FPs (rather than strengths and weaknesses of the national R&I systems). The study seeks to answer the following operational questions:

a. How successful are the BSR countries (and EE, LV, LT and PL in particular) in FPs? What measures have different generations of FPs introduced to facilitate the participation of new Member States?
b. Who are the main partners of researchers from EE, LV, LT and PL? What are the existing cooperation networks and what factors explain their success?
c. What key obstacles do researchers from EE, LV, LT and PL face for more intensive participation in FPs? The answer to this question is based on the analysis of underlying mechanisms of FPs for allocating funding. An alternative way to approach this question would include analysis of strengths and weaknesses of research and innovation (R&I) systems in EE, LV, LT and PL. These issues, however, are only touched upon, because they are beyond the scope of this study.
d. What changes at three levels – future generation of FPs, BSR and national level – would facilitate more intensive participation by researchers from EE, LV, LT and PL in FPs?

The overall approach taken in this study is based on the following three pillars:

a. Excellence should remain the core principle of FPs. DE and the Nordic countries are innovation leaders, whereas, according to the European Innovation Scoreboard, EE, LV, LT and PL trail behind the European Union (EU) average.[1] The introduction of "country quotas" or some "geographical coverage" criteria could lead to a higher participation by EE, LV, LT and PL in FPs. However, this could compromise the excellence of funded R&I activities, as well as reduce the overall value and impact of FPs. Therefore, this study does not consider those options.
b. A number of previous studies and evaluations have already pointed out that limited research and innovation capacities were among the key factors that led to lower levels of participation in FPs of researchers from EU Member States that joined in 2004 and later (hereafter EU-13). Furthermore, there is a well-established need for reforms that develop national research and innovation capacities. While recognising this, the study aims to go beyond national capacity-building arguments and seeks to identify obstacles for participation within the structure and design of FPs.
c. The study focuses on the BSR and EE, LV, LT and PL in particular. However, some of the challenges faced by the latter are also relevant to other EU Member States that joined in 2004 and later. Therefore, whenever relevant and appropriate, EE, LV, LT and PL are analysed as a subset of EU-13.

[1] European Innovation Scoreboard 2016, < http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards_en>

The study is structured as follows. Chapter Two outlines the methodological design of the study and data collection tools. Chapter Three discusses how different generations of FPs sought to facilitate the participation of Central and Eastern European countries and the participation patterns of EE, LV, LT and PL and EU-13 countries. Chapter Four provides the results of an analysis of collaborative research networks. Chapter Five discusses obstacles to research cooperation and participation in FPs that are faced by researchers from EE, LV, LT and PL. The last chapter concludes the report and provides recommendations at three levels – future generation of FPs, the BSR and national.

2. Data collection methods

Data collection relied on five main methods: desk research, interviews, case studies, a survey and the results of an international workshop. These methods are discussed in greater detail below.

2.1. Desk research

Desk research was employed to collect, synthesise and build upon already existing relevant data and knowledge. Analysis relied on three groups of sources:

- *Previously conducted studies, evaluations and academic papers*. Regional research cooperation and participation in FPs has been the subject of over 40 studies. This report provides a synthesis of their results as well as additional new data. Furthermore, knowledge contained within the previously conducted studies provided an important starting point in drafting questionnaires for interviews and surveys. Relevant studies are referred throughout the text whenever necessary.
- *Monitoring information supplemented literature review and provided data on participation patterns in FPs.* Table 2-1 below elaborates on these data sources, as well as describes how each data source was used.
- *Legal documents that govern the implementation of FP7 and H2020 projects.* Analysis of the legal base facilitated the identification of legal barriers that may prevent the participation and co-operation of researchers from the BSR.

Table 2-1. Sources for monitoring information

Monitoring data	Type of data provided
FP7 2013/2012/2011/2010/2009/2008/ 2007 monitoring report	• Distribution of FP7 and H2020 funding per country • Participation and success rates per country • Percentage of above quality threshold proposals from each EU country • Number of experts from different countries in the H2020 advisory groups
H2020 2014/2015 monitoring report	
CORDIS data base	• Data on each FP7 and H2020 project, participants, etc.
Extract from E-Corda database	• Data on quality scores of proposals submitted by researchers from EE, LV, LT and PL to Horizon 2020.
Other (e.g., Eurostat statistics, Innovation Union Scoreboard)	• Contextual statistical data

2.2. Interviews

The results of the interviews provided in-depth insights in four key areas. First, they facilitated the identification of potential challenges that researchers from EE, LV, LT and PL faced when participating in FPs. Second, the results of the interviews also highlighted factors that helped researchers from the BSR join research networks that are successful in FPs. Third, they allowed for collecting in-depth knowledge regarding selected research networks that included participants from the BSR. Finally, the results of the interviews were used in drafting the case studies of successful research networks.

In total, 22 interviews were carried out with:

- **Participants** – Researchers from the BSR region who are part of a successful research network that participates in FPs. Since these interviews sought to identify factors behind sustainable cooperation (as opposed to one-off participation) in the BSR, the selection of informants relied on the following criteria: a) participated in at least two FP7 and/or H2020 projects with the same group (minor changes in the network membership was allowed) of organisations; b) are from EE, LT, LV or PL or coordinated at least one project with at least two partners from these countries.
- **Non-Participants** – Top-notch researchers who do not cooperate with colleagues from the BSR and do not participate in FPs. They were interviewed to understand the reasons that prevent researchers with an excellent track record from participating in FP projects. Selection of non-participants was based on the following criteria: a) researcher was cited at least 500 times in 500 documents (in the case of LV, this criterion was decreased to 300 citations in 300 documents); b) top ten co-authors are from their own country or non-BSR countries; c) over the past five years, they did not participate as a coordinator or a partner in any FP7 or H2020 project.
- **Additional Interviewees** – Researchers from LV who have extensive experience with FPs.

Table 2-2 provides the distribution of interviewees by type and country. Each group received a separate questionnaire that can be found in Annex B.

Table 2-2. Country distribution of interviewees

Type	EE	LV	LT	PL	Other	Total
Participants	2	2	2	2	3 (AT, FR, SE)	11
Non-Participants	2	1	2	3	0	8
Additional Interviewees	0	3	0	0	0	3
Total	4	6	4	5	3	22

2.3. Case studies

Case studies provide an in-depth analysis of successful research networks that participate in FPs and have partners from the BSR. They are based on the results of the interviews with participants as well as on additional desk research. To ensure the reliability of information, at least two members (one coordinator and one partner) from the network were interviewed. Table 2-3 below provides a general outline of the case studies while subsection *4.2. Networks* discusses the results.

Table 2-3. Case studies

Networks' Projects	Research Area	Coordinator Country	Partners from the BSR by Country*	Number of Interviews by Country
EPICE (FP7), SHIPS (H2020), RECAP (H2020)	Medicine and health, Child health	FR	DK (1), EE (1), PL(1), SE (1)	EE, PL, FR (Coordinator)
SMES GO HEALTH (FP6), FIT FOR HEALTH (FP7), FIT FOR HEALTH 2.0 (FP7)	Coordination and cooperation, Medicine and health	AT	DK (1), EE (2), LV (1), PL (1), SE (2),	PL, EE, AT (Coordinator)
LASERLAB-EUROPE (FP6, two FP7 and H2020)	Laser research	DE for FP6 and first FP7 project, SE afterwards	LT (1), LV (1), PL (1)	LT, SE (Coordinator)
SUNShINE** (H2020), Accelerate SUNShINE (H2020)	Building renovation	LV	LV (5)	LV (one with participants and one with coordinator)

*Partners from the BSR by country include all organisations from the BSR that participated in at least one FP7 and/or H2020 project. This does not include organisations that coordinated the project at least once.

**SUNShINE did not strictly follow the case study requirements outlined in subsection *4.2. Existing Networks,* but respondents from this project provided valuable insights.

2.4. Survey

The survey sought to collect viewpoints and data on key obstacles for participation in FPs. Therefore, the online questionnaire was sent to a randomly selected sample of researchers from EE, LV, LT and PL, who participated in FP7 and/or H2020 projects. Successful researchers from FI, SE, DK and DE were not surveyed, because they could not provide relevant insights on obstacles to participation as faced by researchers from EE, LV, LT and PL. A survey of unsuccessful applicants would have been useful, but the publicly available CORDIS database does not contain information that could facilitate the identification of such researchers.

To ensure the representativeness of the results, the sample of respondents was selected randomly from the population of researchers from EE, LV, LT and PL contained in the CORDIS database. Invitations to participate in the survey were sent to 1889 researchers. In total, 288 of the respondents answered the survey partially or in full (response rate 15%), while 238 respondents answered all of the relevant questions. The survey was carried out via an online platform (surveygizmo.com). For the survey, we ensured that all relevant security measures (individual link for each respondent, only one answer permitted following an individual link, etc.) were in place. Table 2-4, Figures 2-1 and 2-2 below provide the distribution of surveyed respondents according to country, funding scheme and level of experience with FPs. The full survey questionnaire can be found in Annex C and the distribution of answers to the questions is provided in Annex D.

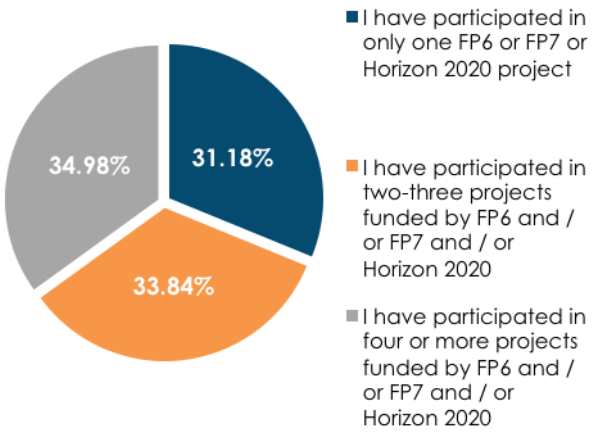
Table 2-4. Distribution of respondents (includes partial completions)

	Country / Funding scheme	Estonia	Lithuania	Latvia	Poland	Total
Framework Programme 7	CP	13	13	10	76	**112**
	CSA	14	13	8	26	**61**
	NoE	2	0	0	4	**6**
	MCA	4	3	1	22	**30**
	SME	5	5	1	4	**15**
	TOTAL FP7	**38**	**34**	**20**	**132**	**224**
Horizon 2020	CSA	4	3	2	7	**16**
	ERA-NET	0	0	1	1	**2**
	IA	1	1	3	2	**7**
	MSCA	4	3	1	6	**13**
	RIA	6	2	1	16	**25**
	TOTAL H2020	**15**	**9**	**8**	**32**	**64**

Source: Visionary Analytics, based on the participant survey.

Note: CP – Collaborative Projects; CSA – Coordination and Support Actions; NoE – Networks of Excellence; MCA – Marie Curie Actions; SME – Small and Medium Size Enterprise Instruments; ERA-NET – European Research Area Network; IA – Innovation Action; MSCA – Marie Skłodowska-Curie actions; RIA – Research & Innovation Action.

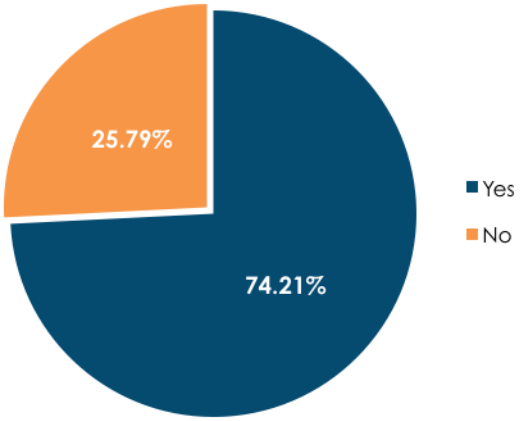
Figure 2-1. What is your experience with Framework Programmes?



Source: Visionary Analytics, based on survey results.

* Number of responses equals 263.

Figure 2-2. Have you submitted as a coordinator or partner a proposal that was not awarded funding?



Source: Visionary Analytics, based on survey results.

* Numbers of responses equals 252.

2.5. Analysis of results of the international workshop

On the 30th of March 2017, an international workshop took place in Riga. It was attended by key stakeholders from the BSR area, including (i) policy makers, (ii) researchers, managers from (iii) companies, (iv) universities and (v) research institutions, as well as (vi) representatives of the funding councils. In terms of nationality, approx. ½ of the participants were from LV, while the remaining ½ represented other BSR countries. The workshop helped to identify the main challenges that researchers from the BSR face when trying to participate in FP calls, as well as several possible solutions to these problems. The results of the international workshop can be found in Annex A.

3. EU schemes to support mobility and cooperation

This chapter focuses on the participation of BSR countries in FPs that support mobility and R&I cooperation in Europe and beyond. The BSR countries do not constitute a homogenous group. DK, SE, FI and Northern DE have a long history of participation in FPs and are among the leading countries (regions) in the world in terms of R&I and innovation capacities. EE, LV, LT and PL face a completely different set of challenges as they are still catching up with leading regions and a lack extensive experience with participation in FPs. Therefore, wherever appropriate, the latter four countries are analysed within a broader group of EU Member States that joined the EU after 2004 (EU-12 and later EU-13).

The chapter is structured as follows. The first sub-section discusses how different generations of FPs opened up and supported the participation of EE, LV, LT and PL, as well as other EU-13 Member States, while the second sub-section discusses the scale of participation in FPs.

3.1. Evolution of cooperation: from FP3 to FP7

Early cooperation efforts

Co-operation between the EU and future EU Member States (including countries from the BSR) began in 1992 under the FP3 with the Community of Pan-European Research Networks off Eastern European Countries (PECO)/Copernicus Programme. It aimed to promote research and development (R&D) cooperation with Central and Eastern European Countries (CEEC). The EU funded around 1300 joint research projects and networks and provided approximately 2500 scholarships worth €155.5 million.[2] Moreover, Candidate Countries gained open participation possibilities in Community programmes (*Leonardo da Vinci, Socrates and Youth for Europe*). Subsequently, the FP4 included CEEC in a dedicated International Cooperation Programme (INCO) with a special budget of €210 million to cover its activities to increase R&D cooperation with CEEC. Other specific programmes were open to EU-12 participation on a project-by-project basis.[3]

Since the FP5, the EU granted future EU Member States full access under the same conditions as EU Member States.[4] The EC allocated part of its Pologne, Hongrie Assistance à la Reconstruction Economique (PHARE) programme funding and ensured the reduction of EU-12 contributions to the FP5 budget by 29% in 1999-2002. This was done to safeguard a smoother integration of the EU-12 into the programme.[5] It also used additional measures (e.g. the provision of information on possible partners from the EU-12, conferences and training seminars) to increase participation of EU-12 researchers.[6]

[2] European Commission's Press Release, „The Commission proposes association of candidate countries with the Fifth Framework Programme", IP/98/706. Brussels, 1998-07-24

[3] *Ibid*

[4] European Commission (DG RTD), „Assessment of the Impact of the 6th Framework Programme on new Member States", COWI Portal/69472/Project documents/Reporting. Brussels, 2009-05-24, 14

[5] European Commission's Financing Memorandum with Lithuania, 2000-05-26, 3

[6] European Commission's Press Release, IP/98/706

FP6

During the FP6, the European Commission (EC) launched several measures aimed at improving the participation of EU-12 countries. In 2003, it launched a €13 million Specific Support Action (SSA) plan. Its main objective was to stimulate the participation of associated/candidate countries (incl. EE, LV, LT and PL) in FP6.[7] It consisted of several calls for proposals that were only open to organisations from these countries. SSA supported organisations during conferences and information days, networking of FP6 national contact points, actions promoting participation of SMEs, etc.[8]

Outside of the SSA framework, the EC offered 30% and 20% rebates for the first two years of participation in FP6 projects respectively to acceding/candidate countries.[9] In addition, the FP6 launched two new instruments that helped participants from the EU-12: (i) Networks of Excellence (NoE) and (ii) Integrated Projects (IP). Both the NoE and IP heavily encouraged projects to include a large number of researchers from different countries.[10] This effectively provided incentives to include partners from the new EU Member States. Moreover, the EC supported the establishment of National Contact Points (NCPs) to raise awareness of FP6 and to remove information barriers.[11]

The EU-12 also introduced new instruments to support participation in the FP6. Table 3-1 below provides several examples of financial incentives implemented by selected new EU Member States.

Table 3-1. Examples of national measures to support participation in FPs

Estonia[12]	• Preparation support (up to €3600 for an Estonian Consortium Coordinator, €2400 for an individual project, €1200 for a WP manager). Support is only given to projects evaluated above threshold. • Seminars and training in R&I. • Funding agencies provide personal consultation (incl. technical issues, financing, partner search, etc.). • National research liaison offices in Brussels promote participation.
Latvia[13]	• The Academy of Science provides funding for successful H2020 project proposals that pass the threshold. • Traveling, networking and other preparatory cost before the projects start are covered.
Lithuania	• Higher salaries for researchers who participate in FP6 projects • Infrastructure funding (e.g., laboratory equipment and computers) • VAT reimbursement for equipment purchased for a FP6 project • Researchers who participate in FP6 proposals are rewarded bonus points in national research evaluations

[7] European Commission's Press Release, „EUR 13 million scheme to boost Candidate Countries' participation in EU research", IP/03/498. Brussels, 2003-04-4

[8] European Commission's Press Release, „Boosting the participation of acceding and candidate countries in EU research", IP/03/1626. Brussels, 2003-11-28

[9] European Commission's Press Release, „Boosting the participation of acceding and candidate countries in EU research", IP/03/1626. Brussels, 2003-11-28

[10] European Commission, "Network of Excellence: Addressing the fragmentation of European research", KI-46-02-48-EN-D, Brussels, 2006-03 and "Integrated Projects: Generating the knowledge to implement the priority thematic areas", KI-46-02-476-EN-D, Brussels, 2006-03

[11] European Commission, „Assessment of the Impact of the 6th Framework Programme on new Member States", 30

[12] Ruttas-Küttim, R. and Carat, G. Stairway to Excellence Country Report: Estonia, 2015.

[13] Kulikovskis, G. and Özbolat, N.K., Stairway to Excellence Country Report: Latvia, 2015.

Poland	• Subsidy to cover part of the costs for proposal drafting • Partial coverage of research institutions' own financial contributions to the FP6 project • National research liaison offices in Brussels promote participation • Researchers who participate in FP6 proposals are rewarded bonus points in national research evaluations

Source: Sources for EE and LV are indicated in respective footnotes. Source for the remaining countries: COWI – the Assessment of the Impact of the 6th Framework Programme on new Member States final report, 2009, https://ec.europa.eu/research/evaluations/pdf/archive/fp6-evidence-base/evaluation_studies_and_reports/evaluation_studies_and_reports_2009/assessment_of_the_impact_of_the_6th_framework_programme_on_new_member_states.pdf.

Despite these measures, the participation of the EU-12 was relatively low: researchers from the EU-12 constituted 10.1% of all FP6 participants, but secured only 4.9% of the funding.[14] Evaluation of the FP6[15] suggests that an underdeveloped research capacity in the new EU Members States is the main obstacle to more intensive participation. In addition, the report suggests that the research capacities of said countries should be further jointly strengthened by FP and European Structural and Investment Funds (ESIF) . Meanwhile, researchers from the EU-12 did not see this as a problem. Another study[16], based on interviews with participants from the EU-12, argued that a lack of professional contacts and research networks followed by the administrative burden and a lack of experience in project management created the most significant barriers. Moreover, according to the interviewees from the EU-12, the NCP system was successful, but local financial support was not enough to reduce the administrative burden. Thus, interviewees highlighted the need for assistance to train administrative staff and to provide EU-12 researchers with more visibility by inviting them to take part in FP evaluation panels.[17]

FP7

While the FP6 aimed to foster EU-13 participation, the FP7 had no such explicit objective.[18] Nevertheless, one of the main pillars of the FP7 – Capacities – included specific programmes implicitly targeted at the EU-13:

- **Regions of knowledge programme (RoK)** includes an obligation to involve at least three partners from three different countries. The mentoring dimension supported this collaboration, where mature cluster organisations mentored new clusters. Thus, during 2007-2009, the majority of calls included regions from the New MS (77%).[19]
- **Research potential programme (REGPOT)** aimed at developing existing or emerging excellence in the EU's Convergence and Outermost regions. Thus, the EC allocated one third of all eligible funds (€340 million) to New EU Member States.[20]
- **The Science with and for Society programme (SiS)** aims to reduce the gap between science professionals and society at large. This programme enjoyed a particularly large demand from EU-13 researchers, due to the absence of similar instruments in the national policy mix.

[14] *Ibid*, 24

[15] The Expert Group on the *ex-post* evaluation of the Sixth Framework Programmes, "Evaluation of the Sixth Framework Programmes for Research and Technological Development 2002-2006", KI-NA-24203-EN-C. Brussels, 2009-02-16, 20

[16] European Commission, „Assessment of the Impact of the 6th Framework Programme on new Member States", 44-45

[17] *Ibid*, 46

[18] Members of the High Level Expert Group, "Ex-Post-Evaluation of the 7th EU Framework Programme (2007-2013)", 2015-11, Brussels, 35

[19] Technopolis group, "Assessment of the impact of the 'Regions of Knowledge' programme", 2011-04-27, 11

[20] Technology Center AS CR, "Preliminary evaluation report on Czech participation in FP7", http://www.fp7.cz/cs/report, 125

Applicants from the EU-13 enjoyed high success rates in SiS that were twice as high compared to the FP7 (15.5% to 8% accordingly).[21]

As a result, 13 % of the funding from Capacities was allocated to the EU-13. This stands in stark contrast to FP7-Ideas and FP7-People where the EU-13 received 2% and 4% respectively.

Horizon 2020

Horizon 2020 (H2020) represents the eighth generation of FPs. H2020 acknowledges that low performing EU Member States and EU Associate Countries need additional assistance and expertise to enter and remain on the FP grid, i.e. to establish and/or access existing networks and partnering opportunities.[22] Therefore, H2020 introduced a Spreading Excellence and Widening Participation (SEWP) programme with a budget of €816 million. It aims to unlock excellence in low-performing RDI regions of EU Member States and EU Associate Countries, widen participation of these countries in H2020 and contribute to the achievement of the ERA.[23] It targets countries where the Composite indicator of Research and Excellence is below 70% of the EU average (hereafter – Widening Countries). SEWP funding complements investments from ESIF and contributes to the implementation of national Smart Specialization Strategies (S3). The main SEWP instruments include Teaming, Twinning and ERA Chairs.

Teaming seeks to alleviate the structural disparities between the EU regions. This is achieved by creating or upgrading Centres of Excellence (CoE) that are intended to build partnerships between leading R&I institutions and organisations from the Widening Countries. It is expected that partnerships with excellent research institutions shall lead to capacity and network building as well as the transfer of competences, including changes in organisational cultures. The coordinator of the project should be an organisation from a Widening Country. An application for funding consists of two stages. During the first stage, partner organisations provide a clear vision for the establishment or the upgrading of a CoE in the Widening Country. The vision must be in line with the S3 of the participating Widening Member State. Successful applicants receive a grant to produce an extensive and detailed Business Plan to implement the vision. The Business Plan has to include commitments from national or regional authorities to provide financial resources for the CoE that will be invested in infrastructure and equipment. During the second stage, successful proposals receive approx. €15-20 million to implement the Business Plan within 5-7 years.[24]

During the first Teaming Call in 2014-2015, EE, LV, LT and PL submitted 42 proposals. PL submitted more than half of the proposals (23). Seven of 42 proposals reached the first phase of the project (success rate around 16.7%)[25] (see Table below for more details). Only one project has successfully passed the second stage. The Project Centre of Advanced Materials Research and Technology Transfer CAMART[2] (from Latvia) proposed by the Institute of Solid State Physics of the

[21] DG RTD, "Ex-post Evaluation of Science in Society in FP7", KI-02-16-497-EN-N. Brussels, 2016, 90-91

[22] Directorate-General for Research and Innovation, "Horizon 2020 2015 monitoring report", Brussels: European Commission, 2016, 176

[23] Directorate-General for Research and Innovation, "Horizon 2020 2014 monitoring report", Brussels: European Commission, 2016, 136

[24] Directorate-General for Research and Innovation, "Horizon 2020 Work Programme 2014 - 2015", Brussels: European Commission, 2015, 4-6 and Directorate-General for Research and Innovation, "Horizon 2020 Work Programme 2016-2017", Brussels: European Commission, 2016, 6-8 and 13-15

[25] Telemachos Telemachou "Spreading Excellence and Widening Participation", Brussels, 2016-02-02 and Projects to be funded under Phase 1 of the Horizon 2020 Teaming call, 2015-01-30.

University of Latvia (Latvijas Universitātes Cietvielu fizikas institūts) was fully funded. The table below provides an overview of Teaming projects in EE, LV, LT and PL, while the footnotes provide the names of successful projects, (i.e., projects that passed the first and/ or the second phase of Teaming).

