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1st ERA-LEARN 2020 Annual Report on P2P Partnerships (2015)

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Foreword

Back in 2006, only a few years after the experiment with ERA-NETs under the 6th Framework Programme had started, an expert group, chaired by Manfred Horvat, reviewed the first experiences and gave a number of key recommendation, among others to develop a common web site on all ERA-NET related activities and to better exploit the tremendous scope for mutual learning and development of common tools and guidelines. This led to the very first NETWATCH and ERA-LEARN activities, taking shape in 2008/9.

Today we are in a different situation. ERA-LEARN 2020 is a key element for joint programming activities and integrates the former NETWATCH, ERA-LEARN and JPIs ToCoWork into a common framework that supports the main stakeholders engaged in designing and deploying the broad structures and functions for the coordination and cooperation of national and/or regional research programmes. It covers the spectrum of networks, actors and activities of JPIs, ERA-NETs and Art.185 initiatives and supports mutual learning, monitoring and impact assessment.

This very first ERA-LEARN 2020 report on Public-Public Partnerships follows up on reports published by the Commission Services, but broadens the scope beyond the ERA-NETs and includes Art.185 initiatives, JPIs and unfunded networks. It provides fascinating insights and important trends for the joint calls, and enriches this with results from the impact assessment of P2P networks and alignment typologies.

It is a privilege to work with the ERA-LEARN team, and my thanks goes in particular to Roland Brandenburg from FFG for his safe hand in coordinating such a complex initiative, to Angus Hunter, Hayley Welsh and Christina McGhee from Optimat for their persistence in collecting data and scrutiny in analysing them, and of course to all those that have provided the data, with a special thanks to the colleagues from PLATFORM that gathered data from the networks in the Bioeconomy.

Jörg Niehoff
Head of Sector Joint Programming
DG Research & Innovation

Executive Summary

This 1st ERA-LEARN 2020 annual report on public-public (P2P) networks in Europe covers the 18 month period from the start of Horizon 2020 in January 2014 to the end of June 2015. It also aims to present the cumulative and emerging position on joint calls since the launch of the P2P movement in 2003 including not only the ERA-NETs but also the Article 185 initiatives and the Joint Programming Initiatives (JPI).

The main headlines from the report include:

- There are just over 70 active P2P networks that cover a wide range of thematic domains but the majority are in four of the Horizon 2020 societal challenge areas. Some of these are linked to spin-off networks such as FP7 ERA-NET Plus and H2020 ERA-NET Cofund actions.
- 11 of the new ERA-NET Cofund actions will have concluded their main call (call closure milestone) by the end of 2015 with another 16 main calls closing in 2016. The total pre-call budget for these calls is over Euro 600 million. Also, a number of topics for additional ERA-NET Cofund actions, with an EU contribution up to Euro 250 million, are included in the Horizon 2020 work programmes for 2016/2017.
- Overall, the P2P networks implemented 85 joint calls up to the call closure milestone during the reporting period (January 2014 – June 2015) with a total budget of more than Euro 1.4 billion. Over 50% of these calls were implemented by FP7 ERA-NET Coordination Actions. The highest budgets per call were for the Article 185 initiatives.
- Since 2004, the P2P networks have collectively implemented more than 420 joint calls and this will increase to around 450 by the end of 2015. The cumulative pre-call budget that has been mobilised is just over Euro 5 billion with the actual investment in projects so far standing at just under Euro 4.5 billion. The majority of this investment is accounted for by the FP6/FP7 ERA-NET Coordination Actions and the Article 185 initiatives.
- The annual budget for joint calls that close in a particular year has been rising and should exceed Euro 900 million in 2015. This is expected to increase to around Euro 1 billion in 2016
- The number of funded projects so far is around 4,500, giving an average of 10 per call. The average project budget is highest for the FP7 ERA-NET Plus and H2020 ERA-NET Cofund projects.

The report also includes a short synopsis of some early results from the ERA-LEARN 2020 strategic analysis activities on impact assessment of P2P networks and alignment typologies.