Table 3-2. Teaming: results of the first call (EE, LV, LT and PL)

	EE	LV	LT	PL
Number of proposals at 1st phase	8	8	3	23[26]
Number of proposals that passed the 1st phase (received funding)	2[27]	1[28]	1[29]	3[30]
Number of proposals that passed the 2nd phase	0	1[31]	0	0
Partners in proposals that passed the 2nd phase (received funding)	-	SE	-	-
Teaming budget (all projects and phases combined)	€0.941 million	€15.497 million	€0.466 million	€1.488 million

Source: Visionary Analytics, based on E-CORDA database (extracted 2017-05-30).

Twinning seeks to strengthen the capacity of universities and/or research organisations in the EU Widening Countries. This is achieved by linking said organisations with at least two internationally-leading counterparts from the EU. Funded activities include staff exchanges, expert visits, workshops, conferences, etc.[32] Successful projects are granted approx. €1-1.5 million. Data obtained in 2017 suggests that Twinning funded seven Polish projects, seven Estonian, three Latvian and no Lithuanian projects (see Table 3-3 for more detailed information).

[26] In one of the proposals Poland was just a partner, and this project did not pass the first stage.

[27] EE-IT - Centre of Excellence on Connected Digital Economy; FINEST TWINS

[28] Centre of Advanced Materials Research and Technology Transfer CAMART²

[29] Centre of Excellence in Science and Technology for Healthy Ageing

[30] International Centre for Research on Innovative Bio-based Materials; CEZAMAT-Environment - Self-Organizing Networks for Real-Time, Wireless Monitoring of Natural Environment; Wroclaw Centre of Excellence

[31] Centre of Advanced Materials Research and Technology Transfer CAMART²;

[32] Directorate-General for Research and Innovation, "Horizon 2020 Work Programme 2014 - 2015", 14-15 and Directorate-General for Research and Innovation, "Horizon 2020 Work Programme 2016- 2017", 6-8 and 15-16

Table 3-3. Twinning 2015 (EE, LV, LT and PL)

	EE		LV		LT		PL	
	Coordinator	Partner	Coordinator	Partner	Coordinator	Partner	Coordinator	Partner
Number of proposals*	32	2	23	2	20	4	63	6
Number of proposals above threshold	22	1	14	1	12	0	42	2
Number of proposals that received funding*	7[33]	0	3[34]	0	0	0	7[35]	1[36]
Partner countries in secured proposals	BE, CH, DE, DK, EE, FI, IT, NL, SE, UK	–	DE, EL, NL, PL, SE, UA, UK	–	–	–	AT, DE, DK, FR, IT, NL, NO, UK	LV, SE, UA
Twinning budget (all projects combined)	€7.171 million	–	€2.995 million	–	–	–	€7.384 million	€0.999 million

Source: Visionary Analytics, based on E-CORDA database (extracted 2017-05-30).

* In those cases where organisations from the same country had the roles of Coordinator and Participants in the same proposal, the proposals were only counted in the Coordinator column.

ERA Chairs is an effort by the EU to tackle two main challenges faced by the EU Widening Countries: (i) limited mass of excellent researchers and (ii) limited (inward) mobility. Through this effort, the selected institutions have to assign the ERA Chair to an outstanding academic who has the capacity to attract high-level research, more EU funding and raise the standard of the organisation.[37] This instrument provides approximately €2.5 million to selected institutions from EU Widening Countries. Under the ERA Chairs´ call launched in 2015, 14 organisations in total received funding. Among them, there are four projects from EE and two from PL. LT and LV did not receive funding (see Table 3-4 for more information).

[33] Building Research Excellence in Russian and East European Studies at the Universities of Tartu, Uppsala and Kent; Widening the Scientific Excellence for Studies on Women's and Fetal Health and Wellbeing; Human Rights – Mutually Raising excellence; Rise of scientific excellence and collaboration for implementing personalised medicine in Estonia; Twinning to Strengthen Tallinn University of Technology's Research and Innovation Capacity in Nanoelectronics Based Dependable Cyber-Physical Systems; Research capacity building through improved knowledge exchange and twinning frameworks for the Centre of Excellence in Translational Medicine; Scientific Excellence in Animal Reproductive Medicine and Embryo Technology

[34] Building on Advanced Lofar Technology for Innovation, Collaboration, and Sustainability; TWINNING ON DNA-BASED CANCER VACCINES; Enhancing excellence and innovation capacity in sustainable transport interchanges

[35] Boosting the scientific excellence and innovation capacity in organic electronics of the Silesian University of Technology; Strengthening of scientific excellence of the National Veterinary Research Institute in animal health and food chain safety; Strategies towards Excellence in Immuno-Oncology; Epigenetic Risk Assessment of Assisted Reproductive Technologies; Twinning for a Sustainable, Proactive Research partnership in distributed Energy systems planning, Modelling and management; Engaged humanities in Europe: Capacity building for participatory research in linguistic-cultural heritage; SMART: Small Medicines Advanced Research Training

[36] TWINNING ON DNA-BASED CANCER VACCINES

[37] Directorate-General for Research and Innovation, "Horizon 2020 Work Programme 2014 - 2015"

Table 3-4. ERA Chairs 2015 (EE, LV, LT and PL)

	EE	LV	LT	PL
Number of proposals*	8	8	0	9
Number of proposals above threshold	6	1	0	5
Number of proposals that received funding	4[38]	0	0	2[39]
ERA Chairs budget (all projects combined)	€10.791 million	-	-	€5.487 million

Source: Visionary Analytics, based on E-CORDA database (extracted 2017-05-30).

Furthermore, SEWP also includes the development of new measures and changes in long-standing instruments:

- **European Cooperation in Science and Technology (COST)** is an intergovernmental framework that funds the networking of researchers. Half of the COST budget (€300 million) is dedicated towards the implementation of SEWP.
- **The Policy Support Facility (PSF)** seeks to provide support for governments in the design, implementation and evaluation of research and innovation policy reforms. The instrument will provide willing governments with access to relevant evidence-based expertise and evaluation results through added-value systems and services.[40]
- **Improvements in the work of NCPs** is aimed at supporting the implementation of the SEWP programme by advancing cooperation between NCPs. It should help EU Widening Countries or regions to bridge the knowledge gap and acquire necessary know-how. Funds are allocated to joint workshops, training, benchmarking and other activities.

Despite the introduced measures, most of the beneficiaries went to the EU-15 countries: 63.4% of the participants in SEWP came from the EU-15 countries and secured 49.4% of the funds.[41] Meanwhile, 32.3% of the participants were from the EU-13 and managed to secure 47% of the total funds. Moreover, the success rate of the EU-28 countries does not differ significantly between SEWP and H2020 (13.9% and 12.3% accordingly).[42]

3.2. Statistical analysis of participation of the EU-13

How successful were the new and old EU Member States (and respective BSR countries) in FPs, given the above discussed actions aimed at widening participation? The overall trends are captured by five stylised facts as discussed below. Most of these broad trends have already been identified in previous studies. They are further supported by the analysis of the most recent monitoring data. Wherever relevant, the discussion below outlines important deviations from these trends and / or differences between countries and actions.

[38] The ERA Chair for Translational Genomics and Personalized Medicine; Cognitive Electronics; Establishing ERA Chair position in Synthetic Biology at University of Tartu Institute of Technology; Cross-Border Educational Innovation thru Technology-Enhanced Research

[39] The Creation of the Department of Physical Chemistry of Biological Systems; New Strategies on Bio-Economy in Poland

[40] Directorate-General for Research and Innovation, "Horizon 2020 Work Programme 2014 - 2015", 20-21

[41] Directorate-General for Research and Innovation, "H2020 monitoring report 2015", 21-22 and 180-181

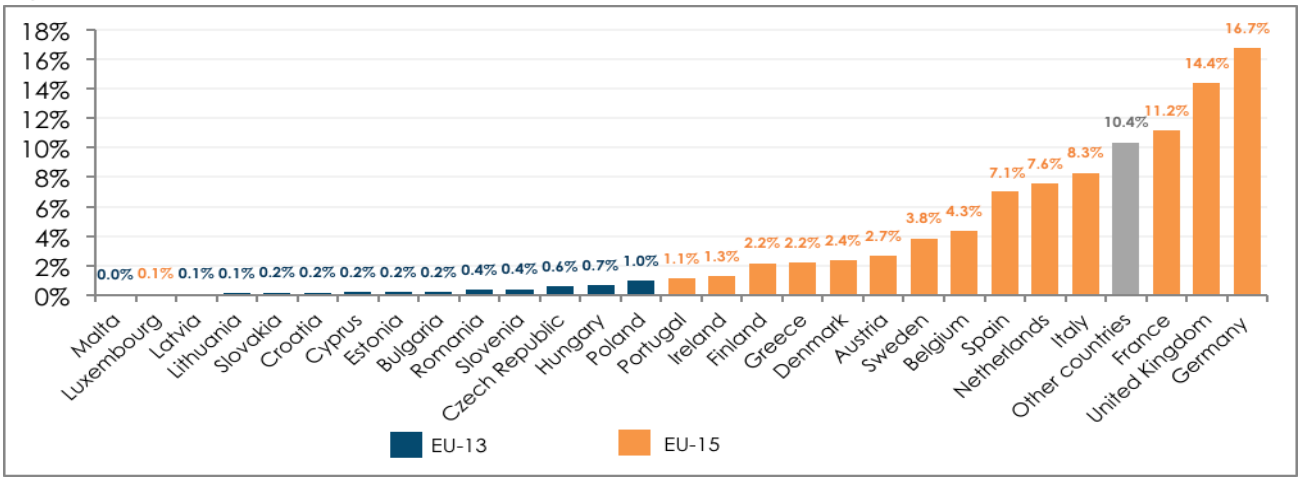
[42] *Ibid*, 14 and 21-22

Stylised Fact 1: The EU-13 receives less than 5 % of funds

Overall, 85% of FP7 funding for research projects was allocated to organizations located in the EU-15, while only 4.4% of the total FP7 funding (in total €1.8 billion) was granted to EU-13 countries.[43] During the first two years of implementation, H2020 allocated 88.5% to the EU-15 and 4.5% to the EU-13. Furthermore, not a single EU-13 country received more funding than any other EU-15 country (with the exception of Luxembourg). If one accounts for differences in country size, Malta, Cyprus and EE received more H2020 funding per capita than some of the EU-15 countries.

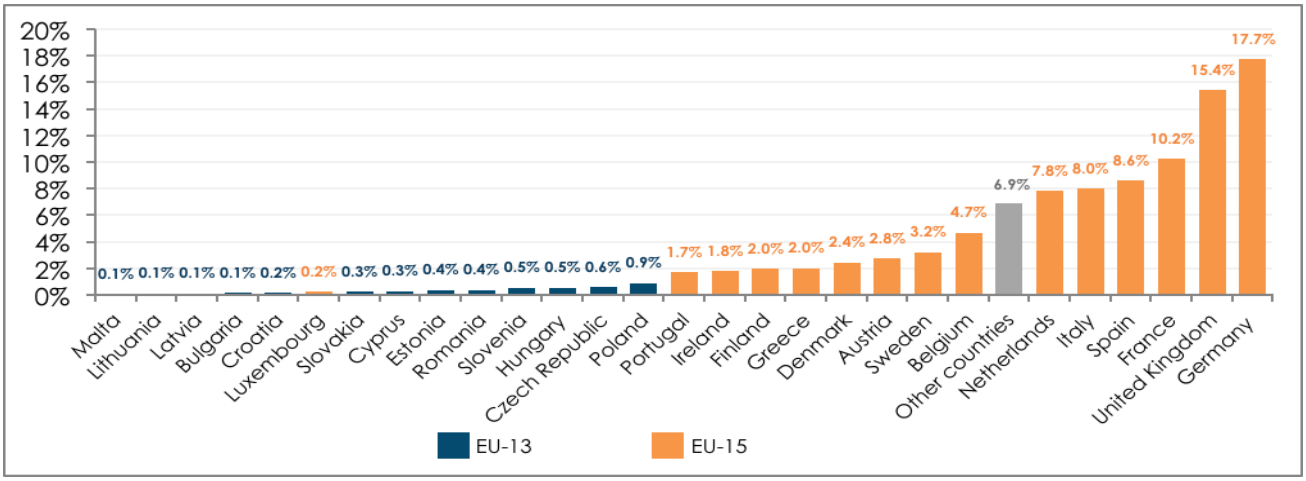
In the context of the BSR, DE, DK, SE and FI collectively received 25.1% and 25.3% of the total FP7 and H2020 funding respectively. On the other hand, Estonia, Latvia, Lithuania and Poland collectively secured 1.4% and 1.5% of the total FP7 and H2020 funding respectively. These differences within the BSR closely mirror the above discussed differences between EU-15 and EU-13 countries.

Figure 3-1. Distribution of FP7 funds per country (2007-2013)



Source: Visionary Analytics, based on the Seventh FP7 Monitoring Report, Monitoring Report 2013, Brussels, 2015, https://ec.europa.eu/research/evaluations/pdf/archive/fp7_monitoring_reports/7th_fp7_monitoring_report.pdf#view=fit&pagemode=none

Figure 3-2 Distribution of H2020 funds among countries (2014-2015)



Source: Second Horizon 2020 Annual Monitoring Report 2015, Brussels, 2016.
http://ec.europa.eu/research/evaluations/pdf/archive/h2020_monitoring_reports/second_h2020_annual_monitoring_re

[43] High Level Expert Group, *Commitment and coherence: essential ingredients for success in science and innovation. Ex-Post-Evaluation of the 7th EU Framework Programme (2007-2013)*, Brussels, 2016, p.32

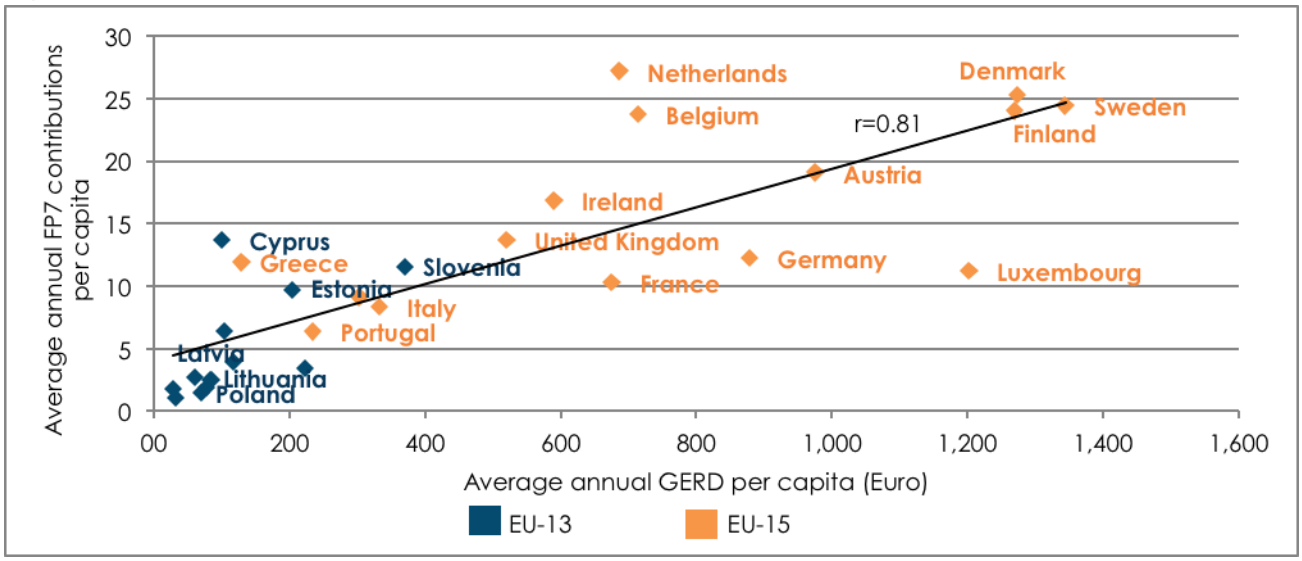
port.pdf

Stylised Fact 2: There is a strong correlation between FP7 and H2020 contributions and national R&I funding

The significant absolute and *per capita* differences between EU-15 and EU-13 are less pronounced if one accounts for the different size of national R&I systems. The latter is measured as Gross domestic expenditure on research and development (GERD) per capita. Although GERD *per se* does not directly affect success in FPs, it can be used as a proxy for measuring national R&I capacities as well as the size of national R&I systems.

The figures below suggest that while Cyprus, Malta, Slovenia and Estonia tend to receive slightly higher funding than their GERD level would suggest from FPs per capita, other EU-13 countries are under-performing (incl. BSR countries such as Latvia, Lithuania and Poland). This trend was true during the FP7 days and remains true with H2020 projects, despite the fact that the annual GERD per capita in countries such as Latvia, Lithuania and Poland increased between the FP7 and H2020 period on an average of approximately 30-50%. Average annual per capita EC contributions in Latvia increased from €2.75 to €4.6, whereas in Lithuania and Poland the increase is almost negligible (from €2.5 to €2.96 and from €1.5 to €1.83 accordingly). The only outlier to this trend is Estonia as it enjoyed a substantial increase of per capita funding (from €9.68 during the FP7 to €21.82 during H2020). In addition, the change has been minor for a majority of the other BSR countries. For Finland, average EC contributions grew from €24.02 to €28.93 and, for Sweden, from €24.42 to €26.58. The only other BSR country apart from Estonia that received a substantial increase in average per capita EC contributions was Denmark (from €25.26 to €34.31).

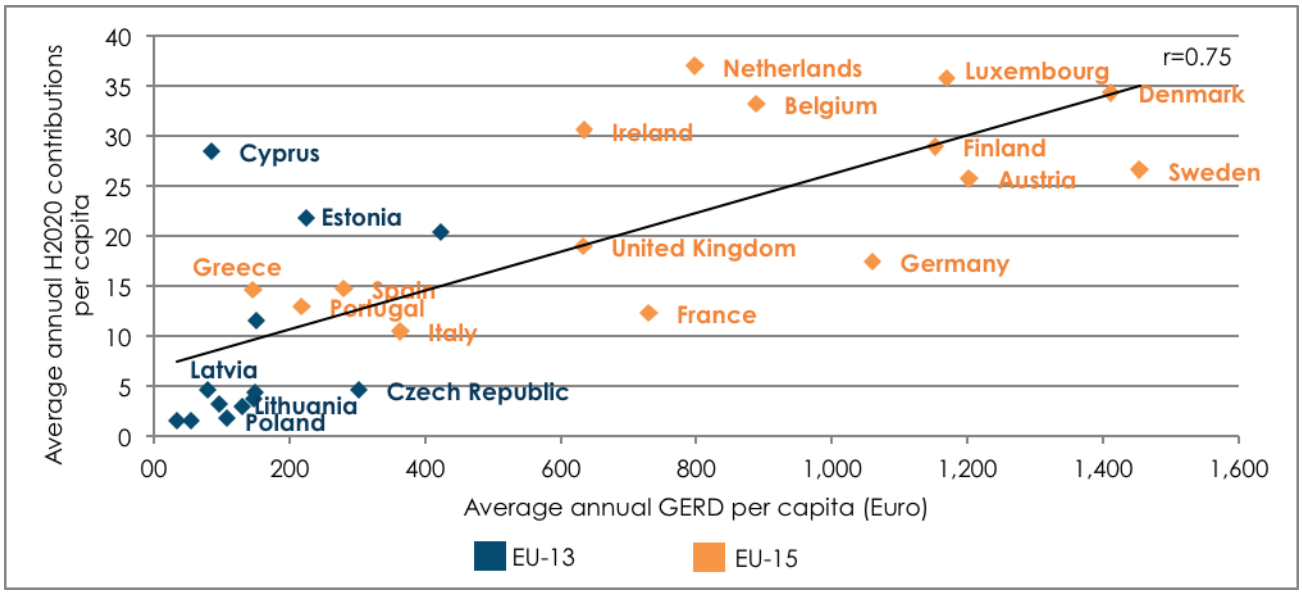
Figure 3-3. GERD and FP7 EC contributions per capita (2007-2013)



*Average FP7 EC contributions were calculated by taking the average FP7 EC contributions for each year of the FP7.

Source: Visionary analytics, based on: Seventh FP7 Monitoring Report, Monitoring Report 2013, Brussels, 2015, http://ec.europa.eu/research/evaluations/pdf/archive/fp7_monitoring_reports/7th_fp7_monitoring_report.pdf; Eurostat, Population on 1 January by age and sex, http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=demo_pjan&lang=en (extracted 2017-03-15).;Eurostat, Total intramural R&D expenditure (GERD) by sectors of performance [rd_e_gerdtot], http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=rd_e_gerdtot&lang=en (extracted 2017-03-15).

Figure 3-4. GERD and H2020 EC contributions (2014-2015)*



*Average H2020 EC contributions were calculated by taking the average H2020 EC contributions in 2014 and 2015.
Source: Visionary analytics, based on: Second Horizon 2020 Annual Monitoring Report 2015, Brussels,2016; https://ec.europa.eu/research/evaluations/pdf/archive/h2020_monitoring_reports/second_h2020_annual_monitoring_report.pdf#view=fit&pagemode=none; Eurostat, Population on 1 January by age and sex, http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=demo_pjan&lang=en (extracted 2017-03-15); Eurostat, Total intramural R&D expenditure (GERD) by sectors of performance [rd_e_gerdtot], http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=rd_e_gerdtot&lang=en (extracted 2017-03-15).

Stylised Fact 3: Differences in funding per participant are significant

Monitoring data from the FP6, the FP7 and H2020 suggests that researchers from the EU-13 submitted between 8 and 10 percent of the proposals, whereas their share of funding has not exceeded 5%. Several factors explain the difference in share of proposals and funding. First, on average, researchers from the EU-13 had a lower success rate than those from the EU-15 (see Table 3-5). The average success rate of Estonia, Latvia, Lithuania and Poland is higher than the EU-13 average during both the FP7 and H2020 (20.2% and 10.2% accordingly). The lower success rate is explained by the lower quality of proposals from the EU-13[44]. Only 43% of proposals from the EU-13 were above the quality threshold, as compared to 52% of proposals from the EU-15.

Second, participants from the EU-15, on average, received twice as much funding than those from the EU-13. This is also true for EU-13 participants from the BSR. Estonia and Poland received on average €189 and €201 thousand from the FP7 and €293 and €240 thousands from H2020 accordingly, which is higher than the overall EU-13 average. Latvia and Lithuania received €155 and €131 thousand from the FP7 and €167 and €148 thousand from H2020 accordingly, which is lower than the EU-13 average. This discrepancy is due to the following factors:

- Researchers from the EU-13 are usually project partners rather than coordinators and that significantly affects the distribution of funds.
- Researchers from the EU-13 receive lower funding for a similar amount of work because personnel costs are typically calculated based on actual (relatively low) salaries. These

[44] Commitment and Coherence: essential ingredients for success in science and innovation. Ex-Post-Evaluation of the 7th EU Framework Programme (2007-2013), Brussels, 2015

differences are amplified further, because indirect costs per participant are calculated as a percentage of direct costs that include relatively low (in comparison to EU-15) personnel costs.

Table 3-5. Participations, success rates, quality of proposals and funding per participant.

	FP6*		FP7**		H2020 (2014-2015)***	
	EU-15	EU-13	EU-15	EU-13	EU-15	EU-13
Participations	77.6 %	10.3 %	78 %	8 %	83.1 %	8.5 %
Success rates	18 %	16 %	21.6 %	17.8 %	13.4 %	9.7 %
Average EC contribution per participant (thousands euro)	€251	€109	€348	€172	€458	€ 226

* Data from: FP6 Final Review: Subscription, Implementation, Participation, Brussels, 2008 https://ec.europa.eu/research/reports/2008/pdf/fp6-final-review.pdf

** data from: Commitment and Coherence: essential ingredients for success in science and innovation. Ex-Post-Evaluation of the 7th EU Framework Programme (2007-2013), Brussels, 2015, https://www.ffg.at/sites/default/files/downloads/page/fp7_final_evaluation_expert_group_report.pdf; Data on success rates from: Seventh FP7 Monitoring Report, Monitoring report, 2013. Brussels, 2015, http://ec.europa.eu/research/evaluations/pdf/archive/fp7_monitoring_reports/7th_fp7_monitoring_report.pdf

*** Data from: Second Horizon 2020 Monitoring Report 2015, Brussels, 2016, https://ec.europa.eu/research/evaluations/pdf/archive/h2020_monitoring_reports/second_h2020_annual_monitoring_report.pdf#view=fit&pagemode=none.

Stylised Fact 4: There are strong concentration effects

As the number of previous studies have already highlighted, a significant share of funding is allocated to a small share of participants:

- The top-500 organisations that received the highest funding from the FP7 make up only 1.7% of organisations that participated in the FP7. However, they received 60% of the total funding (more than €27 billion in total)[45]. In comparison to FP6, the share of funding received by the top-500 organisations has slightly increased (up from 58%).[46]
- The top three organisations[47] collectively received €1.8 billion or 4.4% of FP7 funding. This is equivalent to the funding collectively secured by the entire EU-13.
- Similar concentration effects are also observable in our sub-sample of countries: the top three organisations[48] from EE, LV, LT and PL received 10.6% of the funding from the FP7 dedicated to this group of EU Member States.

There is also a significant concentration of funding among beneficiaries of H2020.

Stylised Fact 5: EU-13 countries are not catching up

An *ex post* evaluation of the FP6 argued that "The new Member States will assimilate further into the FPs over time, as others did before them."[49] These hopes have not yet materialised. The convergence is hardly taking place: the share of funding granted to beneficiaries from EU New

[45] Commitment and Coherence: essential ingredients for success in science and innovation. Ex-Post-Evaluation of the 7th EU Framework Programme (2007-2013), Brussels, 2015, p. 29

46 Ibid.

[47] Centre National De La Recherche Scientifique, Fraunhofer-Gesellschaft and University of Oxford

[48] Uniwersytet Warszawski (€26.93 million), Tartu Ulikool (€22.06 million), Instytut Chemii Bioorganicznej PAN (€17.83 million).

49 Report of the Expert Group. Evaluation of the sixth Framework Programmes for research and technological development 2000-2006, Brussels, 2009, p.20.

Member States has stagnated since accession. FP6 has granted the EU-12 4.6%; the FP7 – 4.4% and H2020 – 4.5% (data covers 2014 and 2015). Estonia is the only EU-13 country that has made significant progress: during the first two years of H2020, (i.e. in 2014 and 2015) it doubled the average annual funding per capita as compared to the FP7. LV, LT and PL (like most of the other EU-13 countries) have not achieved similar progress.

If these trends are not reversed in the future, this will entrench highly asymmetric relationships between centres of excellence and the periphery. The former will continue to grow by attracting funding, "brains" and setting the agenda. The latter, on the other hand, will struggle to grow its existing islands of excellence and multiply their number. Further studies on progress made in EE could potentially highlight possible alternatives to avoiding such a scenario.

4. Research networks in the BSR

There is a strong rationale for regional R&I collaboration. It facilitates the development of a critical mass, an exploitation of complementarities, access to specialised infrastructures and spill-overs of knowledge as well as contributes to the development of a regional excellence brand (see Table 4-1). Hence, this chapter seeks to answer the following questions: To what extent is there a well-integrated BSR area? What factors support or obstruct the emergence of a research networks in the BSR?

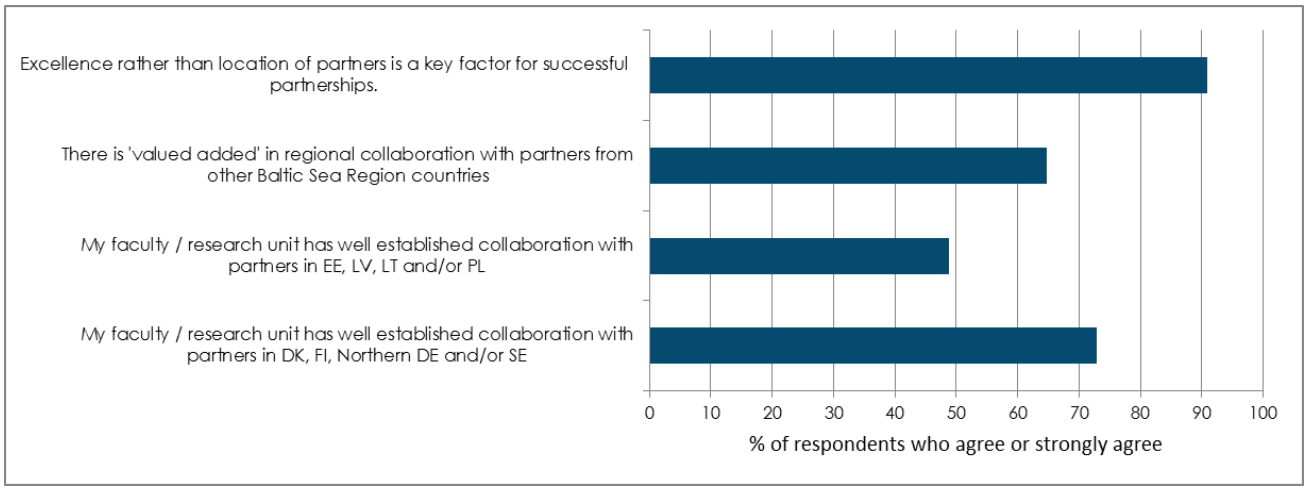
Table 4-1. Rationale for regional R&I collaboration

Economic concept	Driver	Explanation
Economies of scale	Critical mass	Pooling of funds, facilities and human resources to tackle big R&I problems that are too risky or too expensive for an individual country.
	Political power	Increase recognition of excellence (or special needs) to compete for resources from national governments or the EU
Economies of scope	Complementarities	Build on diversity of tangible (e.g. infrastructures) and intangible (e.g. competence of researchers) assets that are complementary and collectively necessary to achieve intended objectives. This is also known as related variety. In some cases, complementarities may also be due to differences in price levels.
Public and club goods	Regional identity and branding	Increase attractiveness and recognition of excellence of the region in Europe and beyond, as well as foster within-region recognition of partners, areas for cooperation, etc.
	Specialised infrastructure	Shared R&I infrastructures reduce financial costs and risks for regions or countries involved, and allow access to a greater number of researchers.
Externalities	Competence building	Spill-overs of know-how, access to networks, etc.

Source: adapted from OECD, Regions and Innovation- Collaborating Across Borders, *OECD Reviews of Regional Innovation*, 2013, p. 19, http://www.programmemed.eu/fileadmin/PROG_MED/capitalisation/OECD_Regions_Collaborating_Across_Borders.pdf.

Results of the survey of beneficiaries of the FP7 and H2020 from EE, LV, LT and PL provide broad indications of drivers for cooperation and existing partnerships (see Figure 4-1). The respondents argue that excellence (rather than location of partners) is the most important factor when choosing collaborators for R&I projects. Nevertheless, more than half of them see value added in regional collaboration with partners from the BSR. More than 2/3 of the respondents claim that their research unit has well-established collaborations with partners in Nordic countries and North DE. On the other hand, less than half cooperate with partners from EE, LV, LT and PL. To obtain more in-depth insight, the next sub-chapter provides an overview of the main partners of researchers from EE, LV, LT and PL in H2020 projects, while sub-chapter 4.2 presents four case studies on successful networks in the BSR.

Figure 4-1. Q: To what extent do you agree with the following statements regarding choice of partners for collaboration?



Source: survey of beneficiaries of FP7 and/or Horizon 2020

4.1. Cooperation of researchers from EE, LV, LT and PL in Horizon 2020 projects

This sub-chapter maps cooperation patterns of EE, LV, LT and PL with the BSR and other countries – it is likely that well established links will further grow in the future. Evidence presented here is based on the results of a Social Network Analysis. The data discussed below captures cooperation in H2020. The data set used for analysis covers all types of actions with the exception of Coordination and Support Actions (CSAs) – these were excluded, as they do not fund R&I *per se*. Patterns emerging from H2020 were also evident in previous generations of FPs and, therefore, the latter are not discussed in greater detail. The analysis for EE, LV, LT and PL relies on two indicators to identify the most frequent cooperation partners:

- Absolute share of collaborations – this indicator highlights the countries with which the largest proportion of joint projects has been carried out. For a country X, it is calculated by dividing the number of H2020 projects in which X participated together with another country by the total number of H2020 projects in which X collaborated with any EU-28 country. The main benefit of this data is that it highlights the most frequent collaborations. However, since EU-28 countries significantly differ in terms of number of H2020 projects, it is likely to indicate that the countries with the largest number of projects are the most frequent collaboration partners for EE, LV, LT and PL.
- Relative share of collaborations – this indicator seeks to highlight the most frequent collaborators, when accounting for the cross-country variation in the number of H2020 projects. To calculate collaborations between X (either EE, LV, LT or PL) and Y countries (partners from EU-28), we divided the total number of projects where X participated together with Y by the total number of projects funded in Y.

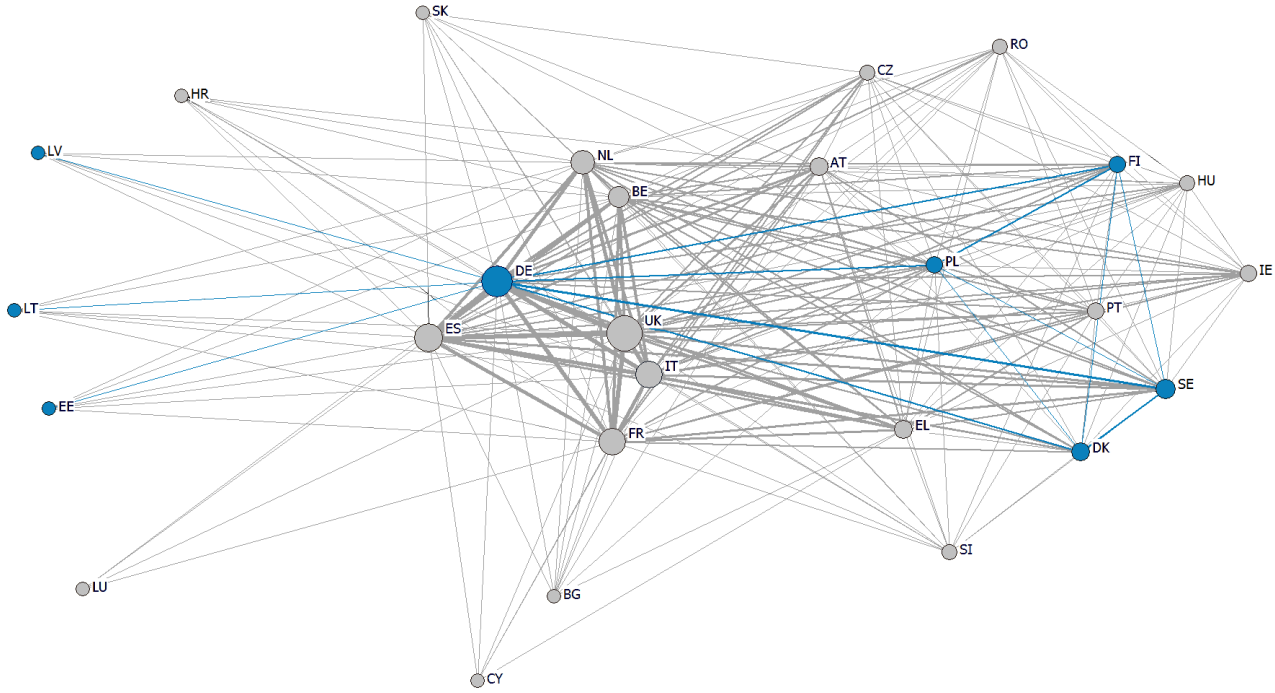
General cooperation patterns in the EU

Figure 4-2 below provides context for an in-depth analysis of EE, LV, LT and PL by outlining general cooperation patterns in the EU. The data suggests that:

- DE, Italy, UK, France, Spain, the Netherlands and Belgium form central positions within the networks. This is hardly surprising, given that these countries are leaders in terms of number of FP funded projects and size of secured share of the FP budget.
- The Nordic countries (DK, FI and SE) do intensively cooperate with each other. However, links with FP leading countries (DE, UK, France, etc.) are at least as important as the links between Nordic countries.
- The Eastern BSR countries (particularly LV, LT and EE) are at the periphery of the network.

The next sub-sections "zoom-in" on the cooperative networks of EE, LV, LT and PL.

Figure 4-2. Cooperation between the EU-28 countries in H2020 projects (includes links with more than 75 projects*)



Source: Visionary Analytics, based on the CORDIS database (extracted 2017-06-29)

* The plot does not include Malta as this country did not cooperate with any other country in H2020 projects more than 75 times.

Estonia

In absolute terms, (see Figure 4-3) researchers from EE most frequently cooperate with partners from DE, the UK and the Netherlands. DE (if not divided into BSR and non-BSR regions) is the most important partner (10.5 % of collaborations). Cooperation with the three top countries constitutes a quarter of all collaborations of Estonian researchers (see Figure 4-3 below). In comparison, collaboration between EE and all BSR countries accounts for 21.5% of joint projects in H2020. The most frequent partners from the BSR were FI (4.6%), DK (3.7%) and PL (3.5%). Hence, in absolute terms, partnerships with the leading countries in Western Europe are more frequent than with BSR countries.

However, in relative terms, (when accounting for differences in the number of funded projects by country), the importance of partnerships with other BSR countries is significantly more pronounced (see Figure 4-4). Estonian researchers participated in 16.1% projects including Latvian, 11.8% including Lithuanian and 6.3 % including Finnish researchers. Furthermore,

although DE, the UK and the Netherlands are important partners for Estonian researchers, the reverse does not hold true: Estonian researchers constitute a very small share of partners for German (4.8%), British (1.8%) and Dutch (3.3%) researchers.

Figure 4-3. Absolute share of collaborations: percentage of collaborations between EE and other MS in H2020 projects*

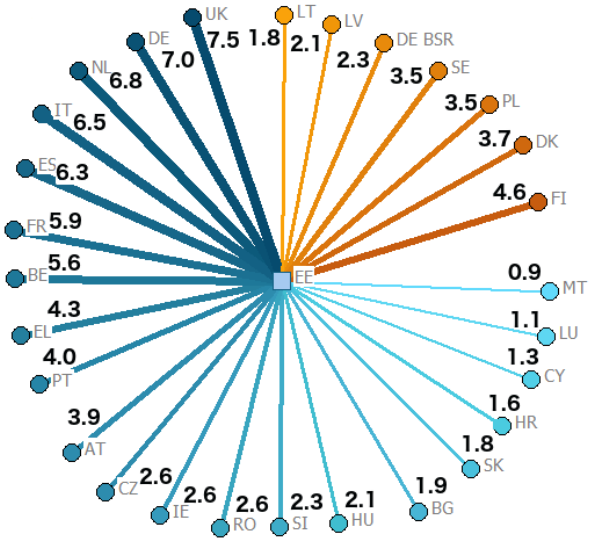
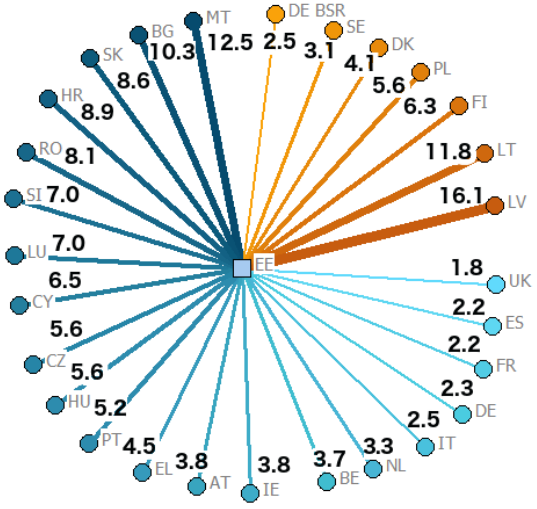


Figure 4-4. Relative share of collaborations: participation of Estonian researchers: percentage of target countries' projects[50]



Source: Visionary Analytics, based on CORDIS. Data reflects cooperation in H2020, coordination and support actions not included in the analysis.

*If several Estonian organisations collaborated on the same project with several organisations from the same country, this is counted as a single collaboration. Note: The gradient of colour and the weight of line represents the percent of projects; orange gradient represents partnership with organisations from the BSR countries; blue gradient – from remaining Europe; DE BSR – the north of DE, which is considered to belong to the BSR (includes these DE's federal states: Hamburg, Berlin, Brandenburg, Schleswig-Holstein and Mecklenburg-Western Pomerania); DE in the plot does not include states from the BSR (DE BSR)

Latvia

In absolute terms, (see Figure 4-5), organisations from the EU-15 are the most common partners for researchers from LV (DE, if not separated (9%), the UK (6.4%), Italy (6.1%) and the Netherlands (5.8%), etc.). Cooperation with other BSR countries accounts for 23% of partnerships. The most common partner-countries from the BSR are PL (4.5%), SE (3.9%) and DK (3.7%).

In relative terms, (see Figure 4-6), researchers from LV frequently cooperate with other researchers from LT (13.9%), Malta (12.5%), Slovakia (11.1%) and EE (10.5%). Hence, cooperation between new EU Member States and between geographically proximate countries gains prominence when accounting for the number of H2020 projects per country.

[50] Calculated by dividing the total number of projects in which Estonia participated with the target country by the total number of H2020 projects carried out by the target country.

Figure 4-5. Absolute share of collaborations: percentage of collaborations between Latvia and other EU Member States in H2020 projects*

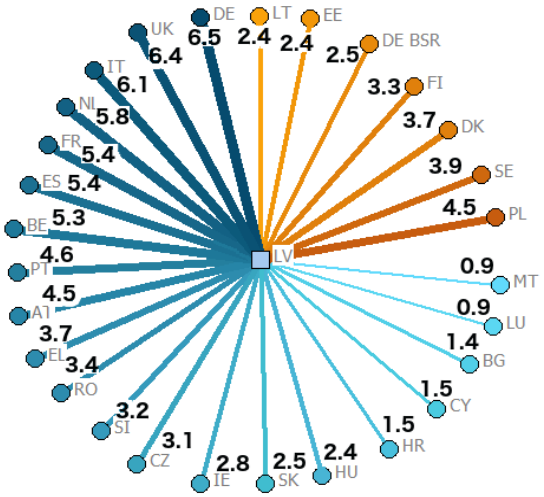
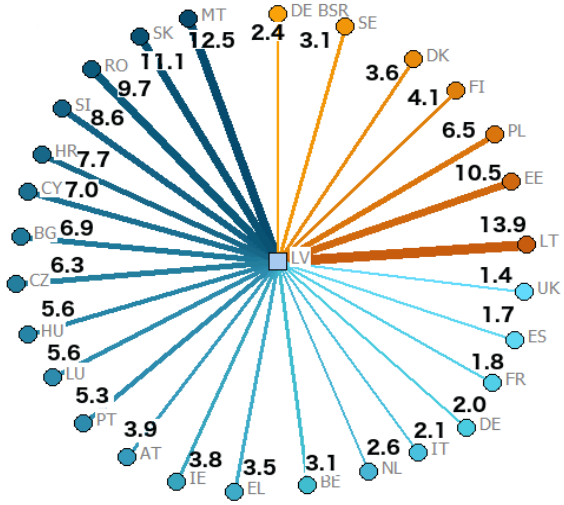


Figure 4-6. Relative share of collaborations: participation of Latvian researchers: percentage of target countries' projects[51]



Source: Visionary Analytics, based on CORDIS. Data reflects cooperation in H2020, coordination and support actions not included in the analysis.

*If Latvian organisations collaborated on the same project with several organisations from the same country, this is counted as a single collaboration. Note: The gradient of colour and the weight of line represents the percent of projects; orange gradient represents partnership with organisations from BSR countries; blue gradient – from remaining Europe; DE BSR – the north of DE, which is considered to belong to BSR (includes these DE's federal states: Hamburg, Berlin, Brandenburg, Schleswig-Holstein and Mecklenburg-Western Pomerania); DE in the plot does not include states from the BSR (DE BSR)

Lithuania

In general, Lithuanian researchers follow the same trend of cooperation as the other Baltic countries. In absolute terms, (see Figure 4-7), the largest proportion of collaborations are established with the big EU-15 countries (the UK, DE, Italy and France). While in relative terms, (see Figure 4-8), the most frequent collaborations are with other EU-13 countries (Slovakia and Croatia in particular) and neighbours (LV, EE and PL).

[51] Calculated by dividing the total number of projects in which LV participated with the target country by the total number of H2020 projects carried out by the target country.

Figure 4-7. Absolute share of collaborations: percentage of collaborations between LT and other EU Member States in H2020 projects*

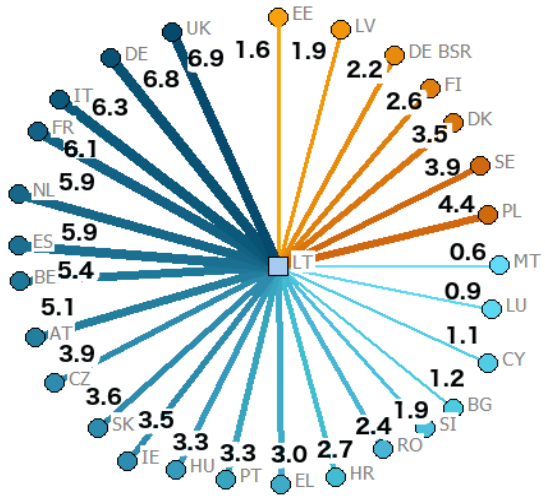
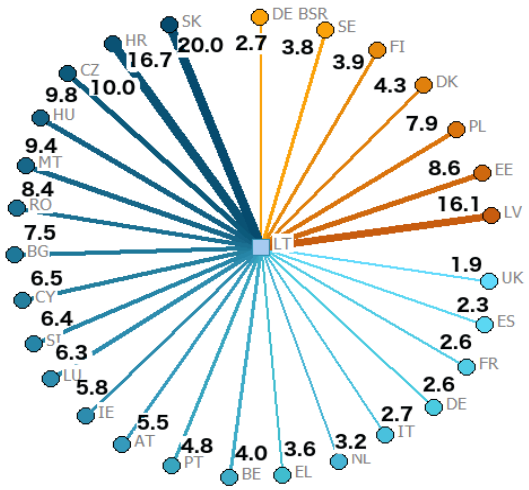


Figure 4-8. Relative share of collaborations: Participation of Lithuanian researchers: percentage of target countries' projects [52]



Source: Visionary Analytics, based on CORDIS. Data reflects cooperation in H2020, coordination and support actions not included in the analysis.

* If Lithuanian organisations collaborated on the same project with several organisations from the same country, this is counted as a single collaboration. Note: The gradient of colour and the weight of line represents the percent of projects; orange gradient represents partnership with organisations from BSR countries; blue gradient – from remaining Europe; DE BSR – the north of DE, which is considered to belong to BSR (includes these DE's federal states: Hamburg, Berlin, Brandenburg, Schleswig-Holstein and Mecklenburg-Western Pomerania); DE in the plot does not include states from the BSR (DE BSR)

Poland

Collaborations of Polish researchers also follow the trends outlined above. In absolute terms, (see Figure 4-9), the largest share of its collaborations are with DE (12%, if not divided into BSR and non-BSR regions), the UK (8.7 %), Italy (8.4 %) and France (8.0 %). Furthermore, PL's collaborations with EE (1.3 %), LV (1.4%) and LT (1.5%) are less frequent than with many other EU-13 countries (including the Czech Republic, Hungary, Romania, etc.) However, when accounting for the number of projects per country (see Figure 4-10), the results dramatically change. Researchers from PL constitute one of the central hubs for collaborations with other EU-13 countries: the former participate in nearly 1/3 of projects that include researchers from LT, LV, Slovakia and others.

[52] Calculated by dividing the total number of projects in which LT participated with the target country by the total number of H2020 projects carried out by the target country.

Figure 4-9. Absolute share of collaborations: percentage of collaborations between PL and other EU Member States in H2020 projects*

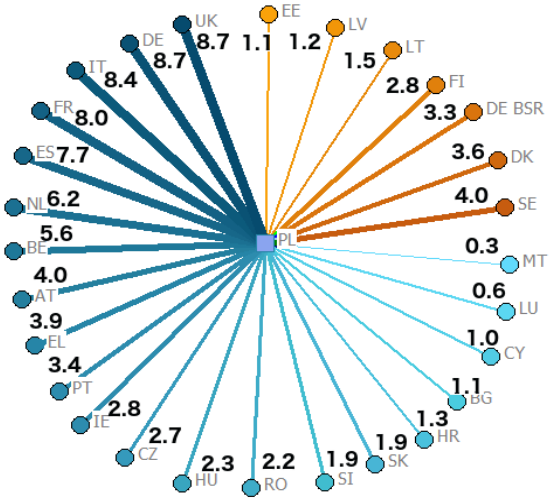
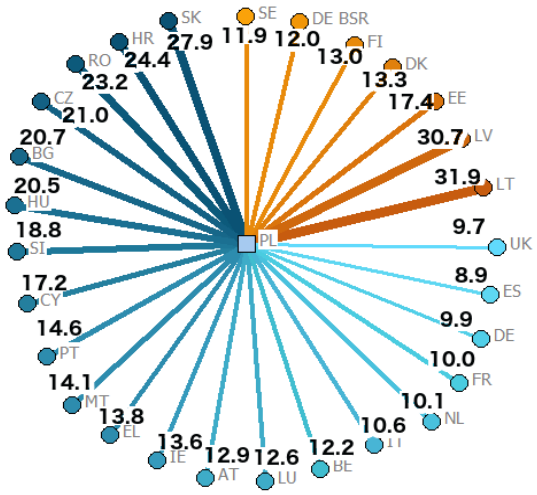


Figure 4-10. Relative share of collaborations: participation of Polish researchers: percentage of target countries' projects [53]



Source: Visionary Analytics, based on CORDIS. Data reflects cooperation in H2020, coordination and support actions not included in the analysis.