Glossary of Terms

P2P Networks:	Public-Public Partnerships aimed at coordination and collaboration between national / regional research and innovation activities
ERA-NET FP6:	ERA-NET (Coordination and Support Actions) funded by the Sixth Framework Programme for research
ERA-NET FP7:	ERA-NET (Coordination and Support Actions) funded by the Seventh Framework Programme for research
ERA-NET+:	ERA-NET Plus with top-up funding for a joint call (Coordination and Support Actions) funded by the Seventh Framework Programme for research
Article 185:	Article 185 Initiatives (Treaty on the Functioning of the European Union) with Union participation in a joint programme undertaken by Member States
ERA-NET Cofund:	The new ERA-NET instrument under Horizon 2020, cofunding of a joint call with optional additional activities and joint calls
JPI:	Joint Programming Initiative
Unfunded:	P2P networks that operate without EU funding

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Introduction

Background

The ERA-LEARN 2020 project commenced in January 2015 and builds on three previous FP7 projects; ERA-LEARN, NETWATCH and JPIs ToCoWork. Its mission is to provide an integrated framework that will strengthen the community of public-public partnerships (P2P) in Europe and support national (and/or regional) funding organisations in the preparation, implementation, monitoring and assessment of joint actions.

The specific objectives are to:

1. Provide a web-based information, learning and support platform for P2P networks (www.era-learn.eu)
2. Support the ongoing optimisation of P2P networks by expanding the FP7 ERA-LEARN learning toolbox to include the wider activities of joint programming, particularly the Joint Programming Initiatives (JPIs), the Article 185 initiatives and the Horizon 2020 Cofund instrument
3. Implement a systematic process for monitoring & impact assessment of P2P networks, including their impacts at the policy, programme and co-funded RTD project level
4. Assess and benchmark current approaches to alignment and explore options for new modalities that will better align national (and/or regional) activities under common research agendas
5. Implement an annual cycle of knowledge exchange aimed at increasing the impact of investment in P2P activities and exploring options to support less research intensive countries

Scope of this report

This 1st Annual Report on the P2P landscape, from the ERA-LEARN 2020 project, covers the 18 month period from 1st January 2014 to 30th June 2015 and is aimed at providing an up-to-date picture in advance of the 1st Annual ERA-LEARN 2020 Conference. It is based on a comprehensive data collection and updating exercise carried out during the summer of 2015. Future reports will cover the annual period from July to June to again align with future annual conferences.

There are several new features that distinguish this report from previous monitoring reports on P2P Networks:

- The monitoring process has been extended from ERA-NETs to include the Article 185 initiatives and JPIs
- Data on numbers of co-funded projects is now included and will gradually be extended to enable central monitoring, and eventually impact assessment, of the evolving portfolio of research & innovation projects
- Short executive summaries of emerging results and conclusions from the ERA-LEARN 2020 'strategic analysis' activities are included

The report commences with an overview of the main developments in the P2P landscape during the period covered by the report (2014/15 Highlights) and then presents a snapshot of the current position in terms of

networks, cumulative investment in Joint Calls and a high level view of the portfolio of co-funded projects (Current Landscape). Networks are segmented into six types:

- JPIs (Joint Programming Initiatives)
- Article 185 Initiatives
- EN FP7 (the FP7 ERA-NET Coordination and Support Actions)
- EN+ (the FP7 ERA-NET Plus Instrument)
- EN Cofund (the Horizon 2020 ERA-NET Cofund Instrument)
- Unfunded (P2P networks that continue implementing joint calls after the end of the Commission funding)

The report also looks forward to give a preview of planned Joint Calls in the period to the end of 2016 (Outlook). It concludes with two short summaries from the early ERA-LEARN 2020 activities on strategic analysis. The first is a synthesis of feedback from a survey of JPI members, which is part of a wider analysis of the impact of P2P networks. The second proposes a common definition and typology of national alignment activities.

Limitations

The majority of the information and statistical analysis contained in the report is based on factual data provided by the P2P networks but there are some limitations and gaps. In such cases, informed estimates have been made so that the scale and diversity of the joint calls is fully apparent.

Acknowledgements

The ERA-LEARN 2020 team would like to sincerely thank the P2P networks for providing the detailed datasets to produce this report. In some cases, this was not a trivial request as (for this 1st report) the data collection process was aimed at gathering information on all historical and planned future calls as well as the number of projects funded.

In addition, we are grateful for the excellent support from the H2020 project PLATFORM - Platform of Bioeconomy ERA-NET Actions - during the data collection process.

Last, but not least, we would like to thank Joerg Niehoff for providing access to Commission data, helping to address data gaps and his invaluable insights to support the descriptive analysis.

Feedback

Any comments on this report and/or suggestions for future reports may be addressed to hayley.welsh@optimat.co.uk.

2014 / 2015 Highlights

This section of the report covers the 18 month period since the start of Horizon 2020 (January 2014 to June 2015). Subsequent reports will cover the most recent 12 month period (e.g. July 2015 – June 2016).

The New Horizon 2020 Cofund Instrument

ERA-NET Cofund is a new funding instrument for P2P networks that was introduced in Horizon 2020. It has some similarities to the FP7 ERA-NET Plus instrument (in that EU co-funding is provided for one joint call) but also has the flexibility to allow additional joint calls and other activities. In 2015, the first 11 successful ERA-NET Cofund projects (submitted in response to the 2014 Horizon work programme) began implementing their co-funded calls. Table 1 below provides a snapshot of the status of the calls and indicates the anticipated number of additional calls (without EU-cofunding) that each network proposes to implement. Those shaded in grey indicate calls that closed after the period of this review (i.e. after the end of June 2015). These calls, therefore, are not included in the wider figures presented in this report. The 'current status' column gives an indication of the current position in November 2015.

ERA-NET CO-FUND		Call Closure	Current Status (November 2015)	Contract Period	Expected Number of Follow-on Calls
EraCoSysMed	Collaboration on systems medicine funding to promote the implementation of systems biology approaches in clinical research and medical practice	Jun-15	Evaluation Complete	1/1/2015 - 1/1/2020	2
ERA-NET SmartGridsPlus	To support deep knowledge sharing between regional and European Smart Grids initiatives	Jun-16	In Evaluation	1/1/2015 - 30/1/2020	3
E-RARE-3	ERA-NET rare disease research implementing IRDiRC objectives	Jun-15	Evaluation Complete	1/12/2014 - 1/12/2019	3
JP co-fuND	ERA-NET for establishing synergies between the Joint Programming on Neurodegenerative Diseases Research and Horizon 2020 (JPI ND)	Jun-15	Evaluation Complete	1/12/2014 - 30/11/2019	5
DemoWind	Delivering cost reduction in offshore wind	Jul-15	Evaluation Complete	1/1/2015 - 1/1/2020	0
Transcan-2	Aligning national/regional translational cancer research programmes and activities	Jul-15	Evaluation Complete	1/1/2015 - 31/12/2019	3
ENSCC	ERA-NET Smart Cities and Communities	Sep-15	In Evaluation	1/12/2014 - 30/11/2019	1
FACCE SURPLUS	Sustainable and Resilient agriculture for food and non-food systems (FACCE JPI)	Sep-15	In Evaluation	1/3/2015 - 1/3/2020	2
WaterWorks	Research and Innovation Cooperation in the Water Area (Water JPI)	Sep-15	In Evaluation	1/2/2015 - 1/2/2020	0
HERA JRP UP	HERA Joint Research Programme Uses of the Past	Oct-15	In Evaluation	1/1/2015 - 31/12/2019	0
BiodivERsA 3	Consolidating the European Research Area on biodiversity and ecosystem services	Dec-15	2nd Stage Proposals in Preparation	1/3/2015 - 1/3/2020	2

Table 1: Status Overview - 2014/15 Co-funded Calls

Nine of the ERA-NET Cofund networks shown above are linked to FP7 ERA-NETs, either still running or recently ended, or Joint Programming Initiatives (JPI). They therefore build on the experience and collaborative actions established over a number of years.

The total budget for the Cofund calls listed in Table 1 is over Euro 260 million; with the planned European Union contribution of almost Euro 80 million included. The average budget for these Cofund calls is around

Euro 24 million. Networks with calls that closed before the end of June 2015 had a total available budget commitment of over Euro 103 million from the participating countries, including the EU contribution of around Euro 31 million. The amount of funding actually invested in projects will not be known until the evaluations are complete and the contracts have been negotiated with each successful project consortium.

These Cofund calls have a broad participation of countries, with an average of 15 countries participating in each call. Figure 1 highlights the budget contribution of each country to the Cofund calls that closed in 2015 (Table 1).