*If Polish organisations collaborated on the same project with several organisations from the same country, this is counted as a single collaboration. Note: The gradient of colour and the weight of line represents the percent of projects; orange gradient represents partnership with organisations from BSR countries; blue gradient – from remaining Europe; DE BSR – the north of DE, which is considered to belong to BSR (includes these DE's federal states: Hamburg, Berlin, Brandenburg, Schleswig-Holstein and Mecklenburg-Western Pomerania); DE in the plot does not include states from the BSR (DE BSR)

To sum-up, in absolute terms, organisations from EE, LV, LT and PL more frequently cooperate with researchers from DE, the UK, the Netherlands, France, Italy and Spain rather than with other BSR researchers. However, when accounting for the differences in the number of projects per country, researchers from the EE, LV, LT and PL most frequently cooperate with partners from the BSR and other EU-13 countries (including their neighbours). The latter finding could be explained as follows: a) researchers from EE, LV, LT and PL (and the EU-13) tend to join large H2020 projects that cover all or nearly all of the EU-28 countries; b) this leads to the statistical conclusion that EE, LV, LT and PL (and the EU-13 more generally), in relative terms, cooperate very closely, because the EU-13 are overall involved in a relatively small number of projects. Furthermore, the difference between absolute and relative estimates can be interpreted as follows: the leading Western EU countries (DE, the UK, the Netherlands, etc.) are important partners for EE, LV, LT and PL, but the reverse does not hold true. The key implications of these findings are as follows:

- The BSR as an integrated research area has not yet emerged. There is intensive cooperation between the Nordic countries and, in relative terms, researchers from EE, LV, LT and PL cooperate rather frequently. However, the two groups of countries do not frequently cooperate in absolute or in relative terms. Furthermore, the leading R&I performers in Western Europe (DE, the UK, etc.) are more important partners than other BSR countries.
- Nevertheless, there is some evidence that neighbours tend to cooperate more frequently than geographically and culturally distant countries. This trend, however, is only evident when

[53] Calculated by dividing the total number of projects in which Poland participated with the target country by the total number of H2020 projects carried out by the target country.

accounting for the number of projects per country and applies to neighbours rather than the BSR region as such[54].

4.2. Existing networks

This sub-section provides an in-depth analysis of the set-up and evolution of four successful networks in the BSR. It seeks to answer the following questions: how the networks evolved, when and why they included researchers from EE, LV, LT and PL, to what extent is participation of researchers from EE, LV, LT and PL sustainable, and what challenges do the networks face? Well-established networks for analysis were selected in line with the following criteria:

1. The same group of organisations (with minor changes in network membership) participated in at least two FP7 and/or H2020 projects.
2. At least two organisations in the network are from LT, LV, EE or PL. For example, if an organisation from LV worked together on two projects with the same two organisations from the BSR countries, we considered that to be a network.

Seven cross-national networks and one network that included only participants from LV (SUNShiNE) satisfied the above criteria. The seven cross-national networks did not include networks comprised of organisations from almost all of the EU-28 Member States. Such networks were omitted, as it is unlikely that they provided researchers from the BSR with extensive collaboration opportunities. Table 4-2 provides a short overview of the selected networks and the case studies below provide a more in-depth overview. Importantly, we did not identify a single research network that: a) satisfied the two conditions b) was led by a partner from EE, LV, LT and PL and c) was predominantly composed of researchers from the BSR countries (as opposed to a geographically dispersed group of countries or organisations predominantly from one BSR country). This suggests that truly BSR-focused networks are yet to emerge.

Table 4-2. Identified research networks

Networks' projects	Research area	Coordinator country	Partners from the BSR by country*
EPICE (FP7), SHIPS (H2020), RECAP (H2020)	Medicine and health, Child health	FR	DK (1), EE (1), PL(1), SE (1)
SMES GO HEALTH (FP6), FIT FOR HEALTH (FP7), FIT FOR HEALTH 2.0 (FP7)	Coordination and cooperation, Medicine and health	AT	DK (1), EE (2), LV (1), PL (1), SE (2),
LASERLAB-EUROPE (FP6, two FP7 and H2020)	Laser research	DE for FP6 and first FP7 project, SE afterwards	LT (1), LV (1), PL (1)
SUNShINE** (H2020), Accelerate SUNShINE (H2020)	Building renovation	LV	LV (5)
DYNICP (FP7), BRAINSAFE (FP7), BRAINSAFE II (FP7)	Medicine and Health	EE coordinated DYNCIP, LT both BRAINSAFE projects	LT (2), EE (1), DK (1)
More than three H2020 projects in the field of aviation	Aviation	Different coordinators for different projects, none of which are from the BSR	PL (1), LT (1), SE (2)
AMBIPOD (FP7),	Life Sciences	PL	PL (1), LT (1)

[54] To illustrate this, consider the case of Poland: in absolute and relative terms, it tends to cooperate more extensively with direct neighbours (Lithuania, Slovakia and the Czech Republic) than with Estonia, despite the high standing of the latter in the European Innovation Scoreboard.

EXCILIGHT (H2020)			
ARCADIA (FP7), BRILLIANT (H2020)	Nuclear Fission	RO coordinated ARCADIA, LT coordinated BRILLIANT	PL (1), LT (1), SE (1), EE (1), LV (1)

*Partners from the BSR by country include all organisations from the BSR that participated in at least one FP7 and/ or H2020 project. This does not include organisations that coordinated the project at least once.

Case Study #1 – EPICE + SHIPS + RECAP

FP projects

The network participated in three FP projects:

- **Effective Perinatal Intensive Care in Europe: translating knowledge into evidence based practice (EPICE)** (2011/01/01–2015/12/31) – An FP7 project aimed at building a knowledge base that shows how scientific evidence is translated into health services, with a specific focus on infant healthcare.
- **Screening to Improve Health in Very Preterm Infants in Europe (SHIPS)** (2015/09/01–2018/08/31) – An H2020 project that is a continuation of the work done during EPICE, which aims to access the quality of infant health screening programmes.
- **Real-time Content Analysis and Processing (RECAP)** (2017/01/01–2021/03/31) – A new H2020 project, that is a continuation of the SHIPS project, and that aims to create an ICT platform with data collected through the previous projects.

At the time of writing, the consortium had one submitted application, which was under evaluation.

Members

The following organisations participated in both the EPICE and SHIPS projects and could be considered as the core of the network:

- Institut national de la santé et de la recherche médicale (National Institute of Health and Medical Research (Inserm); FR) – Coordinator
- Uniwersytet Medyczny im Karola Marcinkowskiego w Poznaniu (Poznan University of Medical Science (PUMS); PL)
- Regione Lazio (Lazio Region; IT)
- Tartu Ülikool (University of Tartu; EE)
- Stichting Katholieke Universiteit (Foundation of Catholic Universities; NL)
- Philipps-Universität Marburg (Philipps University of Marburg; DE)
- Karolinska Institutet (Karolinska Institute; SE)
- Universidade do Porto (University of Porto; PT)
- University of Leicester (UK)
- Ospedale Pediatrico Bambino Gesù (Bambino Gesù Children's Hospital; IT)

Research area

The network operates in the field of healthcare, with a focus on infant health. The main goal of the network is to improve infant survival and long-term health by checking and ensuring that available medical knowledge is applied in practice.

History of the network

The core organisations, which later formed the network, started working together in the 90s on different projects. Later they worked on an EU project named MOSAIC. During this project, the

network was unofficially created. At the end of MOSAIC, the network was searching for new opportunities and they decided to start participating in a FP project. Their first project was EPICE (2011), and after its end they started a new project named SHIPS (2015).

The role of partners from EE, LV, LT and PL

Currently, the network has one partner from PL (Poznan University of Medical Science) and one from EE (University of Tartu). The partner from PL was part of the network from the start (they were collaborating with the Coordinator of the network already in the 90s), while researchers from EE joined in 2007.

PL joined the network due to their pre-existing connections and extensive experience in the field of infant health care. However, the Estonian researchers' route to collaboration was slightly different. Interviews revealed that, at the time, the EC was informally encouraging expanding networks by including more organisations from Central and Eastern Europe. As a result, Project Coordinators sought additional partners from the new EU Member States. Partners from EE were selected because:

- They had demonstrated scientific excellence in the field of interest of the network
- They already possessed the necessary data for the project
- EE is a small country and that makes it is much easier to collect data, i.e., communication between different hospitals is much easier.
- There is a small number of immigrants in EE. This matters because immigrants are considered a high-risk group for premature birth, and, as they tend to travel a lot, data collection is very difficult.
- The rates for researchers in new EU Member States are smaller than for those in the West Europe.

Obstacles and barriers

Researchers from PL and/or EE mentioned the following obstacles to participation:

- The huge bureaucratic burden of H2020 projects. This is especially problematic for researchers from this network who are also medical practitioners. They are not used to the forms, writing style and other EU requirements.
- Researchers from the BSR receive less pay than those from the West. For some researchers, this is demotivating, especially because they do not believe that they are doing less work.
- They have to prove themselves at each step. One interviewee felt that he had to work much more than other researchers from Western Europe to prove that he was on the same level. This could be demotivating for some researchers from the BSR and prevent them from participating outright.

Future plans

Cooperation within the network is likely to continue. As was mentioned previously, the network has already submitted another application. Furthermore, the network is likely to expand, since the core research team is looking for new partners as they wish to have as much data as possible. During the ongoing project, they are unable to include new members in the network, but during this period, potential partners are able to attend their meetings and contribute to the discussion. If they will be able to demonstrate their competence, it is very likely that for the next project they will be included in the network.

Case Study #2 – FIT FOR HEALTH

FP projects

The network has already existed for around 15 years. Throughout the years, the network participated in a large number of thematically different FP6 or FP7. However, the focus of the case study will be projects related to the health sector. Several projects of the network on this theme are:

- SMES GO HEALTH (2007/02/01 – 2010/01/31) – An FP6 project designed to support SMEs and researchers that wish to participate in the FP7.
- FIT FOR HEALTH (2010/10/01 – 2013/09/30) – An FP7 project with the goal of enhancing participation of SMEs in FP7 health theme calls.
- FIT FOR HEALTH 2.0 (2013/11/01 – 2017/10/31) – A project financed by the FP7 that is a continuation of the FIT FOR HEALTH project.

Members

Membership in this network heavily fluctuates from project to project. However, the network core that participated in both FIT FOR HEALTH and FIT FOR HEALTH 2 projects, consists of seven organisations:

- Die Österreichische Forschungsförderungsgesellschaft FFG (Austrian Research Promotion Agency; AT) – Coordinator
- Euro-Top SCRL (BE)
- Research and Innovation Management Services bvba (BE)
- Forschungszentrum Jülich (Jülich Research Centre; DE)
- Steinbeis Innovation gGmbH (DE)
- Εθνικό Ίδρυμα Ερευνών (National Research Foundation; EL)
- Ministerie Van Economische Zaken (Ministry of Economic Affairs; NL)
- FM MANAGEMENT CONSULTANCY (RO)

There are also several organisations from the BSR that on several occasions cooperated with the core:

- Sihtasutus Eesti Teadusagentuur (Estonian Research Council; EE)
- SA Archimedes (Archimedes Foundation; EE)
- Latvijas Tehnoloģiskais centrs (Latvian Technological Center; LV)
- Instytut Podstawowych Problemów Techniki PAN (Institute of Fundamental Technological Research; PL)

Research area

The main goal of the network is to support research intensive SMEs in health related FP7 and H2020 calls.

History of the network

The network originated around 15 years ago with the aim of helping SMEs in health-related FP calls, as well as to promote cooperation between NCPs on Health in Europe. Throughout the years, they participated in several FP projects and, in 2007, started work on the SMES GO HEALTH project. During SMES GO HEALTH, many BSR organisations joined the network.

The role of partners from EE, LV, LT and PL

The network started their cooperation with SA Archimedes (EE), the Latvian Technological Center (LV) and the Institute of Fundamental Technological Research (PL) 10 years ago with the SMES GO HEALTH project. Cooperation with the Estonian Research Council (EE) started in 2010 with the FIT FOR HEALTH project. In FIT FOR HEALTH 2.0, there were no participants from the BSR.

Both SMES GO HEALTH and FIT FOR HEALTH were large-scale projects that were required to have representatives from as many EU countries as possible. This pushed the network to include organisations from the BSR region. However, for FIT FOR HEALTH 2.0 there was no such push, and that led to a smaller network without EE, LV and PL.

Interviewees argued that the main value added by partners from Central and Eastern Europe is related to their knowledge of the region. Because of their common history, organisations from one country often have a good understanding about other East European countries and the partners there.

Obstacles and barriers

For the network, the main problem is that the budget is not large enough. For partners from the BSR region, one obstacle is that often the experience and knowledge of researchers from Eastern Europe is not valued as highly as that from the West. Because of that, respondents from the BSR strongly believe that the main reason why they were included in the network for several projects is only for geographic coverage.

Future plans

The network itself does not have any concrete plants for the future, as currently there are no suitable calls. However, if there will be a new call that will suit them, they will participate. In addition, if the call will encourage a large network, they most likely will enlarge again.

Case Study #3 – LASERLAB

FP projects

Through the years, the network participated in four FP projects:

- LASERLAB EUROPE I (FP6; 2004/01/01 – 2008/12/31)
- LASERLAB EUROPE II (FP7; 2009/03/01–2012/05/31)
- LAERLAB EUROPE III (FP7; 2012/06/01 – 2016/11/30)
- LASERLAB H2020 (H2020; 2015/12/01 – 2019/11/30)

Members

Currently, the network consists of 26 members from 16 countries. The members include:

- Lunds universitet (Lund University; SE) – coordinator of the last two LASERLABs.
- Forschungsverbund Berlin E.V. (Berlins Research Association; DE) – Coordinator of the first two LASERLABs.
- Vilniaus Universitetas (Vilnius University; LT)
- Latvijas Universitāte (University of Latvia; LV)
- Wojskowa Akademia Techniczna im. Jarosława Dąbrowskiego w Warszawie (Military University of Technology in Warsaw; PL)
- Other 21 organisations.

Research area

LASERLAB networks focus on both high and low energy laser research and their applications. The aim of the network itself is to form an interdisciplinary net of European laser laboratories and to promote laser research in Europe.

History of the network

Unofficially, the network started at the end of the 90s. During FP4-FP5, there were many programmes supporting individual researchers, however, EC indicated that they wished to see more structured and institutionalised cooperation. Hence, the researchers formed a laser network. Furthermore, the FP6 aimed at funding larger projects run by a single formal network, rather than awarding many individual contracts. Hence, during 2002-2003, the cooperation transformed into a formal network consisting of representatives from nine countries (incl. LT). Although, formally, the network is a combination of organisations, in reality it is much more than that. The LASERLAB network is a combination of national laser research infrastructures. As a network, they submitted their first LASERLAB (FP6) proposal and won.

To secure funding from the FP7, the network had to further expand, although the network did not expect to secure larger budget. Hence, the network faced a dilemma: to expand, but individually make less money, or not to expand and reduce the likelihood of success. The network decided to expand and in 2007 already included 16 countries. It won the next call and continued to cooperate.

After the first FP7 call, the network participated in the next FP7 call and after that in a H2020 call, securing funding in all of them. For these calls, the network did not expand to new countries, but employed several subcontractors from countries that are not covered by the partners.

The role of partners from EE, LV, LT and PL

Currently, LASERLAB has one partner from LT (Vilnius University), one from LV (University of Latvia) and one from PL (Military University of Technology in Warsaw). The partner from LV joined the network in 2004, during the first LASERLAB project. Partners from LV and PL joined the team in 2007 during the first FP7 call.

LT was included in the LASERLAB due to their excellence in the field, a strong laser research infrastructure, as well as their geographic position. PL and LV did not have a strong infrastructure like LT, but they were still invited because of their geographic position and because they had several excellent researchers in the field of laser technologies.

According to the interviewees, all researchers in the network bring a large amount of experience and knowledge to the network, independent from where they live. Some partners mentioned that researchers from LV and LT are very motivated and well organised as well as create significant added value.

Obstacles and barriers

Limited funding is the main obstacle for the network. Currently, they are receiving less funding than previously (€14 million previously, currently €10 million), even though the number of participants has almost doubled. Because of that, they are unable to expand. Another major

problem that surfaced recently is related to uncertainty regarding future funding – network members are concerned that the FP9 will not further fund LASERLAB.

Future plans

The long history of LASERLAB can be explained by the fact that it is a network of infrastructures with a structured research agenda. This has contributed to the viability of the network, as it facilitates exploitation of a related variety, i.e. it complements its own expertise and infrastructure with that of its network partners. Nevertheless, significant uncertainty regarding future funding remains. Currently, the network runs LASERLAB H2020, which will last until the end of 2019. One of the possible scenarios is to gain European Research Infrastructure Consortium status for their network. However, this implies a need for additional national funding, which may be difficult to obtain.

However, the respondents agree that even if they will not be able to secure any funding, they will continue to cooperate. Researchers in the network learned throughout the years that such cooperation is hugely beneficial to its members. In addition, they trust each other and have similar goals, which reduce obstacles to further cooperation.

Case Study #4 – SUNShiNE

FP project **Save your bUildiNg by SavINg Energy (SUNShiNE**) (H2020) was the first, and currently the only, project for the network. This project started on 2015/03/01 and should end on 2018/02/28. However, before SUNShiNE, some members had prior experience of cooperating with one another in non-framework projects.

Members

The network consists of seven members that were chosen based on their exceptional competence:

- Rīgas Tehniskās universitātes Vides aizsardzības un Siltuma Sistēmu institūts (Riga Technical University Institute of Energy Systems and Environment; LV) – experienced researchers in fields of energy efficiency and renewable energy and the Coordinator of the network.
- RENESCO (LV) – An energy service company (ESCO) that has large experience in implementing in multifamily building renovation.
- Ēku saglabāšanas un energotaupības birojs (Energy Conservation Bureau; LV) – Electronic Product Code (EPC) administrator in Latvia.
- Ekodoma (LV) – An advisory company with 25 years of experience in energy efficiency and sustainable energy.
- Salaspils Siltums (Salaspils Heat; LV) – A Salaspils based company that provides heating solutions and building renovation.
- ECO.NRG (LV) – A recently formed energy service company.
- Funding for Future (NL) – An alternative investment management fund that is committed to investing €0.5m to start the project.

Research area

The network aims to improve the energy efficiency of buildings in Latvia. SUNShiNE tries to achieve this through deep renovation – capturing the full energy efficiency potential of a building by creating building envelopes. This is especially relevant for Latvia, as their multifamily building stock continues to deteriorate due to a lack of proper maintenance.

History of the network

The network, as it is now, was formed in around 2014. It was created specifically for the SUNShiNE project. However, there was prior cooperation between (i) Riga Technical University Institute of Energy Systems and Environment (ii) Ekodoma and (iii) Energy Conservation Bureau. More specifically, the Riga Technical University has been working with Ekodoma for more than 10 years. This partnership was possible since many Ekodoma employees also worked at the Riga Technical University. The partnership with the Energy Conservation Bureau started after its inception in 2012. Before forming the network, the core team had already worked on the idea of refurbishing multifamily buildings.

The role of partners from EE, LV, LT and PL

The network mainly consists of organisations from Latvia. They are responsible for both coordinating and carrying out the project. The main reason behind the composition of the network is that the main network project (i.e., SUNShiNE) currently only focuses on Latvia. Hence, when creating the network, the core team heavily favoured organisations from Latvia. However, according to the respondents, there are other benefits from coordinating with researchers from the BSR that are not present when coordinating with researchers from Western Europe:

- Organisations in the BSR have similar problems and a similar climate, so the network would not need to create completely new solutions for those regions (i.e., buildings are structurally the same).
- Researchers from this region have lower hourly rates than those from the West.
- Their knowledge and experience are similar and hence, it is easier to communicate with them.

Obstacles and barriers

One of the main obstacles that members of this network face is that the organisations from the West do not see them as equals. They have to work extra hard to prove their worth, compared to other organisations from the EU-15. In addition, another obstacle they faced relating specifically to the project is the way the impact of the project has to be calculated. In the proposal, they had to calculate the impact in absolute values (e.g., Gigawatt hours). This was problematic for them as Latvia is small and hence, the absolute impact would be small compared to an impact that could be achieved in a country such as Germany or France. One of the interviewees suggested that this measure should be changed from absolute values to something relative (e.g., Gigawatt hours per capita).

Future plans

The network will continue to cooperate as well as to expand. They already have another project planned for the future named Accelerated SUNShiNE, in which the network will work with municipalities. In addition, they wish to expand the network, as they also wish to participate in other projects that require other kinds of expertise.

4.3 Summary: Is there a Baltic Sea Region research area?

The evidence discussed above suggests that the BSR is yet to emerge as an integrated research area. In absolute terms, researchers from EE, LV, LT and PL tend to cooperate the most frequently with organisations in the UK, Germany, the Netherlands, France, Italy and Spain rather than with the Nordic countries. Furthermore, when accounting for the number of H2020 projects per

country, EE, LV, LT and PL tend to cooperate more frequently with neighbouring countries rather than within the BSR. Lastly, the analysis failed to identify long-standing networks that are successful in FPs and are predominantly focused on the BSR. Previous studies[55] highlight some of the key factors explaining the lack of structured integration in the BSR:

- As a macro-region, the BSR includes areas with widely varying levels of economic development and R&I capacity.
- While the Nordic countries have been able to jointly develop a Nordic research and innovation area supported by transnational governance structures (such as NordForsk), such mechanisms (and funding for such initiatives) are absent in the BSR macroregion.
- National and regional operational programmes outlining priorities for the ESIF do little to coordinate national investments with the transnational framework.
- A significant share of current cooperation is driven by the partners' perceptions on how to maximise their chances in securing funding from the FPs. Therefore, cooperation is mostly project-driven and does not necessarily lead to structured partnerships or long-term joint activities. The case study on LASERLAB suggests that such one-off cooperation could be averted if the focus were to be shifted towards the better exploitation of a related variety of national infrastructures.

[55] Technopolis Group and Manchester Institute of Innovation Research, *Drivers of International collaboration in research*, Brussels, 2009, p. 72-76.

5. FP requirements and obstacles behind low levels of participation and cooperation

Regulations governing implementation and management of FPs, as well as operational documents setting out the rules for specific calls for proposals are the same for all eligible applicants. There are no explicit or implicit rules targeted at specific EU Member States. In fact, such regulations would violate the fundamental legal principles of the EU and the ERA. Our analysis confirms that there is no such regulation that directly puts researchers from specific EU Member States (including EE, LV, LT and PL) at a comparative (dis)advantage when competing for funding from FPs. Hence, the universal rules governing the FPs establish equal opportunities. These, however, do not result in an equal distribution of funding due to differences in inherited institutional qualities and institutional strategies. Therefore, capacities and R&I excellence, past experience with competitive funding, membership and role in networks, national R&I policy contexts and other factors have a significant effect on the capacities of researchers from EE, LV, LT and PL (and other EU-13 countries) to participate in FPs.

Text Box 5-1. Criteria for evaluation of proposals

Criteria for evaluation of proposals submitted for H2020

Proposals submitted to H2020 are evaluated by panels of experts against three criteria:

- *Excellence*. This covers the following aspects: pertinence of the objectives of proposed project, credibility of the proposed approach, level of ambition, soundness of concept, etc.
- *Impact* in terms of the expected impacts listed in relevant work programme. For example, Research & Innovation Action (RIA) and SME Instrument aim at enhancing innovation capacity, strengthening the competitiveness and growth of companies <…>, etc.
- *Quality and efficiency of the implementation.* This includes coherence and effectiveness of the work plan, complementarity of participants within the consortium, appropriateness of the management structures.

One should note that different types of action tend to emphasise different aspects of the above award criteria.

Most types of action proposals score on a scale from 0 to 15, whereby each of the three criteria has equal weight. To pass the quality threshold, proposals need to receive at least three points from five per criteria and at least 10 points in total.

During the discussions on the design of the FPs, two distinct approaches on fostering participation of the EU-13 resurfaced time and again. The first approach emphasises the excellence of R&I as the central pillar of FPs (hereafter, excellence refers to outstanding proposals and R&I outputs rather than one of the three criteria for award of funding (see Text Box 5-1)). It argues that researchers from all MS should participate under equal conditions and the overall excellence of the proposal should be the main criteria for awarding funding. Accordingly, *ex post* evaluations of the FP6 and the FP7[56] argued that less developed R&I capacities prevent researchers from the EU-13

[56] European Commission, „Assessment of the Impact of the 6th Framework Programme on new Member States", 20; Members of the High Level Expert Group, "Ex-Post-Evaluation of the 7th EU Framework Programme (2007-2013)", 8; The

from more extensive participation. Furthermore, both *ex post* evaluations and other reports[57] argued that ESIF should be used to develop excellence and R&I capacities.

The second approach emphasises a widening of participation. Interviews with researchers from the EU-13[58] suggest that a lack of contacts and networks as well as a lack of experience with similar funding schemes (rather than excellence *per se*) are among the most important obstacles to successful participation in FPs. Accordingly, if given more chances to develop networks and engage in learning-by-doing, researchers from the EU-13 may develop the capacities necessary for subsequent participation on equal footing with the EU-15. Hence, the Common Position of the EU-12 Member States[59] emphasises that FPs should put higher emphasis on increasing participation through inclusive and flexible instruments.

Both approaches to obstacles for participation indirectly refer to the Matthew effect. Merton introduced this concept for the study of the sociology of science and argued that it can be "expressed in the principle of cumulative advantage that operates in many systems of social stratification to produce the same result: the rich get richer at a rate that makes the poor become relatively poorer. Thus, centres of demonstrated scientific excellence are allocated far larger resources for investigation than centres which have yet to make their mark."[60] In the context of participation in FPs, this implies that top institutions from the EU-15 that started participating in FPs early: a) developed elaborate processes for the drafting of proposals; b) developed strong and tried networks with other leading institutions; c) attracted competitive funding for ambitious R&I projects that boosted their excellence as well as reputation; d) used their excellence and reputation to attract top researchers; e) relied on proposal writing processes, trusted networks, research excellence, reputation and excellent researchers to secure additional funding from subsequent FPs and national / regional programmes. All of this has led to the evolutionary development of a cumulative comparative advantage that the relative newcomers do not have. Accumulation of a comparative advantage can explain the large (and growing) concentration of FP funding that is allocated to the top-500 institutions. It can also explain why LV, LT and PL are not catching-up and why the researchers from these countries are typically partners that play a rather peripheral role in research collaborations funded by the FPs. To counter this dynamic, researchers from LV, LT and PL should "run twice as fast" to catch-up with other organisations in the EU-15.

The surveyed participants of the FPs from EE, LV, LT and PL argue that the quality of a proposal is the main factor behind success (see Figure 5-1) and failure (see Figure 5-2). On the one hand, this suggests that the surveyed researchers consider the excellence of proposals as the key criterion in allocating funding. This is also strongly supported by the results of the interviews. On the other hand, the excellence of proposals does not necessarily equal excellence in research and innovation activities. Close to half of the respondents argued that international recognition of the consortium leader (42%) and the experience of the proposal writers (38%) were among the most important factors behind success. In contrast, only 12% of respondents viewed frontier research as

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Expert Group on the *ex-post* evaluation of the Sixth Framework Programmes, "Evaluation of the Sixth Framework Programmes for Research and Technological Development 2002-2006", 56

[57] EURADA, "Participation of EU13 countries in FP7", Interim Report: Spring 2014, 37 and Faunhofer MOEZ, "Participation of the Central and Eastern European EU Member States in the 7th Framework Programme: Analysis, Evaluation, Recommendations.", Leipzig, 2012-01-29, 21

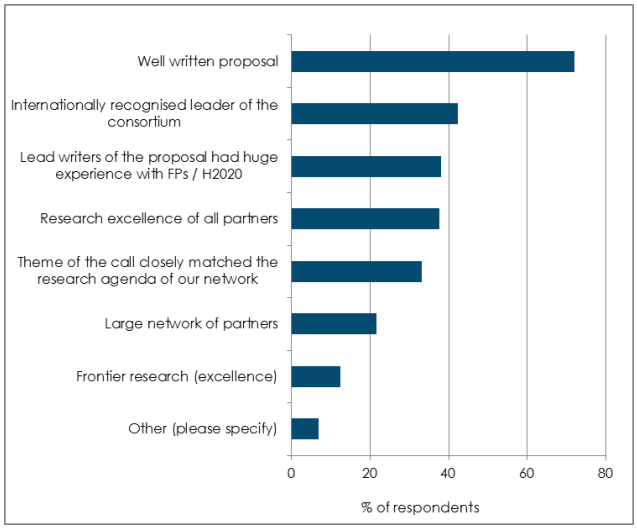
[58] European Commission, „Assessment of the Impact of the 6th Framework Programme on new Member States", 44-45

[59] Common Position Paper of the EU-12 Member States for the next Framework Programme, 2011-02-01, 2

[60] Robert K. Merton, "The Matthew Effect in Science" Science, Vol. 159 (3810), 1968, p. 62.

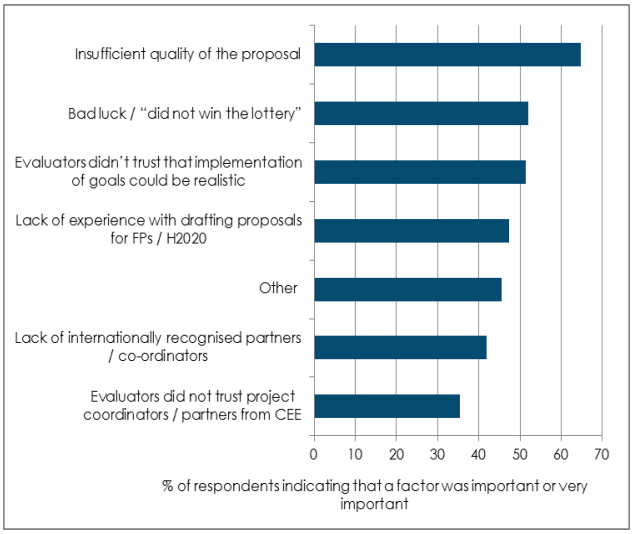
a very important factor. Furthermore, 52% of respondents argued that "bad luck" was an important factor behind unsuccessful proposals – this is outstanding, given that the respondents were not complete outsiders of FPs (in addition to unsuccessful proposals, they have participated in at least one FP funded project). To the extent that perceptions of respondents are well grounded, this suggests that an excellent proposal is a necessary, but not sufficient condition for receiving funding. Given that a large number of excellent proposals are competing for limited funding, other factors (international recognition of consortium leaders, past experience in drafting proposals or pure luck) also play a role. Specific obstacles for submitting more high quality proposals and securing a higher share of funding are analysed in the sub-sections below.

Figure 5-1. Q: in your opinion, which of the following factors were the most important in securing funding for your project from Framework Programme / Horizon 2020? Please select no more than three. If you have won more than one proposal, please answer about the most recent one.



Source: survey of beneficiaries of FP7 and/or H2020.

Figure 5-2. Q: in your opinion, why the proposal was not funded? Please rank the importance of factors from 1=not important to 4=very important. If you have lost more than one, please answer about the most recent one.



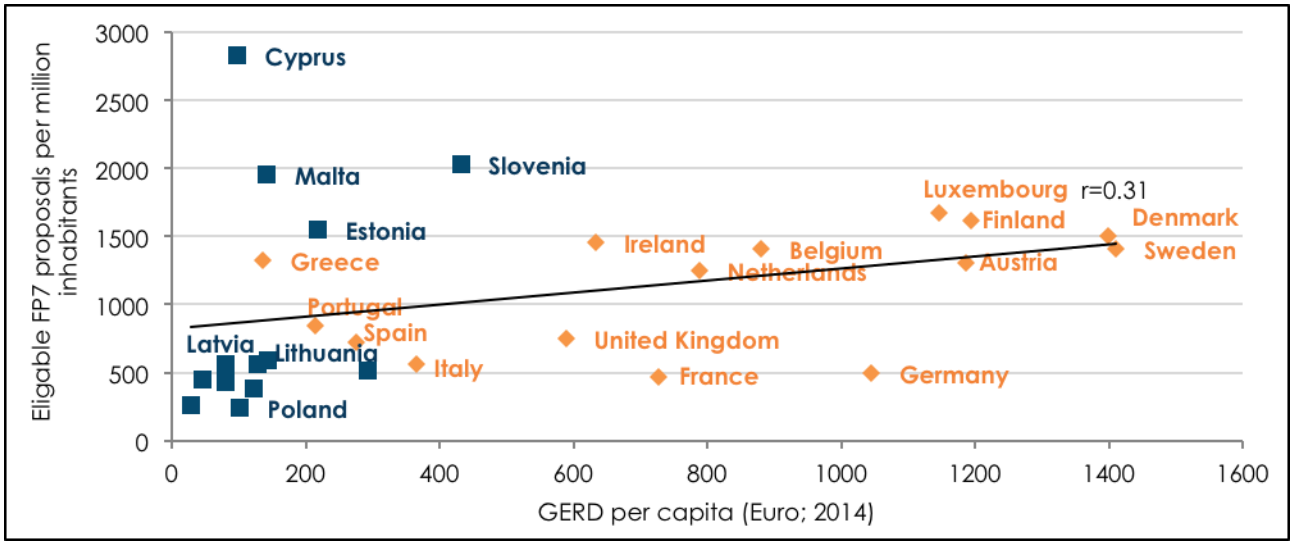
Source: survey of beneficiaries of FP7 and/or H2020.
Note: Includes answers only from researchers, who submitted an unsuccessful proposal.

5.1. Motivation for participation

As previously conducted studies[61] suggest, access to complementary expertise (networks), high prestige and availability of additional funds for R&I are among the main factors that motivate researchers from "old" and "new" Member States to participate in FPs. However, researchers from LV, LT and PL submit fewer proposals (see Figure 5-3.) and are considerably less likely to coordinate projects in comparison to most other EU Member States. The standard explanation is that organisations lacking research and innovation excellence do not favourably view their chances of success and therefore self-select not to participate. The analysis below seeks to gain a more in-depth understanding of this issue.

[61] Technopolis group, *An analysis of the role and impact of Research Performing Organisations' participation in the Framework Programmes*, Luxembourg, 2016.

Figure 5-3. No. of eligible proposals submitted to FP7 per million. inhabitants and GERD per capita



Source: Visionary Analytics, based on Seventh FP7 Monitoring Report, Monitoring report 2013, Brussels, 2015, http://ec.europa.eu/research/evaluations/pdf/archive/fp7_monitoring_reports/7th_fp7_monitoring_report.pdf;; Eurostat, Total intramural R&D expenditure (GERD) by sectors of performance [rd_e_gerdtot], http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=rd_e_gerdtot&lang=en (extracted 2017-03-15).

To understand why researchers do not submit and lead more projects, we carried out interviews with non-participants – top-notch researchers who have not participated in the FP7 and H2020 projects. They fall into two broad groups. Members of the first group are optimistic: they have submitted one or several unsuccessful proposals, but intend to participate (as partners) in the future. Most of them were successfully involved in previous FPs and believe that FPs provide more freedom, partnering opportunities and visibility to their R&I activities. The limited budget of FPs is the main barrier for this group. Since success rates are very low, researchers think twice before deciding to lead the proposal. Furthermore, limited funds also sometimes lead to tensions within networks, whereby each member seeks to secure a higher share of the budget in the event of success. Interviewed researchers feel that they lack leverage in such negotiations due to their limited past experience with FPs and the low prestige of researchers from Eastern Europe. Therefore, they decide to limit their own investments in proposal preparation by choosing the role of partner rather than Coordinator.

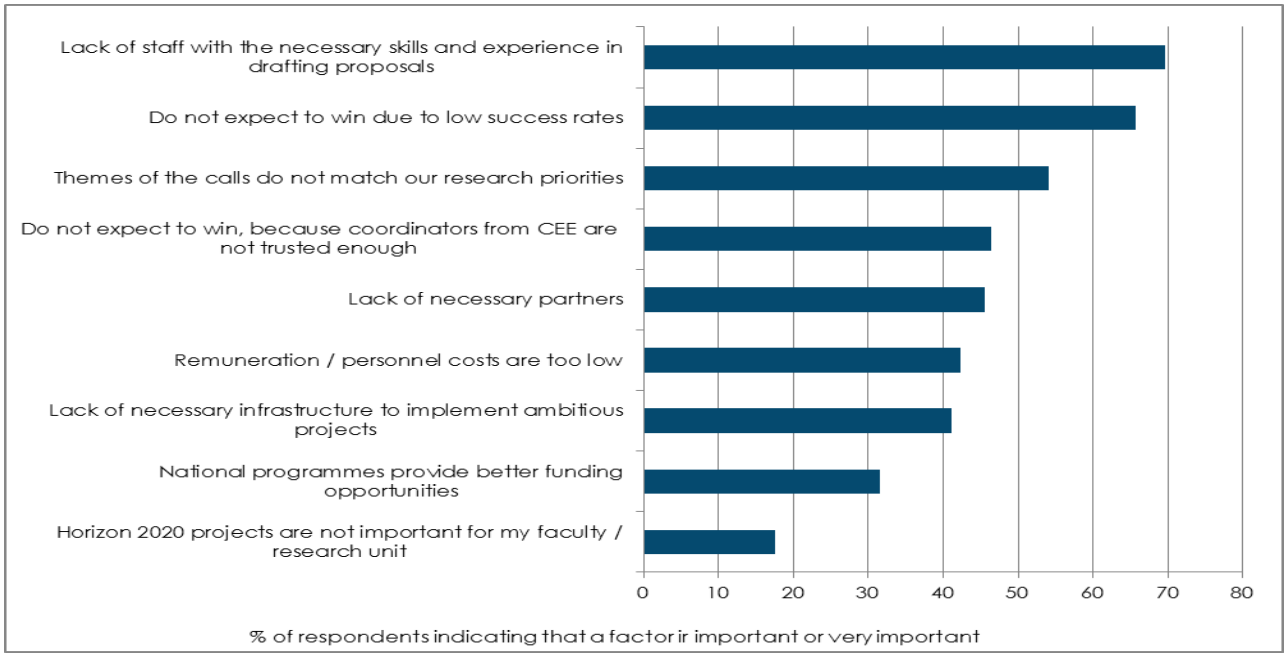
Members of the second group are discouraged: they have either submitted unsuccessful proposals or have not submitted any and do not intend to participate in FPs. The main factors discouraging participation are as follows:

- *High perceived administrative burden for coordinators of projects*. A number of interviewees argued that they receive limited administrative support in coordinating project preparation that discouraged them from leading the consortiums. As one researcher put it: "the ratio between bureaucracy and content is not very appealing. <…> I heard that in Western European countries institutions strongly support researchers while writing the proposals and mainly help with the administrative part. Because of that, researchers can put a larger focus on the content, which results in better proposals." The opinions regarding the extent to which other national or international programmes impose a lower administrative burden have diverged. While some researchers argued that national programmes are more flexible and less bureaucratic, others suggested that national programmes are quite similar to FPs in this respect.

- *Perceived lack of transparency*. One researcher argued that all calls within her area of interest were very clearly targeted at a specific consortium of large, renowned institutions that have the necessary infrastructure. Another researcher argued that the quality of feedback on previously submitted proposals was very low and the researcher could not understand why the proposal was rejected. Yet another interviewee who submitted an unsuccessful proposal argued that the outputs of projects funded under the same call were not outstanding, which led to the conclusion that the selection process lacks transparency.
- *Very low success rates and limited funding for fundamental research*. One interviewee argued that he does not submit proposals to FPs because they only focus on fields that can be easily commercialised. As the researcher put it, "The only way a scientist working with fundamental research can receive funding is by applying for a European research council grant. <…> However, it is almost impossible to secure a grant if you are not a research superstar".

Results of a survey of participants (see Figure 5-4) reinforces the above discussed perceptions of non-participants. A large share of respondents argued that a lack of staff with necessary skills and experience in drafting proposals prevents them from coordinating more proposals for H2020. In light of this, as well as other findings, it seems that a very large share of research units in LV, LT and PL have not yet acquired the necessary proposal preparation skills and capacities. This could be explained by two factors. First, research units in LV, LT and PL had limited opportunities to engage in learning-by-doing, because: a) they have comparatively less experience with coordinating projects funded by FPs and b) competitive national funding of R&I has been only recently introduced. This does not apply to EE, where competitive funding was set up in early 90s and between 1996 and 2005 all research funding was allocated in a competitive manner. This could explain the significantly better performance of researchers from EE in competing for funding from the FPs. Second, most of the eligible organisations in LV, LT and PL have not yet sufficiently invested in developing the necessary systems, processes and skills. It seems that the development of such capacities was not at the top of priorities in most organisations due to the following intertwined factors: a) a predominant focus on teaching, rather than research in most universities in LV, LT and PL; b) a perceived lack of R&I excellence (self-selection not to participate); c) a perceived lack of preconditions (network of partners) necessary for successful competition; d) low success rates that reduce incentives to invest in the necessary capacities.

Figure 5-4. Q: Why your faculty / research unit is not more active in COORDINATING proposals for Horizon 2020? Please rank the importance of factors from 1=not important to 4=very important

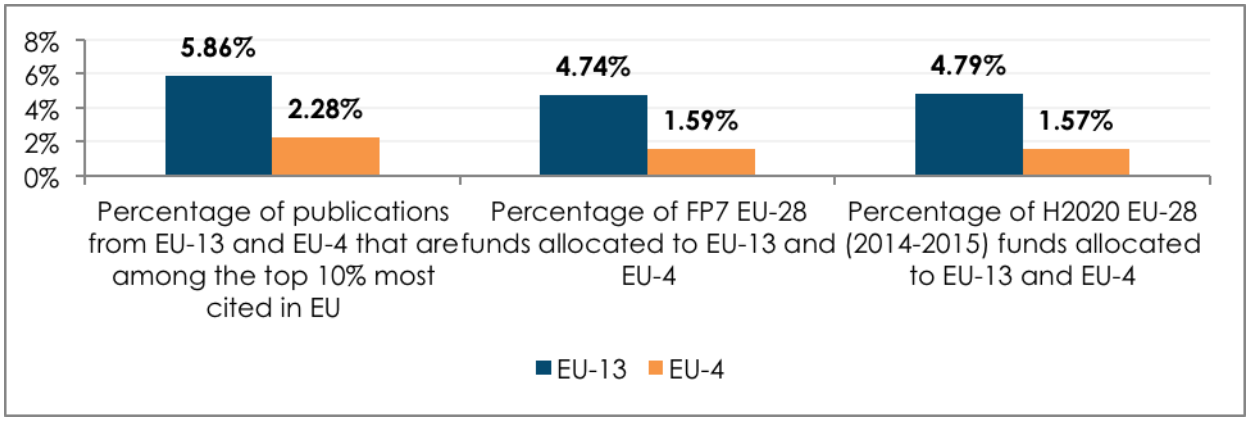


Source: survey of beneficiaries of FP7 and/or Horizon 2020. Note: there are no significant differences in the answers submitted by researchers, who participated in FPs as coordinators and partners (although the former group tends to somewhat downplay the importance of low success rates).

5.2 Research excellence

All previous evaluations of FPs emphasised that R&I capacities and excellence are a key bottleneck for more active cooperation with and participation of researchers from the EU-13. Overall, empirical evidence supports this claim, although nuances in data are note-worthy. On the one hand, there is a very strong correlation (see Section 3.2) between funding per capita from FPs and GERD. While current levels of domestic expenditure do not directly affect chances of securing funding from FPs, the former provides a good proxy for the size and intensity of national R&D and innovation efforts. Furthermore, past levels of GERD had a direct impact on current capacities of R&I performance. Funding per capita from FPs also rather closely correlates with other proxies of excellence, such as one's position on the European Innovation Scoreboard. On the other hand, correlations are not perfect and LV, LT and PL (but not EE) are underperforming in FPs, given the scope of R&I efforts and excellence. To illustrate this, we estimated what proportion of funding should be allocated to the EU-13 and to EE, LV, LT and PL, if research excellence was the only factor. The percentage of publications among the top 10% of the most cited publications serves as a proxy of research excellence. The results presented in Figure 5-5 suggest that, given the level of research excellence, the two groups of countries should be able to secure a larger share (between 0.6 and 1 percentage points) of the FP budget.

Figure 5-5. Research excellence and funding



Source: Own calculations based on Monitoring reports, Thomson Reuters publication statistics and data provided in Innovation Union Scoreboard (http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards_lt) (publications refer to 2015 data).

What could explain the imperfect correlation between R&I excellence and participation in FPs? The quality of the applications is one of the key factors. Although FPs seek to fund excellence, they rely on the quality of applications rather than on the quality of final outputs to make funding decisions. The two are clearly related, but excellent applications do not always lead to excellent results and *vice versa*.

Empirical evidence suggests there are significant differences in the quality of proposals submitted by applicants from different groups of EU Member States. Researchers from the EU-15 submit 9% more proposals that are above the quality threshold, when compared to the EU-13 (see Table 5-1). Furthermore, when looking at the proportion of proposals that were above the quality thresholds and did or did not receive funding, the differences between the EU-15 and the EU-13 are rather small. This suggests that the quality of proposals can account for a significant share of variation in success rates.

Table 5-1. Success rates and quality of proposals in FP7.

	EU-15	EU-13
Success rates	21.6 %	17.8 %
% of participations in proposals above quality threshold	52 %	43 %
% of EC funded participations among participations in proposals above threshold	41 %	39 %

Source: Commitment and Coherence: essential ingredients for success in science and innovation. Ex-Post-Evaluation of the 7th EU Framework Programme (2007-2013), Brussels, 2015, https://www.ffg.at/sites/default/files/downloads/page/fp7_final_evaluation_expert_group_report.pdf.

Figure 5-6 provides a more in-depth view of the quality scores of proposals submitted by researchers from EE, LV, LT and PL for different types of action. Key insights are as follows:

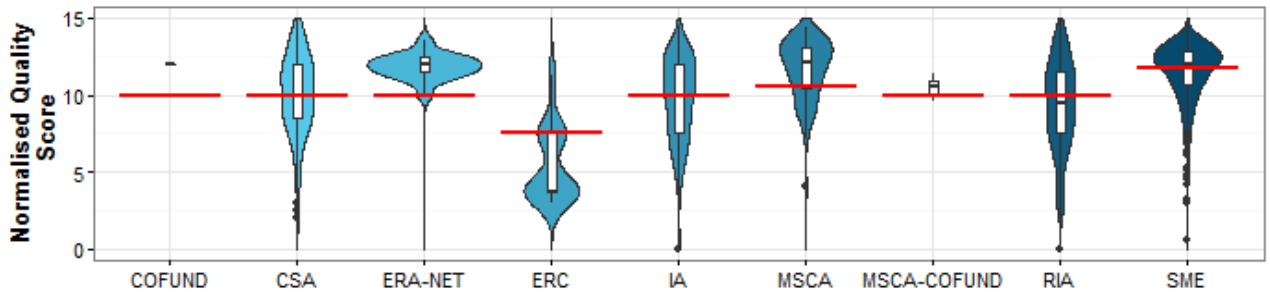
- Overall, there is a huge variation in the quality of submitted applications from very poor to relatively high – this is indicated by long and narrow shapes of the "violins" that depict data distribution;
- Researchers from EE submit higher quality applications than LV, LT and PL. For most types of actions, the EE median quality score is above or very close to the quality thresholds. This suggests high capacities to develop quality applications and further increase the share of funds from FPs. The difference between EE and LV, LT and PL is statistically significant according to the t-test, which checks if two samples are similar. The statistically significant difference was

present when comparing all proposals (p-value between EE and other Eastern BSR countries was less than 0.01) as well as when comparing proposals from different actions. The only three actions where this did not hold true were always ERA-NET (no difference), CSA (no difference between EE, LT and PL) and RIA (no difference between EE and LV). These results have to be interpreted very carefully as both significant or lack of it could be due to the size of the data set (a large data set almost always finds significant differences, while small sets almost never do).

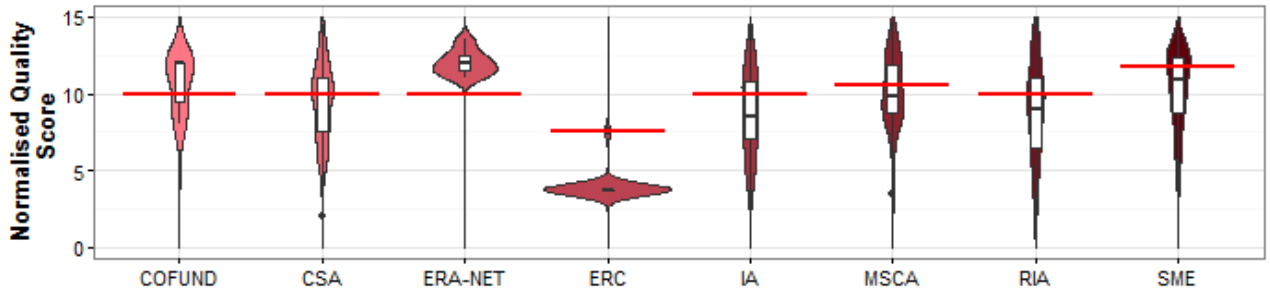
- Median scores of applications submitted for prestigious European Research Council (ERC) grants are significantly below thresholds and slightly below thresholds for RIA. It is not likely that in the near future a breakthrough will be achieved in the former, but performance in the latter (and other actions) could be improved by strengthening application development capacities.
- EE, LV, LT and PL submitted high quality applications for COFUND and ERA-NET actions, although the number of applications for these actions was small.