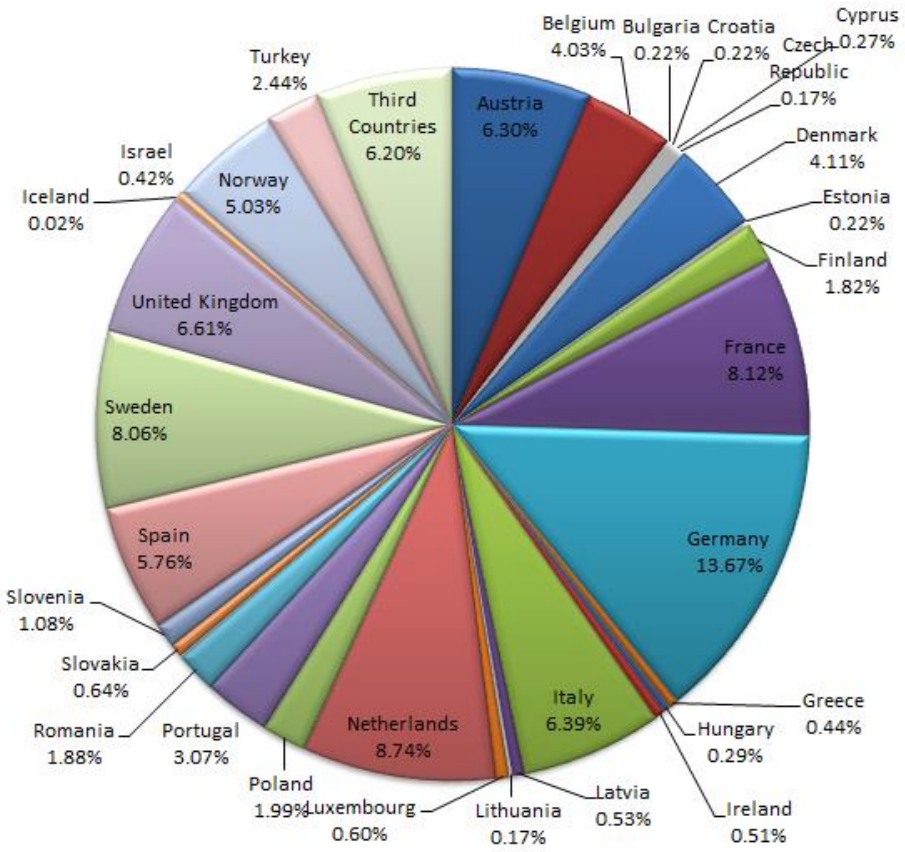

Figure 1: Distribution of Pre-Call Committed Budget for Cofunded Calls in 2015

Figure 2, shown overleaf, further analyses the overall funding commitment for the 2015 Cofund calls to include the EU contribution.

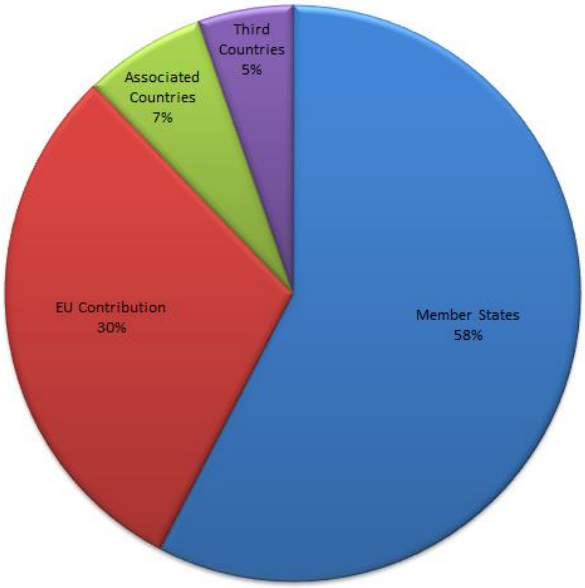

Figure 2: Distribution of Pre-Call Committed Budget for Cofunded Calls in 2015(2)

Joint Calls

During the review period (January 2014–June 2015), 85 joint calls closed. A breakdown of these, by network type, is presented in figure 3 below. This clearly shows that over 50% of the Calls were generated by the FP7 ERA-NETs.