Figure 5-6. Violin plots of normalised scores of applications submitted for Horizon 2020 by country and type of action[62]

Estonia

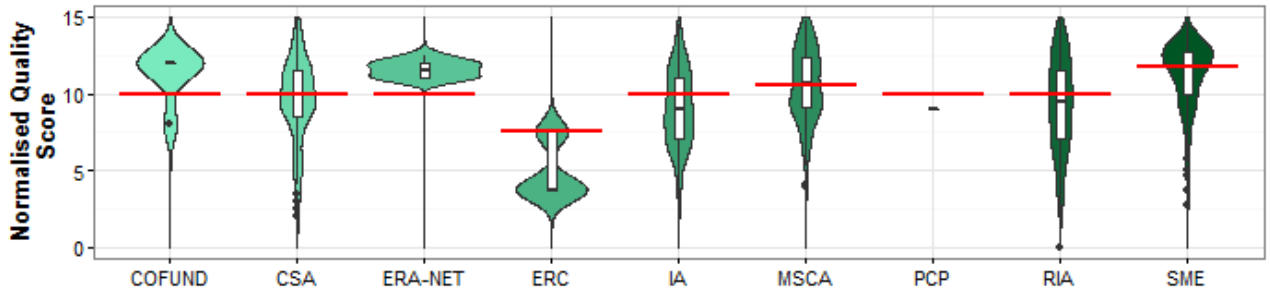


Latvia

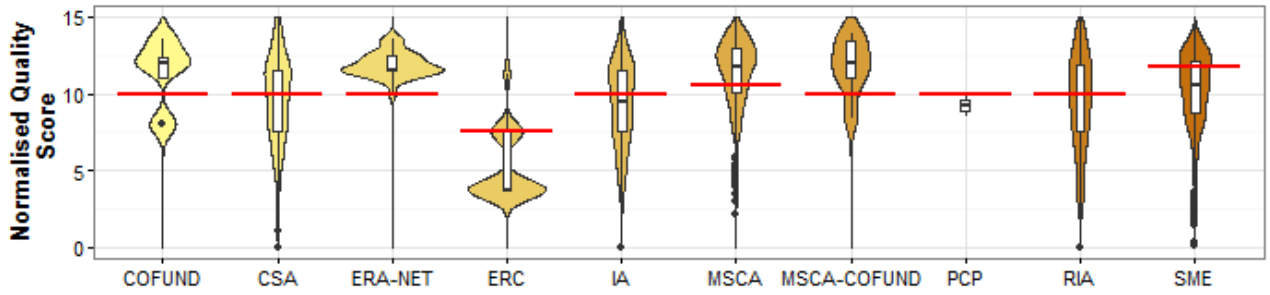


Lithuania

[62] ERC - European Research Council grants; IA - Innovation Action; PCP - Pre-Commercial Procurements; RIA - Research & Innovation Action; CSA - Coordination & Support Action; MSCA - Marie Skłodowska-Curie actions; MSCA-COFUND - Marie Skłodowska-Curie COFUND actions ; ERA-NET - European Research Area Network; SME - Small and Medium Size Enterprise Instruments; COFUND - Co-funding of regional, national and international programmes.



Poland

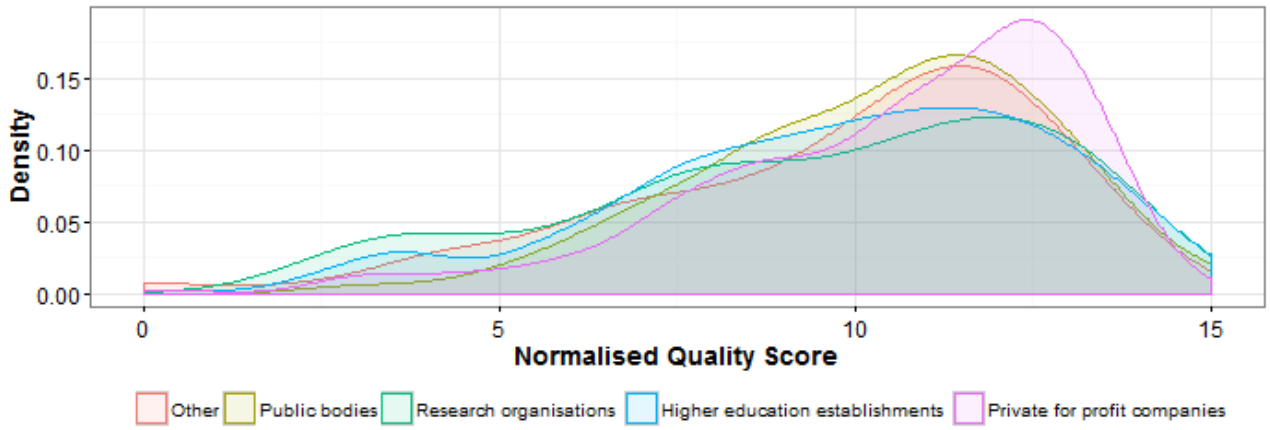


Source: Visionary Analytics calculations based on E-Corda data, extracted in May, 2017. It includes data from all H2020 calls, except: H2020-ECSEL-2015-1-RIA-two-stage, H2020-ECSEL-2015-2-IA-two-stage, H2020-ECSEL-2016-1-RIA. They were excluded, since analysis could not establish clear thresholds.
Note: Red lines on the plot indicate the average quality threshold for each action type. Since quality thresholds differ by action and slightly differ from call to call within the same action, they were calculated empirically, by estimating minimum score that had to be achieved to pass the threshold. The scores for all types of actions were normalised to scale from 0 to 15 (e.g., MSCA projects were on a 0-100 scale, some RIA projects were on a 0-5 scale).

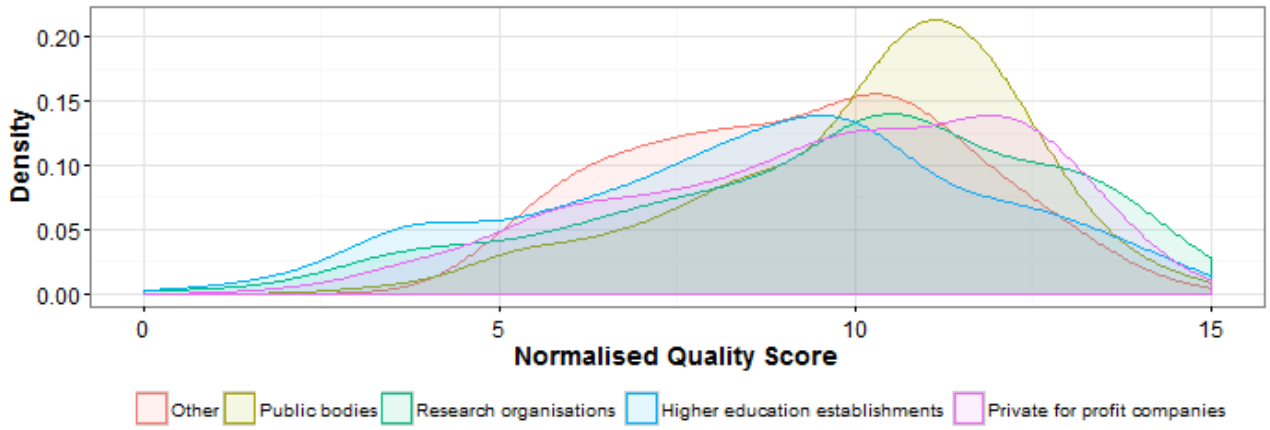
What types of applicants have the most advanced capacities to develop high quality applications? Figure 5-7 plots quality scores and the density of proposals submitted by different types of organisations: humps show the normalised score of the largest share of proposals. Types of organisations that submitted the largest share of high quality proposals are indicated by the largest humps in the right corner of the graph. The data suggests that in LT and EE private for profit organisations have submitted relatively better applications in comparison to other types of applicants. Public bodies stand out in LV, while there are no noticeable differences between types of applicants from PL.

Figure 5-7. Density plot of normalised quality scores by type of applicants

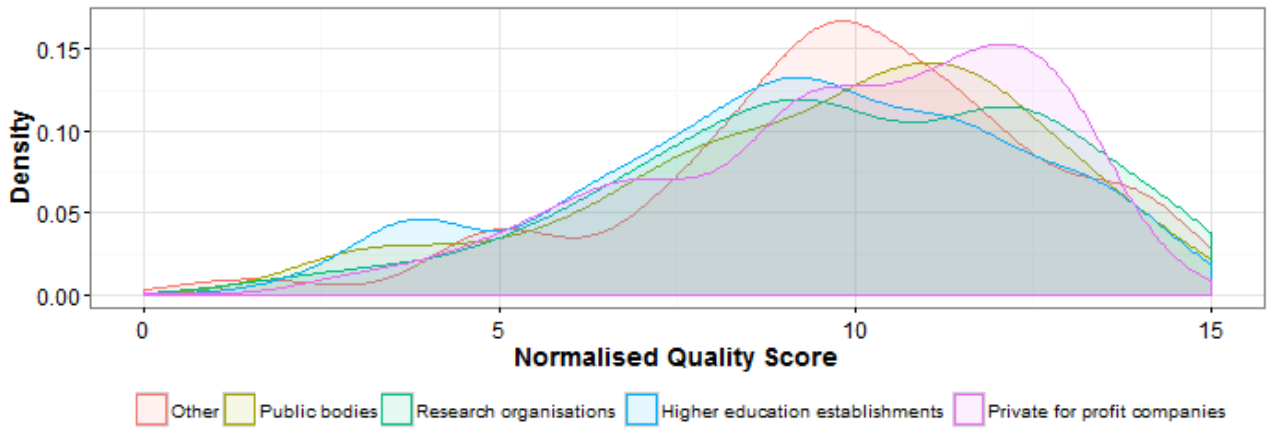
Estonia



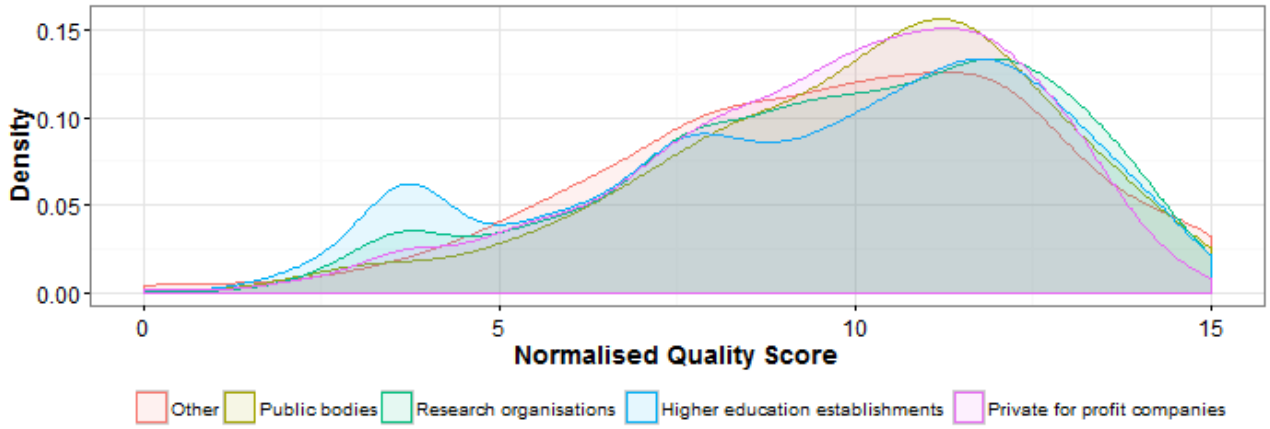
Latvia



Lithuania



Poland



Source: Visionary Analytics calculations based on E-Corda data, extracted in May, 2017. It includes data from all H2020 calls, except: H2020-ECSEL-2015-1-RIA-two-stage, H2020-ECSEL-2015-2-IA-two-stage, H2020-ECSEL-2016-1-RIA.

To sum up, excellence is the key criteria for the allocation of funds by FPs. Given the scope of R&I efforts and excellence, LV, LT and PL are underperforming in FPs (this does not apply to EE). To close the gap LV, LT and PL researchers need to develop capacities for delivering higher quality applications – this is particularly relevant for research organisations and higher education institutions. This view is also strongly supported by the results of the survey and interviews.

5.3. Networks

Networks of researchers and institutions play a critical role in implementing FP projects. This is because, typically, a single institution does not have all of the infrastructure and competences to carry out ambitious R&I work. Furthermore, specific programmes also fund cooperation, where a strong consortium is a prerequisite for securing funding. Interviewed researchers argued that most of the participation and cooperation opportunities emerge when partners are invited to join a consortium. Most of these partnerships have evolved from past collaborative work, including projects funded by the FP6, which explicitly aimed at building partnerships between the EU-15 and the EU-13. However, researchers that to date have not joined a well-established network, face difficulties in doing so. The successful consortia are reluctant to expand because a larger number of partners increase the costs of coordination. Furthermore, interviewed researchers also felt that they are not trusted enough to effectively contribute to specific tasks. Trust also played a very important role when interviewed researchers sought to become coordinators of projects. Well-regarded institutions from the EU-15 were reluctant to join efforts with project coordinators from EE, LV, LT and PL, if there was no prior collaborative experience. As a result, researchers from EE, LV, LT and PL (as well as other EU-13) usually were partners rather than coordinators of projects and played a peripheral rather than central role within the networks.[63]

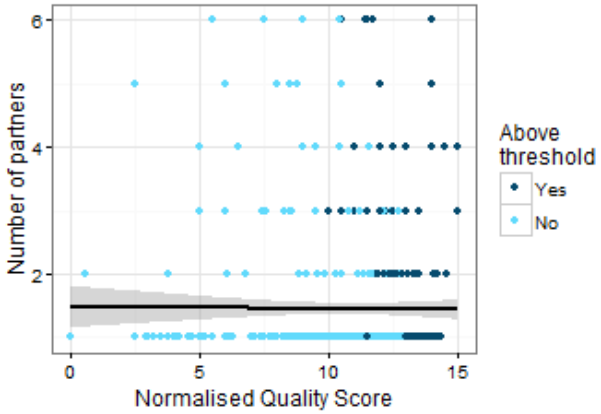
Monitoring data (see Figure 5-8) provides more in depth insights into the role of partnerships:

[63] Commitment and Coherence: essential ingredients for success in science and innovation. Ex-Post-Evaluation of the 7th EU Framework Programme (2007-2013), Brussels, 2015, p. 35. PPMI, FP7 Marie Curie Actions Interim Evaluation, Brussels, 2013, p. 60.

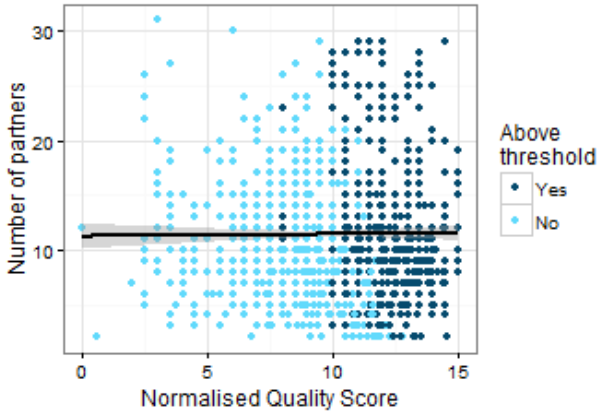
- On average, coordinators from EE, LV, LT and PL develop significantly smaller partnerships when compared to project applications that they join as partners. This highlights the difficulties in forming partnerships when EE, LV, LT and PL are leading the project proposals.
- When EE, LV, LT and PL researchers are coordinators, the higher the number of partners, the lower the average quality scores. This is indicated by the downward sloping lines in Figure 5-8. This trend is very pronounced for LT and barely visible for EE and LV. Such a counter-intuitive finding can be interpreted as follows: researchers who coordinate proposals (particularly from LT) lack the capacity to attract a large number of quality partners, build partnerships and manage the development of applications with a larger number of partners.
- When EE, LV, LT and PL researchers are partners, the reverse holds true: the larger the number of partners in a proposal, the higher the average quality scores. Again, this highlights the importance of joining large networks to increase the chances of successful applications.

Figure 5-8. Scatter plots of number of partners and normalised quality score of projects

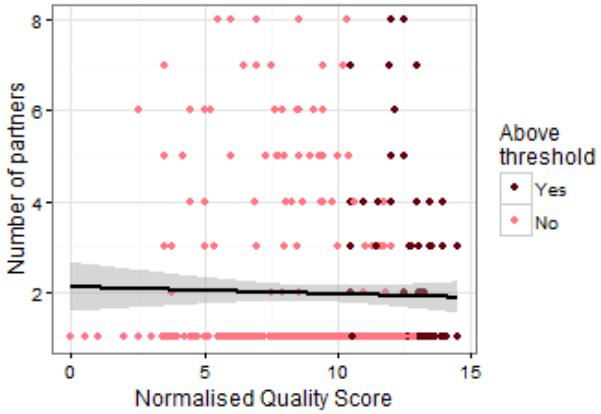
Estonian organisations as coordinators



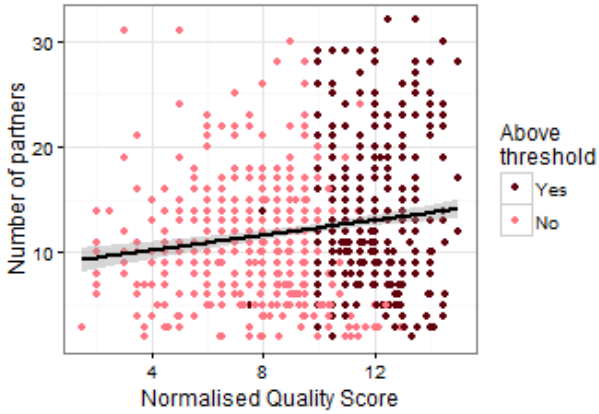
Estonian organisations as partners



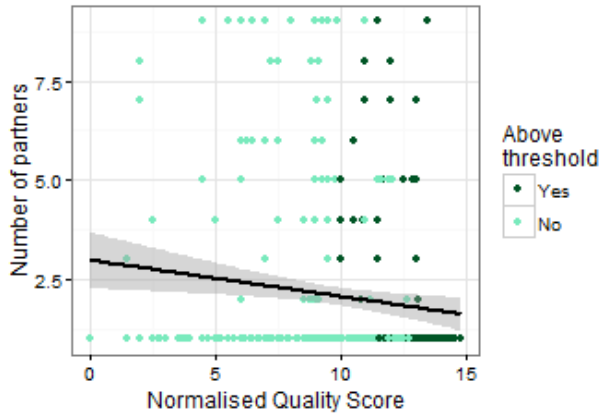
Latvian organisations as coordinators



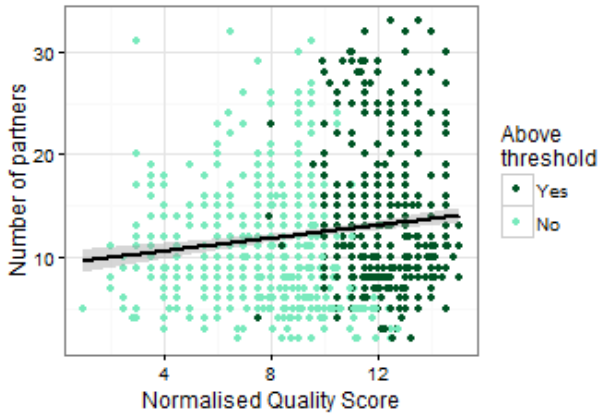
Latvian organisations as partners



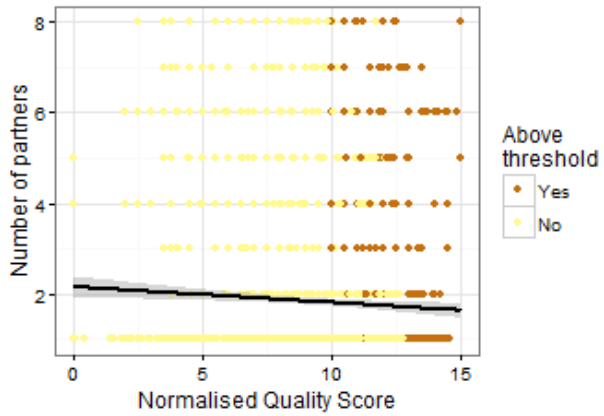
Lithuanian organisations as coordinators



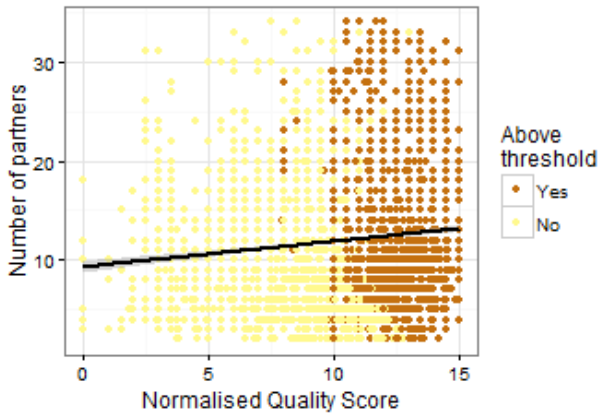
Lithuanian organisations as partners



Polish organisations as coordinators



Polish organisations as partners

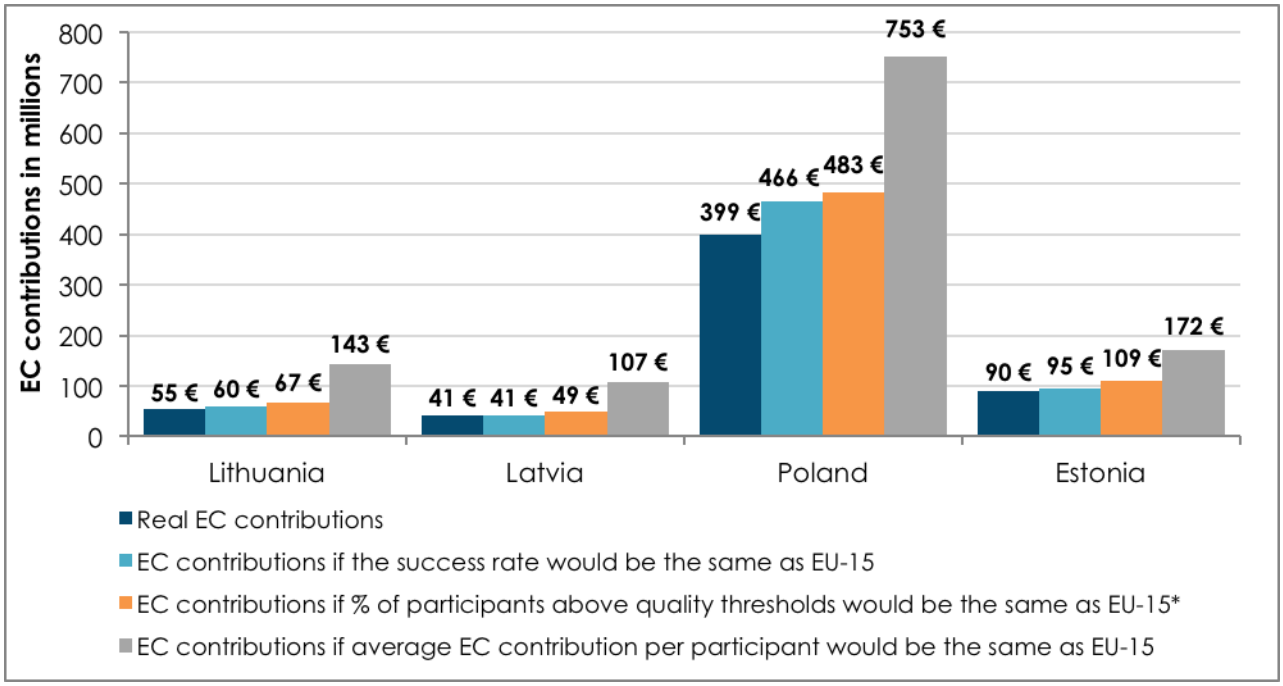


Source: Visionary Analytics calculations based on E-Corda data, extracted in May, 2017. It includes data from all H2020 calls, except: H2020-ECSEL-2015-1-RIA-two-stage, H2020-ECSEL-2015-2-IA-two-stage, H2020-ECSEL-2016-1-RIA.

5.4. Rules for calculation of costs and budgets

R&I excellence as well as the capacity to join or lead consortia has significant impacts on: a) the number of applications submitted because prospective applicants weight their chances of success, and b) the success rates of submitted proposals. However, it is the funding per participating researcher that explains the significant proportion of variation in funding received by EE, LV, LT and PL (as well as other EU-13) and the EU-15. Figure 5-9 presents hypothetical calculations of FP7 funding in line with three scenarios. Higher success rates (Scenario One) as well as a higher proportion of high quality proposals would have led to a somewhat higher amount of FP7 funding for EE, LV, LT and PL. However, if the funding per participant were the same as on average per researcher from the EU-15, funding for EE, LV, LT and PL would significantly increase (LT gaining the most in percentage terms and EE the least).

Figure 5-9. Actual and hypothetical funding from FP7 under three scenarios.



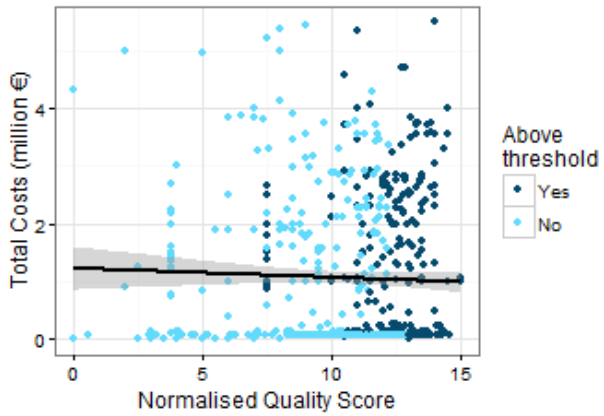
Note: * The estimates were calculated using the EU-15, EE's, LT's, LV's and PL's average success rate, % of participants above the quality threshold and EC contributions per participant.

Source: Own estimates based on data provided in: Commitment and Coherence: essential ingredients for success in science and innovation. Ex-Post-Evaluation of the 7th EU FP (2007-2013), Brussels, 2015, https://www.ffg.at/sites/default/files/downloads/page/fp7_final_evaluation_expert_group_report.pdf; Seventh FP7 Monitoring Report, Monitoring report 2013. Brussels, 2015, http://ec.europa.eu/research/evaluations/pdf/archive/fp7_monitoring_reports/7th_fp7_monitoring_report.pdf.

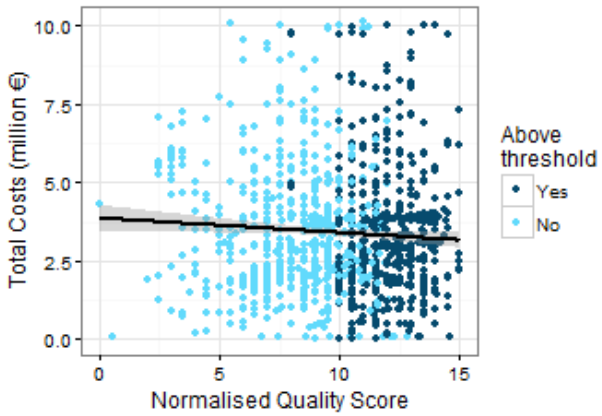
There are three key factors that explain the differences in funding per participant. First, the role within the consortia matters. Researchers from EE, LV, LT and PL are usually partners and carry out peripheral functions. As a result, their share of the projects' budgets is significantly smaller, which implies lower funding per participant. Second, researchers from EE, LV, LT and PL usually coordinate projects with smaller budgets in comparison to projects where they are partners (see Figure 5-10). In fact, projects with smaller budgets coordinated by EE, LV, LT and PL tend to receive higher quality scores – this is indicated by the downward sloping lines in graphs on the left in Figure 5-10 (this does not hold for LV). Conversely, when researchers from EE, LV, LT and PL are partners, projects with larger budgets tend to receive higher quality scores, which are indicated by the upward sloping line in graphs on the right in Figure 5-10 (this does not hold for EE). Third, a large proportion of FPs programmes and actions rely on the actual level of salaries to calculate personnel costs. Since researchers in EE, LV, LT and PL are underfunded relative to their peers in the EU-15, their personnel costs are substantially lower. Furthermore, calculations of indirect costs as a percentage from direct costs (that include personnel costs) further amplify the differences. In addition to direct financial implications, this also has a negative impact on the motivation of the researchers from EE, LV, LT and PL. Results of interviews suggest that researchers feel that they are treated unfairly, when remuneration for similar work differs significantly and beyond the differences in the costs of living.

Figure 5-10 Scatter plots of project costs and normalised quality score of projects

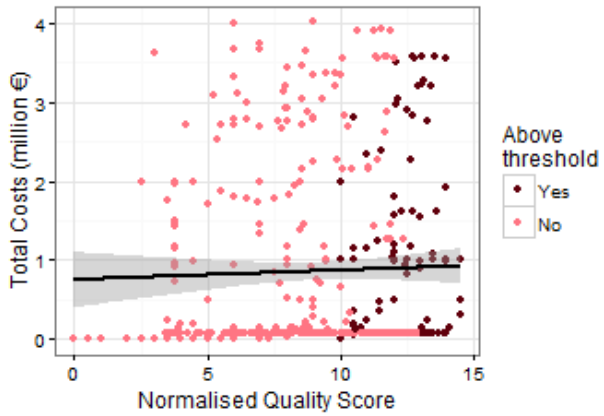
Estonian organisations as coordinators



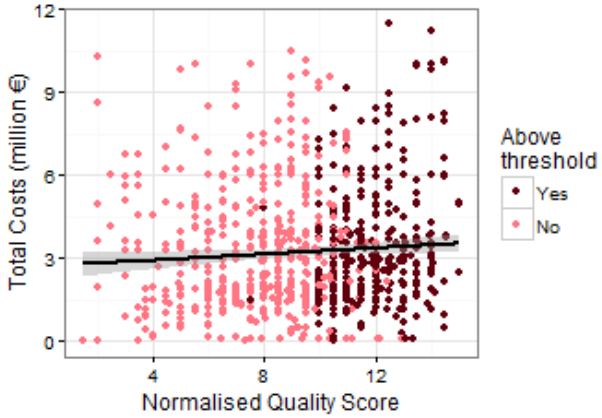
Estonian organisations as partners



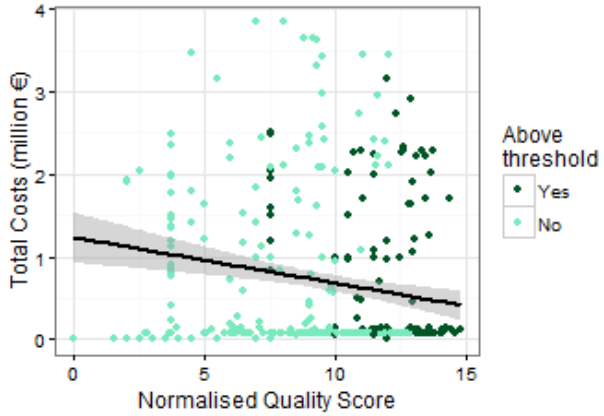
Latvian organisations as coordinators



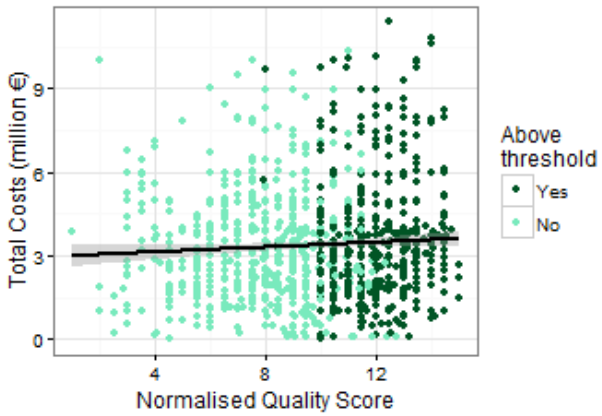
Latvian organisations as partners



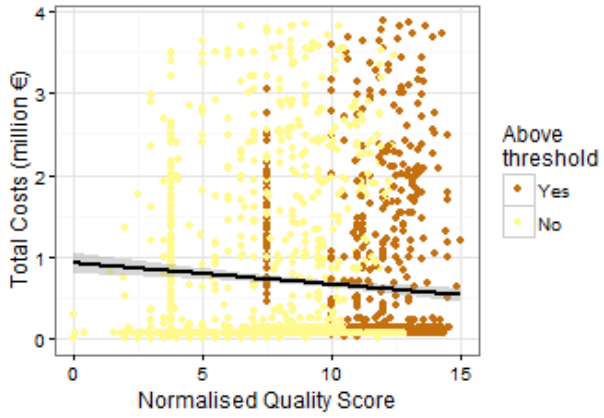
Lithuanian organisations as coordinators



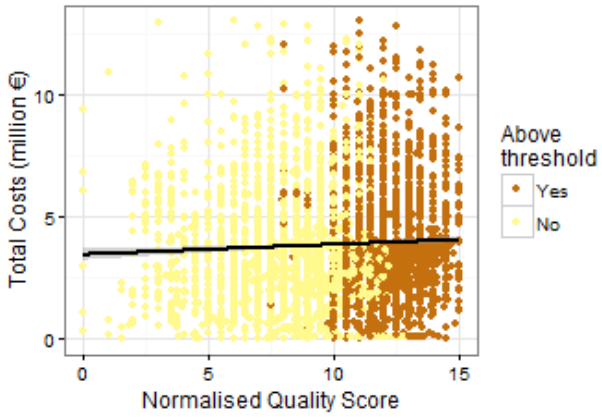
Lithuanian organisations as partners



Polish organisations as coordinators



Polish organisations as partners



Source: Visionary Analytics calculations based on E-Corda data, extracted in May, 2017. It includes data from all H2020 calls, except: H2020-ECSEL-2015-1-RIA-two-stage, H2020-ECSEL-2015-2-IA-two-stage, H2020-ECSEL-2016-1-RIA.

5.5. Incompatible research programmes

A number of calls under FPs are thematically targeted at specific challenges and R&I problems. Researchers may not participate if national or institutional R&I priorities do not match those of the FPs. Hence, we tested a hypothesis that researchers from EE, LV, LT and PL submit fewer proposals due to incompatible R&I programmes and priorities. Hypothetically, researchers from EE, LV, LT and PL (and other EU-13) may be disadvantaged in this respect, if their "voice is not heard" when setting thematic priorities. However, available evidence does not provide strong support for this hypothesis. Approximately half of the surveyed participants argued that their research units would submit more proposals if the themes of the calls more closely matched their institutional R&I priorities. Furthermore, several interviewed respondents argued that calls are highly focused and do not match their area of research, which provides an obstacle to participation. However, this was not an issue for the vast majority of respondents. Furthermore, previous studies[64] found that it is the under-defined national and institutional priorities (rather than incompatibility) that limit participation of researchers from the EU-13 in FPs. In fact, participation in FPs seems to have had a structuring effect on priority setting in the EU-13[65]. Lastly, experts in the advisory groups of FPs can make "their voices heard". As Table 5-2 suggests, experts from the EU-13 are over-represented in the advisory groups, if compared to the proportion of funding received and slightly under-represented, when accounting for size of population. To sum up, incompatible research programmes might provide an obstacle to participation for some researchers. However, there is lack of strong evidence that these barriers are higher for researchers from the EU-13.

[64] COWI, European Commission, DG RTD, *Assessment of the Impact of the 6th Framework Programme on new Member States*, Brussells, 2009.

[65] Ibid.

Table 5-2. Experts in H2020 advisory groups (2014-2015)

	EU-15	EU-13
Number	329	72
% of total	82 %	17.9 %
Number. of experts per 1 million inhabitants	0.81	0.69

Source: Own calculations based on: Second Horizon Annual 2020 Monitoring Report 2015, Brussels, 2016, https://ec.europa.eu/research/evaluations/pdf/archive/h2020_monitoring_reports/second_h2020_annual_monitoring_report.pdf#view=fit&pagemode=none.

6. Conclusions

There is a large body of evidence showing that FPs have funded frontier research and contributed to the development of highly innovative products and services. Perhaps more importantly, in the long term, FPs have contributed to structuring the ERA and developing the intellectual capital of key players in the fields of training of researchers, building of partnerships, fostering research and innovation capacities and prestige, etc. In this regard, FPs (in tandem with the efforts at the EU Member States' level) have the potential to establish and secure Europe's global competitiveness and leadership in research and innovation. To achieve this, ERA has to be populated with a critical mass of interlinked metropolises of excellence that could emerge from the current geographically concentrated centres and dispersed islands of excellence. Crucially, this implies the challenge of multiplying the number and fostering growth of the current islands of excellence in Eastern and Southern Europe. This study explores how the BSR and particularly its Eastern-Southern countries (EE, LV, LT and PL) can contribute to this vision.

6.1 Participation in FPs

Since the early 90s, FPs have gradually opened-up and provided targeted incentives for researchers from post-communist Central and Eastern Europe to join the European networks and common R&I projects. Nevertheless, participation in FPs of new EU Member States (the EU-13) in general and of LV, LT and PL specifically, remains limited. The EU-13 have received less than 5% of the FP6, the FP7 and H2020 budget. In fact, all of the EU-13 countries have collectively secured less funding from the FP7 than the top five organisations from the EU-15. Furthermore, in contrast to initial expectations, new EU Member States (with the notable exception of EE) are not catching up with the EU-15.

Findings

There is a significant amount of evidence showing that the relative size of national R&I systems hampers the more intensive participation of researchers from EE, LV, LT and PL (and the EU-13 more generally) in FPs. There is a positive strong correlation between FP contributions, on the one hand, and gross domestic expenditure on research and development as well as the top-10 percent most cited publications, on the other hand. This suggests that, talking metaphorically, the islands of excellence in LV, LT and PL are too few and too small to deliver the same number of excellent proposals and projects as centres of excellence in the leading EU regions. Nevertheless, given the size of the national systems and the level of R&I excellence, researchers from LV, LT and PL should be able to secure notably higher funding from FPs. This does not apply to researchers from EE, who perform in the FPs rather well, given the relative size of the national R&I system.

Available evidence suggests that researchers do not fully utilise their potential to participate in FPs due to the following factors:

1. *Capacities and motivation*: researchers from LV, LT and PL submit fewer proposals in comparison to peers from the EU-15 (researchers from EE submit high number of proposals, given the size of national R&I system). Furthermore, researchers from all four BSR countries are

less likely to coordinate proposal drafting and project implementation due to a lack of staff with the necessary skills and experience in drafting high quality proposals. This is due to two factors:

- Researchers (and administrative staff) from EE, LV, LT and PL have limited opportunities to engage in learning-by-doing because they are still relative newcomers to FPs. Furthermore, while a long history of allocating a large bulk of national funding for research through competitive schemes in EE might have contributed to building the capacities of EE researchers to successfully compete in FPs, this was not the case in LV, LT and PL.
- While participation in FPs is highly regarded, investment in relevant capacities and processes is not a top priority for organisations. This is due to different strategic orientations, (e.g. predominant emphasis on teaching in a significant share of universities in LV, LT and PL), self-selection not to participate due to perceived lack of R&I excellence and other pre-conditions (e.g. networks, infrastructure, etc.). Furthermore, very low success rates in FPs implies that investments into the capacities necessary for coordination of proposal writing are very risky and therefore not highly attractive.

2. *Quality of proposals*: success rates and the quality scores for submitted proposals are lower in the EU-13 compared to the EU-15 averages. For most types of actions in H2020, the median normalised quality scores are close to or slightly above the quality thresholds (and quality scores for proposals from EE are significantly higher than those from LV, LT and PL). This suggests that a significant share of the proposals are considered "good enough", but only a small share are "excellent enough" to receive funding. The above does not apply to proposals submitted for prestigious ERC grants and RIAs, where median quality scores are well below quality thresholds. This suggests that significant capacity building is necessary before researchers from LV, LT and PL can expect to secure a substantially higher share of funding from said actions.
3. *Networks*: the capacity to develop one's own or join existing networks is essential for successful participation in FPs. A number of participants from EE, LV, LT and PL have joined large European networks during the FP6 (or earlier) and have since collaborated on a number of successive projects with the same consortium. This route to participation in FPs has a number of benefits for the insiders, such as the low costs of participation (researchers from EE, LV, LT and PL are usually partners who do not have to coordinate proposal writing) and high success rates (due to the past track record of the network, a continuous build-up of competence over projects, etc.). However, well-established networks hamper the participation of outsiders. Prospective project coordinators from EE, LV, LT and PL face immense difficulties in setting up their own networks with renowned centres of excellence and/or when competing with the established networks. Furthermore, individual organisations reportedly face difficulties in joining established networks, which reduces their chances of successful participation even further.
4. *Funding per successful participant* from EE, LV, LT and PL comprises 38-55% of average funding per participant from the EU-15. This is due to the following factors:
   - Researchers from EE, LV, LT and PL are usually partners rather than coordinators of projects and tend to carry out peripheral tasks, which entail a lower share of the project budget.
   - Project coordinators from EE, LV, LT and PL more frequently apply to calls with lower budgets and on average receive better evaluation scores for these types of proposals.
   - Rules for calculating project costs matter. A large proportion of FPs programmes and actions rely on actual salaries of researchers to calculate personnel costs. Since researchers from EE, LV, LT and PL are underfunded compared to their peers in the EU-15, their personnel costs

are proportionally lower. Furthermore, calculations of indirect costs as a percentage from direct costs (which include personnel costs) further amplify the differences. In addition to direct financial implications, this also creates a sense of unfair treatment among researchers, because remuneration for similar work differs beyond differences in price levels of EU regions and countries.

Interpretation

The empirical findings mentioned previously may be interpreted through a prism of the Matthew effect, whereby established centres of excellence are building their comparative advantage at a rate that increases or maintains the distance between "leaders" and "followers". An accumulation of comparative advantage can explain the large (and growing) concentration of FP funding: the top-500 organisations in the FP7 made up only 1.7% of successful participants, but received 60% of the total funding; similarly, top-3 organisations from EE, LV, LT and PL received over 10 % of FP7 funding for this group of countries. These centres and islands of excellence have embarked on a virtuous circle: a) early on started participating in FPs and invested in the necessary processes and competences; b) attracted competitive funding for ambitious R&I projects that boosted their excellence as well as reputation; c) developed strong and tried networks with other leading institutions; d) used their excellence and reputation to attract top researchers; e) continue to rely on elaborate proposal writing processes, trusted networks, research excellence, reputation and excellent researchers to secure additional funding from subsequent FPs and national/regional programmes.

Accumulation of the comparative advantage poses two major challenges. First, the number of centres of excellence in the EU-15, let alone the size and number of islands of excellence in EE, LV, LT and PL, is insufficient to secure Europe's global competitiveness. Second, the logic of accumulating comparative advantages in several organisations puts newcomers at a relative disadvantage. Organisations from EE, LV, LT and PL with demonstrated R&I excellence, but limited previous involvement in FPs, find themselves on an uneven playing ground. This is due to the absence of a track record of successful FP projects, difficulties in joining and/or competing with established networks and lack of funding to engage in ambitious R&I projects and attract "brains". Furthermore, such organisations may be discouraged altogether from initial strategic investments in processes and skills for participation in FPs by the low likelihood of success (driven by low overall success rates and poorer starting positions), as well as the rules for calculating project costs.

6.2 Research cooperation in the Baltic Sea Region

There are strong arguments to be made in favour of regional R&I cooperation. It can facilitate the utilisation of complementarities, knowledge spill-overs, mobilisation of critical mass, create public and club goods (such as shared infrastructures and a regional brand of R&I excellence). Furthermore, a truly integrated research area within the BSR could contribute to deepening integration within the ERA by:

- Contributing to network building and knowledge spill-overs between centres of excellence in leading regions and islands of excellence in the periphery.
- Tackling the asymmetric relationships between leading and catching-up regions and facilitating a two-way flow of people, ideas and good practices.
- Structuring existing cooperation into sustainable partnerships and networks.

Yet the available evidence suggests that the BSR as an integrated research area has not yet emerged. There is well-established cooperation between the Nordic countries. EE, LV, LT and PL also tend to cooperate with direct neighbours, but both groups of countries tend to cooperate more frequently with R&I centres in the UK, Germany, the Netherlands and France rather than within the BSR. Furthermore, the analysis failed to identify long-standing networks that are successful in FPs and that predominantly includes partners from the BSR (excluding networks that are mainly comprised of organisations from only one BSR country).

The building of an integrated research area in the BSR faces several challenges. First, the BSR includes regions with vastly varying levels of R&I capacities. This hinders the utilisation of synergies, plans for development of joint infrastructures or the development of the BSR brand as a leading R&I region. Second, in the absence of a strong political commitment and regional governance structures (such as NordForsk that has facilitated the structuring of the Nordic R&I area) in the BSR macroregion, bottom-up structured cooperation may take decades to emerge. So far, cooperation between researchers in this macroregion remains project-driven and does not necessarily lead to structured partnerships. This can be overcome by supporting the exploitation of synergies between national R&D infrastructures: case studies suggest that such networks are more likely to be sustainable over a prolonged period of time (see the LASERLAB case study). Third, research networks do not necessarily follow the logic of regional cooperation. As the majority of surveyed researchers argued, excellence rather than geographical location is the key factor in the choice of partners. Hence, policy initiatives aimed at strengthening regional cooperation should be based on areas of joint excellence and the related variety of available R&D infrastructures so as to reinforce existing partnerships and complementarities.

Overall, the study clearly suggests that it is worthwhile to further explore the role of macroregions in R&I policy. Macroregions in general and the BSR specifically, could:

- Provide a test-bed for the development of new approaches and instruments aimed at broader European challenges.
- Provide a mechanism for structuring R&I cooperation, i.e. development of joint priorities, common pools of resources and building lasting partnerships.
- Provide new pathways to capacity building and spreading of excellence.

7. Recommendations

7.1. Recommendations for the future generation of FPs

Strategic orientation and concentration

The design of the FPs has resulted in a huge concentration of resources: the top-500 organisations receive approx. 60% of the funding. This poses two challenges. First, it is risky to assume that a limited number of organisations can significantly contribute to securing Europe's global competitiveness. Second, this creates asymmetric opportunities for growth for the centres of excellence and islands of excellence in the periphery.

Recommendation No. 1:

Europe's global competitiveness and leadership in R&I should remain the overarching objective of the future generation of Framework Programmes. To achieve this, FPs should seek to populate ERA with a critical mass of interlinked metropolises of excellence that could emerge from the current geographically concentrated centres and dispersed islands of excellence.

Budget of FPs

Currently, the EU is spending approx. four times less on H2020 than it does on the European Agricultural Guarantee Fund. Although historically the budget of FPs has significantly increased, the success rates remain low and too many excellent proposals are competing for very limited funding. This has a demotivating effect, particularly for organisations that do not have significant experience with FPs.

Recommendation No. 2:

Significantly increase the overall budget of the FP9. In the long term, investments in R&I should be at least on par with the investments in agriculture.

Emphasis on excellence and impact of results

Evaluation of proposals rightly focuses on excellence, impact and quality of implementation. However, excellent proposals do not necessarily lead to excellent, high impact results and vice versa. Furthermore, while the evaluation of coordinators' and partners' qualifications is necessary, it also fuels the Matthew effect, whereby success in previous allocations of competitive funding further increase the chances of success.

Recommendation No. 3:

Maintain an emphasis on excellence, impact and quality and efficiency of implementation as core criteria for evaluation of proposals.

Recommendation No. 4:

Wherever feasible, introduce multi-stage evaluation and funding processes, whereby at initial stages funding is allocated to a larger number of projects, but at subsequent stages the number of funded projects goes down, while funding per project goes up. This could be particularly relevant for top-down initiatives aimed at tackling grand challenges.

Recommendation No. 5:

Introduce double blind reviews whenever appropriate for the evaluation of excellence and impact of the proposals. This should ensure that the evaluation of project ideas is not "contaminated" by the evaluators' knowledge of an applicants' credentials.

Widening participation and spreading excellence

Despite previous efforts, widening participation in FPs remains an important challenge. Available evidence suggests that formal or informal requirements to include researchers from new EU Member States in the networks have created mixed results. While it opened new cooperation opportunities for some, in a number of cases such partnerships were short-lived.

Recommendation No. 6:

Further support and increase the budget for widening participation and the spreading of excellence initiatives.

Recommendation No. 7:

Do not introduce special requirements regarding geographical coverage of European regions.

Recommendation No. 8:

Implementation of frontier research and innovation projects has the larger potential to contribute to capacity building by fostering learning-by-doing in islands of excellence than coordination and networking activities. Therefore, funding for capacity building should be focused on the former rather than the latter.

Rules for calculation of personnel costs

Calculation of personnel costs based on current salaries reinforces the divide between well and poorly funded European regions.

Recommendation No. 9:

In line with the current practice adopted in MSCA, use fixed rates corrected by the purchasing power parities to calculate personnel unit costs.

7.2 Recommendations for the Baltic Sea Region

Building the Baltic Sea Research Area

Closer macroregional cooperation in R&I could yield a number of benefits. Nevertheless, a truly integrated research area in the BSR has not yet emerged.

Recommendation No. 10:

There is a need to structure existing project-by-project cooperation efforts in the BSR. To this end, set-up and fund transnational macro-regional governance structures by expanding the geographical scope or by copying the good practices of NordForsk. They could provide funding for joint PhD training, R&I projects, joint infrastructures, etc. With the aim of facilitating synergies, cooperation should be focused on areas of joint excellence and the exploitation of a related variety of national R&I infrastructures. To ensure competition and build critical mass, priority areas

should be broadly defined.

Recommendation No. 11:

The newly established body could rely on a combination of national contributions and funding attracted from FPs (COFUND, ERA-NET and other actions).

Testing innovative approaches for European challenges at the regional level

Asymmetries between centres and islands of excellence within the EU are also mirrored in the BSR. Since the EU does not seem to have proven solutions to the existing challenges, the BSR could become a test-bed for examining innovative R&I policies on a regional scale.

Recommendation No. 12:

Develop supporting schemes that could facilitate experimentation with new tools and approaches for the:

a) Design of joint macroregional R&I priorities
b) Structuring of long term collaborations between researchers and their organisations
c) Setting up innovative capacity building systems and structures

7.3. Recommendations for R&I policy makers in Lithuania, Latvia and Poland

Build internationally competitive metropolises of excellence

In EE, LV, LT and PL there are too few islands of excellence within higher education and public research organisations and the existing ones are too small to compete successfully in the European and global context. While EE has already made impressive progress in this respect, others are still in the process. Hence, these recommendations are primarily targeted at policy makers in LV, LT and PL.

Recommendation No. 13:

There is a need to significantly increase overall research funding and concentrate resources in the following areas:

- Significantly increase the number of PhD students and raise the standards of training. To this end, investments could be directed towards joint PhD programmes with established centres of excellence, the attraction of outstanding professors and similar initiatives.
- Improve the attractiveness of a career in research by raising wage levels to the EU average (when corrected for purchasing power parities).
- Create framework conditions for the most promising organisations and research units to significantly expand their research activities.
- Create incentives and facilitate a shift in the strategic focus from teaching to research in the most promising universities. This could also alleviate challenges created by a declining number of students in the face of demographic changes.

Recommendation No. 14:

Develop open, transparent, competitive and excellence-driven public research systems:

- Increase the share of R&I funding allocated on a competitive basis as well as ensure transparency

of the allocation of funds.

- Ensure openness and transparency of a competitive recruitment and promotion system.

Recommendation No. 15:

The EC could use its available instruments (such as Country Specific Recommendations) to create political momentum for increasing the level of R&I funding.

Organisational capacities to participate in FPs

There is a need to develop organisational capacities (systems and processes as well as skills of staff) for drafting proposals for FPs.

Recommendation No. 16:

Introduce a results-oriented support system that would develop the capacity to participate in the most prestigious actions of FPs. Such instruments could include vouchers for proposal writing while the sum of the voucher could differ by action and evaluation outcome.

Annex A. Conclusions of international workshop

INTERREG Baltic Sea Region Project „Baltic Science Network“

International workshop: Widening participation in Horizon 2020: a way towards scientific excellence in Baltic Sea region

Venue: Riga Technical University, Faculty of Architecture and Urban planning, Ķīpsalas street 6, Riga.
Time: 30 March, 2017, 9.30–16.30

SUMMARY AND CONCLUSIONS OF THE WORKSHOP

Widening participation in Horizon 2020: scope of the problem

The speakers and participants emphasised that researchers from the EU Member States that joined in 2004 and later (hereafter – EU-13) and particularly EE, LV, LT and PL (hereafter EE, LV, LT and PL respectively) do not fully utilise their potential when participating in the Framework Programmes (hereafter – FPs). More specifically:

- In absolute terms, researchers from the EU-13 receive less than 5 % of funding awarded by the FPs.
- When accounting for the size of a country, important intra-regional differences emerge. EE, Slovenia and Cyprus receive similar per capita funding as DE, France and the UK. The remaining EU-13 receive significantly less FP funding per capita than other EU-15 countries.
- There is a strong correlation between GERD and funding received from FPs.
- There are strong concentration effects. In the FP7, the top-500 organisations (defined as organisations receiving the largest funding from FP) receive 60 % of overall funding, although they comprise just 1.7 % of participants. Furthermore, the top-3 organisations in the FP7 received the same amount as all EU-13 countries combined.
- The EU-13 are “catching-up” with the EU-15 in terms of scientific excellence and R&I funding. However, there is little convergence (with the notable exception of EE) in terms of participation and funding received from FPs.

Barriers for participation in Framework Programmes

The discussions focused on drivers of the problem as well as barriers to participation. Drivers explain why the problem has emerged and therefore have a significant impact on the level of participation in FPs. Nevertheless, it is difficult to reverse these trends with the help of public policy instruments. On the other hand, barriers lend themselves to easier manipulation by targeted policy interventions.

Speakers and participants argued that the main drivers of the problem are as follows:

- **Quality of proposals**. On average, the quality of proposals from the EU-13 is significantly lower. Only 43 % of proposals submitted by researchers from the EU-13 to the FP7 were above quality threshold, in comparison to 52 % submitted by researchers from the EU-15. Participants sought to explain this by:

- Limited experience with competitive research funding overall and FPs in particular. Hence, researchers from EE, LV, LT and PL have not yet developed the necessary proposal writing skills and processes.
- Although the past decade has witnessed significant growth in research excellence in the EE, LV, LT and PL, significant gaps from the most competitive EU regions remain.

- **Matthew effect**. An initial success in attracting competitive funding has a positive impact on competitiveness in subsequent rounds of funding. This is because the researchers and organisations that were initially successful tend to: a) over time develop and institutionalise proposal writing and project implementation systems; b) gain resources for boosting research excellence; c) obtain "signals" of excellence (such as the successful implementation of ambitious projects, prestigious publications, etc.). As a result of these factors, the initially successful researchers and organisations over time accumulate competitiveness. This leads to widening the gap from organisations and researchers that initially were not successful and therefore did not develop the necessary capacities, obtain "signals" of excellence, etc. It is difficult to test this proposition empirically. Nevertheless, it could explain the growing differences between the top organisations that have a strong track record in competing for funding and relatively recent entrants from the EU-13.
- **Capacities and critical mass**. In comparison to the top performers, organisations from EE, LV, LT and PL are relatively small, lack a critical mass of world-class researchers.
- **Level of ambition**. Several participants argued that a significant proportion of researchers from EE, LV, LT and PL are not keen on tackling grand challenges. There is a lack of ambition in terms of scope and the scale of R&I efforts.

Discussions during the workshop focused on the following barriers:

- **Networks** play a critical role in a successful participation in the FPs. In a vast majority of cases, researchers from EE, LV, LT and PL participate in H2020 projects because they were invited to join by their past collaborators or partners. However, organisations and researchers that are not members of established networks face significant challenges in joining them. This limits their chances of successful participation in FPs. Furthermore, organisations aiming to coordinate projects face difficulties in persuading recognised organisations to join efforts.
- **Capacities for coordinating proposal writing and project implementation**. Since researchers from EE, LV, LT and PL are relative newcomers, they lack experience and capacities to develop high quality proposals and deal with administrative requirements. This obstacle is the most relevant for coordinators – partners face significantly smaller managerial and administrative workloads when submitting proposals and implementing projects.
- **Funding rules**. Personnel costs are typically calculated on the basis of actual (relatively low) salaries. These differences are further amplified, because indirect costs per participant are calculated as a percentage of direct costs. As a result, researchers from EE, LV, LT and PL may receive significantly smaller funding than the EU-15 for comparable work.
- **Incompatibility of research agendas**. Researchers may not submit proposals, if the calls do not match their research agendas.
- **Interplay between national and FP funding**. Success rates in national R&I funding programmes are usually higher. As a result, the latter offers higher expected financial pay-offs than the FPs, which are more competitive and require more sophisticated proposals. On the other hand, researchers perceive participation in FPs as more prestigious.

Proposed solutions

Discussants have proposed a wide range of solutions for reversing the underlying trends and tackling the barriers. National governments should implement a majority of the proposed solutions. These included:

- Funding: increasing overall research funding, continue investments in the R&I infrastructure, more funding to PhD students, increase funding for bilateral or regional programmes and similar.
- Reforms: improve the national policy mix so as to strengthen capacities, create stronger incentives for more ambitious and higher quality R&I efforts and similar.
- Develop human and relational capital: more funds should be allocated to academic mobility, joint PhD programmes, the provision of additional support for emerging excellent researchers, headhunting and attracting excellent researchers from abroad (including nationals) and similar.
- Invest in large-scale international research infrastructures or join existing infrastructural projects: this could provide opportunities for researchers to meet peers, set-up new networks, discuss collaborative projects.
- Provide targeted support for proposal writing. This could include:
  - Seminars / workshops for exchange of good / bad practices and experiences;
  - Seminars, where evaluators of proposals could share their insights and tips;
  - Support institutional capacity building in drafting the proposals;
  - Allocate vouchers that researchers could use to hire experts in proposal writing.

Recommendations targeted at the EU level included:

- Increase overall funding for FPs;
- Fund regional cooperation and mobility schemes aimed at capacity building and the establishment of networks;
- Introduce double blind evaluation of proposals for young / emerging researchers;
- Provide more extensive and higher quality of feedback on relative strengths and weaknesses of proposals;
- Widening activities should receive larger funding;
- More calls should utilise a two-stage selection process;
- Existing technological platforms should be better exploited.

Stakeholders

A majority of participants were researchers and managers (administrators) from universities and research institutes as well as civil servants. Several participants also represented funding councils and businesses. Although discussions were very intense, there were no significant differences in the positions advocated by the different groups of stakeholders.

Annex B. Interview questionnaires

Questionnaire for participants in successful networks

Letter to network participants

Dear,
We are carrying out a study on research cooperation in the Baltic Sea region. Ministry of Education and Science of Latvia has commissioned Visionary Analytics, which is a private research institute based in Vilnius, Lithuania, to carry out the study. Overall, it seeks to identify key obstacles for research cooperation in the Baltic Sea region and participation in Horizon 2020. The findings of the study will be used to develop specific proposals aimed at improving the next generation of Framework Programmes by increasing the participation of researchers from the region.
We are contacting you as a coordinator / partner of a network that has successfully carried out several projects funded by FP6, FP7 and H2020, namely … write in project title / abbreviation.
We kindly invite you to contribute to the study by participating in a short (max 20 minutes) on-the-phone interview. The interview will focus on key success factors and obstacles faced by your network. Please find the questionnaire attached.
Are you available for the interview? If so, what time between March 20 and March 29 would suit you best and what phone number should we call?
Best regards,

Questionnaire to respondents from EU-15

1. Please tell us about the origins of your network that participated in FP7/H2020: when was it formed? When have the partners from Estonia / Latvia / Lithuania / Poland joined the network? Why has your network included organisations from these Member States? How did you come to know them?
2. To what extent has the location of partners (positively or negatively) affected the decision to include specific network partners?
3. What is the value added (if any) of cooperation with partners from Estonia / Latvia / Lithuania / Poland compared to partners from the older EU Member States?
4. Have you encountered significant obstacles to participation in FP7 / Horizon 2020? Would you say that these obstacles are equally relevant to participants from all EU Member States?
5. Do you intend to expand the network? Why? Are there specific obstacles?
6. Is it likely that your network will continue to cooperate in the future?

Questionnaire to respondents from EU-13

1. Please tell us about the origins of your network that participated in FP7/H2020: when was it formed? When have you joined the network? How did you come to know network leaders and partners?
2. To what extent has the location of partners (positively or negatively) affected the decision to form / join specific networks?

3. What is the value added (if any) of cooperation with other partners from Estonia / Latvia / Lithuania / Poland compared to partners from the older EU Member States?
4. Have you encountered significant obstacles to participation in FP7 / Horizon 2020? Would you say that these obstacles are equally relevant to participants from all EU Member States?
5. Do you intend to expand the network? Why? Are there any specific obstacles?
6. Are you likely to cooperate with the network in the future?

Questionnaire for non-participants

Letter to non-participants

Dear,
We are carrying out a study on research cooperation in the Baltic Sea region. Ministry of Education and Science of Latvia has commissioned Visionary Analytics, which is a private research institute based in Vilnius, Lithuania, to carry out the study. Overall, it seeks to identify key obstacles for research cooperation in the Baltic Sea region and participation in Horizon 2020. The findings of the study will be used to develop specific proposals aimed at improving the next generation of Framework Programmes by increasing the participation of researchers from the region.
Currently we are contacting scholars from Estonia, Latvia, Lithuania and Poland, who have demonstrated research excellence, but have not recently participated in Horizon 2020 projects. You seem to match both criteria.
We kindly invite you to contribute to the study by participating in a short (max 20 minutes) on-the-phone interview. The interview will focus on key reasons, why researchers with outstanding record do not participate in Horizon 2020. Please find the questionnaire attached.
Are you available for the interview? If so, what time between March 20 and March 29 would suit you best and what phone number should we call?
Best regards,

Questionnaire

1. Have you ever applied to FP6, FP7 or Horizon 2020?
   a. **If yes**, what key difficulties have you encountered? Was the application successful? Why you have not recently participated in Horizon 2020 funded projects?
   b. **If not**, why?
2. When considering international cooperation, do you see value added in cooperation with other institutions from the Baltic See Region?
3. When considering participation in Horizon 2020, to what extent have you encountered the following:
   a. Other national / regional programmes provide better funding opportunities;
   b. Information on planned calls for proposals arrives too late;
   c. Thematic priorities do not match your research agenda / priorities within your institution;
   d. Inadequate information and administrative support in drafting the proposal;
   e. Difficulties in identifying potential partners;
   f. Established networks are not willing to include new members;
   g. Specific rules (e.g. remuneration of researchers) of Horizon 2020 are discriminatory for researchers from Central and Eastern Europe;
   h. Partners from “old” EU Members States and experts responsible for selection of projects do not sufficiently trust researchers from “new” EU Member States.

Questionnaire for successful participants

Letter

Dear,
We are carrying out a study on research cooperation in the Baltic Sea region. Ministry of Education and Science of Latvia has commissioned Visionary Analytics, which is a private research institute based in Vilnius, Lithuania, to carry out the study. Overall, it seeks to identify key obstacles for research cooperation in the Baltic Sea region and participation in Horizon 2020. The findings of the study will be used to develop specific proposals aimed at improving the next generation of Framework Programmes by increasing the participation of researchers from the region.
We are contacting you, because you have been previously involved projects funded by FP7 and / or H2020, namely … write in project title / abbreviation.
We kindly invite you to contribute to the study by participating in a short (max 20 minutes) on-the-phone interview. The interview will focus on key success factors and obstacles faced by your network. Please find the questionnaire attached.
Are you available for the interview? If so, what time between March 20 and March 29 would suit you best and what phone number should we call?
Best regards,

Questionnaire

1. Please tell us about how you got involved in FP7 / H2020 project: how did you receive information on call for proposals, who formulated the underlying idea of the proposal, how did you identify the relevant partners?
2. Have you encountered significant obstacles to participation in FP7 / Horizon 2020? Would you say that these obstacles are equally relevant to participants from all EU Member States?
3. When considering participation in Horizon 2020, to what extent have you encountered the following:
   a. Other national / regional programmes provide better funding opportunities;
   b. Information on planned calls for proposals arrives too late;
   c. Thematic priorities do not match your research agenda / priorities within your institution;
   d. Inadequate information and administrative support in drafting the proposal;
   e. Difficulties in identifying potential partners;
   f. Established networks are not willing to include new members;
   g. Specific rules (e.g. remuneration of researchers) of Horizon 2020 are discriminatory for researchers from Central and Eastern Europe;
   h. Partners from “old” EU Members States and experts responsible for selection of projects do not sufficiently trust researchers from “new” EU Member States.

Annex C. Survey questionnaire

Dear,
We are carrying out a study on research cooperation in the Baltic Sea region. It seeks to identify key obstacles for researchers from Estonia, Latvia, Lithuania and Poland to participate in European Framework Programmes (including the current Horizon 2020). The findings of the study will be used to develop specific proposals aimed at improving the next generation of Framework Programmes by increasing the participation of researchers from the region. Ministry of Education and Science of Latvia has commissioned Visionary Analytics, which is a private research institute based in Vilnius, Lithuania, to carry out the study.

We would like to invite you to participate in an online survey. It should not take more than 10 minutes to fill in the questionnaire. To do so, please follow this link:

Thank you very much for your highly valuable time and input!

0. Pre-defined variables that we input on the basis of information already available to us

0.1. Country

Estonia	
Latvia	
Lithuania	
Poland	

0.2. Status in networks

Coordinator (has coordinated at least on FP project)	
Partner	

0.3. Experience with FPs

Has participated in only 1 FP/H2020 project	
Has participated in more than 1 FP/H2020 project	

QUESTIONNAIRE

1. **Success factors. In your opinion, which of the following factors were the most important in securing funding for your project from Framework Programme / Horizon 2020?** Please select no more than three. If you have won more than one proposal, please answer about the most recent one.

Internationally recognised leader of the consortium	
Well written proposal	
Large network of partners	

Research excellence of all partners	
Theme of the call closely matched the research agenda of our network	
Lead writers of the proposal had huge experience with Framework Programmes / Horizon 2020	
Frontier research (excellence)	
Other (please specify)	

2. **Unsuccessful proposals.**

2.1. Have you submitted (as coordinator or partner) a proposal that was not awarded funding?

Yes → question 2.2.	
No → question 3	

2.2. In your opinion, why the proposal was not funded? Please rank the importance of factors from 1=not important to 4=very important. If you have lost more than one, please answer about the most recent one.

	1 not important at all	2 not a major factor	3 important	4 very important	Do not know
Insufficient quality of the proposal					
Lack of internationally recognised partners / co-ordinators					
Bad luck / "did not win the lottery"					
Evaluators did not trust project coordinators / partners from Central and Eastern Europe					
Lack of experience with drafting proposals for Framework Programmes / Horizon 2020					
Evaluators didn't trust that implementation of goals could be realistic					
Other (please specify)					

3. **Why your faculty / research unit is not more active in COORDINATING proposals for Horizon 2020?** Please rank the importance of factors from 1=not important to 4=very important.

	1 not important at all	2 not a major factor	3 important	4 very important	Do not know
National programmes provide better funding opportunities					
Lack of staff with the necessary skills and experience in drafting proposals					
Lack of necessary partners					
Do not expect to win due to low success rates					

Remuneration / personnel costs are too low					
Lack of necessary infrastructure to implement ambitious projects					
Do not expect to win, because coordinators from Central and Eastern Europe are not trusted enough					
Horizon 2020 projects are not important for my faculty / research unit					
Themes of the calls do not match our research priorities					
Other (please specify)					

4. **To what extent do you agree with the following statements regarding choice of partners for collaboration?**

	Strongly disagree	Disagree	Agree	Strongly agree	Do not know
My faculty / research unit has well established collaboration with partners in Denmark, Finland, Northern Germany and/or Sweden					
My faculty / research unit has well established collaboration with partners in Estonia, Latvia, Lithuania and/or Poland					
There is valued added in regional collaboration with partners from other Baltic Sea Region countries					
Excellence rather than location of partners is a key factor for successful partnerships.					

5. **Use of internationally significant research infrastructure**

5.1. **Do you use any research infrastructure of international or local significance that is located in OTHER institutions?**

Yes → question 5.2	
No → question 6.	

5.2. **What infrastructure do you use and under what conditions?**

	Free of charge on the basis of personal agreement	Free of charge on the basis of university / national agreement	Pay agreed subsidised price	Pay market price	Pay only from project budgets	Do not know

4.1. Infrastructure 1(please name it) _____						
4.2. Infrastructure 2 (please name it) _____						
4.3.Infrastructure 3 (please name it) _____						
4.4. Infrastructure 4(please name it) _____						

6. Plans to use research infrastructures

6.1. Do you plan to use research infrastructure of international or local significance that is located in OTHER institutions?

Yes → question 6.1	
No → question 7	

6.2. What infrastructure located in OTHER institutions do you intend to use?

Please write in the name of the infrastructure

6.3. How much have you progressed in making the arrangements (please tick all that apply)?

We have identified the need, but have not established contacts yet.	
We know the infrastructure generally, but have not used it yet.	
We are ready to use it, but only for free	
We are ready to use it, but only for a subsidised price	
We are ready to use it for full market price.	

7. **What barriers prevent you from using research infrastructures of international or local significance located in OTHER organisations?** Please rank the importance of factors from 1=not important to 4=very important.

	1 not important at all	2 not a major factor	3 important	4 very important	Do not know
Lack of resources to pay for services					
Brain drain and outflow of local talent					
Different e-standard to start remote use of such infrastructure					
Underdeveloped internet linkages that do not allow achieving the required data streaming speed					
Other technical obstacles					
Lack of necessary local nodes to					

establish linkage					
Lack of competence					
National legal regulations that prevent from paying for infrastructure					
Unfriendly policy of EU research organisations operating infrastructure					
Too high hourly costs					
Missing support or technical assistance					
Other (please specify)					

8. **What is your main motivation for using research infrastructures located in OTHER organisations?** Please rank the importance of factors from 1=not important to 4=very important.

	1 not important at all	2 not a major factor	3 important	4 very important	5 Do not know
Widening of local research excellence					
Motivation for local new doctoral students to choose research carrier and employment in my organisation					
Growth of reputation and image					
Increase of local (national) funds					
Increase of local research performance (more and better publications)					
Growth of attracted funds from new projects					
Door opening in old boy clubs – closed EU-15 research consortia					
Strengthen the profile of your institution in national research policy					
Motivation for senior research staff					
Existing strong support of national government					
Other (please specify)					

Thank you very much!

Annex D. Results of the survey

Table D-1. Survey completion statistics by country

	Fully completed survey	Partially filled in survey	TOTAL
Estonia	44	9	**53**
Latvia	26	2	**28**
Lithuania	33	10	**43**
Poland	135	29	**164**
TOTAL	**238**	**50**	**288**

Table D-2. Q: What is your experience with Framework programmes?

	I have participated in only one FP6 or FP7 or Horizon 2020 project	I have participated in two-three projects funded by FP6 and / or FP7 and / or Horizon 2020	I have participated in four or more projects funded by FP6 and / or FP7 and / or Horizon 2020	TOTAL
Estonia	9	18	19	**46**
Latvia	8	10	9	**27**
Lithuania	14	17	6	**37**
Poland	51	44	58	**153**
TOTAL	**82**	**89**	**92**	**263**

Table D-3. Q: In your opinion, which of the following factors were the most important in securing funding for your project from Framework Programme / Horizon 2020? Please select no more than three. If you have won more than one proposal, please answer about the most recent one.

	Estonia	Latvia	Lithuania	Poland	TOTAL
Internationally recognised leader of the consortium	21	12	15	63	**111**
Well written proposal	32	19	29	106	**186**
Large network of partners	4	4	10	37	**55**
Research excellence of all partners	24	11	13	53	**101**
Theme of the call closely matched the research agenda of our network	20	7	9	51	**87**
Lead writers of the proposal had huge experience with Framework Programmes / Horizon 2020	15	9	14	58	**96**
Frontier research (excellence)	9	1	6	17	**33**
Other	4	2	2	8	**16**

Table D-4. Q: Have you submitted (as coordinator or partner) a proposal that was not awarded funding?

	Estonia	Latvia	Lithuania	Poland	TOTAL

Yes	40	21	23	103	**187**
No	8	5	12	40	**65**
TOTAL	48	26	35	143	**252**

Table D-5. Q: In your opinion, why the proposal was not funded? Please rank the importance of factors from "not important" to "very important". If you have lost more than one, please answer about the most recent one.

	Very important	Important	Not a major factor	Not important at all	Do not know
Insufficient quality of the proposal	60	56	49	10	4
Lack of internationally recognised partners / coordinators	31	41	61	31	9
Bad luck / "did not win the lottery"	41	51	49	22	11
Evaluators did not trust project coordinators / partners from Central and Eastern Europe	30	32	40	36	36
Lack of experience with drafting proposals for Framework Programmes / Horizon 2020	21	61	48	31	11
Evaluators didn't trust that implementation of goals could be realistic	40	53	46	14	23

Table D-5. Q: In your opinion, why the proposal was not funded? Please rank the importance of factors from "not important" to "very important". If you have lost more than one, please answer about the most recent one.

	Very important	Important	Not a major factor	Not important at all	Do not know
Insufficient quality of the proposal	60	56	49	10	4
Lack of internationally recognised partners / coordinators	31	41	61	31	9
Bad luck / "did not win the lottery"	41	51	49	22	11
Evaluators did not trust project coordinators / partners from Central and Eastern Europe	30	32	40	36	36
Lack of experience with drafting proposals for Framework Programmes / Horizon 2020	21	61	48	31	11
Evaluators didn't trust that implementation of	40	53	46	14	23

goals could be realistic					
Other factors (specified by respondents)	47	14	2	2	12

Table D-6. Q: Why your faculty / research unit is not more active in coordinating proposals for Horizon 2020? Please rank the importance of factors from "not important" to "very important".

	Very important	Important	Not a major factor	Not important at all	Do not know
National programmes provide better funding opportunities	26	46	74	59	20
Lack of staff with the necessary skills and experience in drafting proposals	95	67	47	15	6
Lack of necessary partners	42	60	76	37	10
Do not expect to win due to low success rates	72	79	41	21	16
Remuneration / personnel costs are too low	56	41	80	36	14
Lack of necessary infrastructure to implement ambitious projects	35	61	75	47	11
Do not expect to win, because coordinators from Central and Eastern Europe are not trusted enough	52	54	58	33	33
Horizon 2020 projects are not important for my faculty / research unit	13	9	68	111	9
Themes of the calls do not match our research priorities	48	77	68	30	6
Other factors (specified by respondents)	37	12	2	4	18

Table D-7. Q: To what extent do you agree with the following statements regarding choice of partners for collaboration?

	Strongly agree	Agree	Disagree	Strongly disagree	Do not know
My faculty / research unit has well established collaboration with partners in Denmark, Finland, Northern Germany and/or Sweden	71	101	50	7	6
My faculty / research unit has well established collaboration with partners in Estonia, Latvia, Lithuania and/or Poland	30	84	92	20	9
There is valued added in regional collaboration	105	47	50	10	22

with partners from other Baltic Sea Region countries					
Excellence rather than location of partners is a key factor for successful partnerships.	137	82	15	2	5