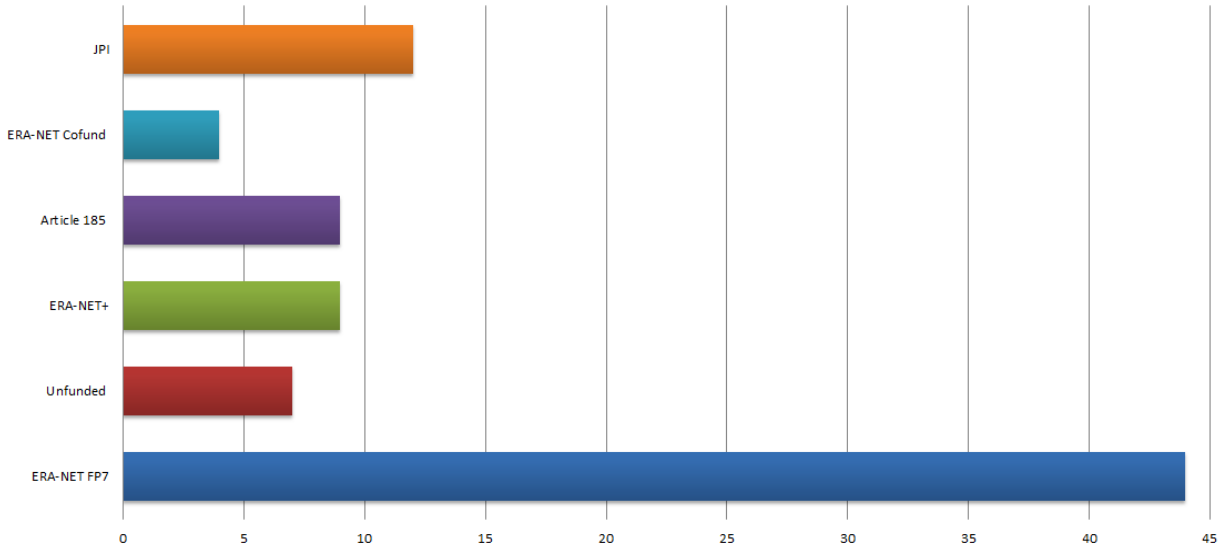

Figure 3: Number of Joint Calls, by Network Type

Of the 85 joint calls shown, 50 of them closed in 2014, with the remaining 35 closing in the first half of 2015. Another 26 calls have since closed, or are due to close, during the second half of 2015. These are not included in figure 3.

A thematic breakdown[1] of these joint calls is presented in figure 4:

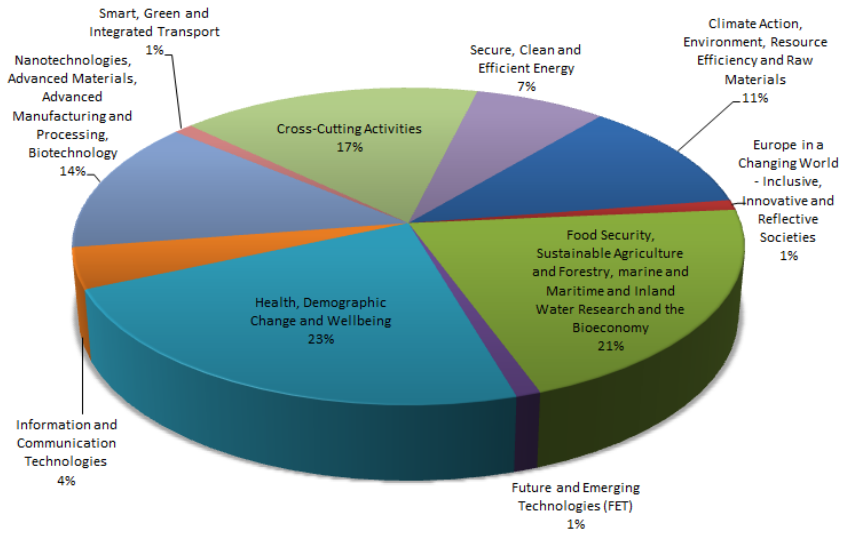

Figure 4: Thematic Area Overview of Joint Calls during the Review Period (January 2014 – June 2015)

For these 85 calls, a total budget of more than Euro 1.4 billion was pre-committed to fund transnational projects; of around which Euro 173 million was committed by the European Union for EN+, EN Cofund and Article 185 actions. The spread of the budget across the different funding instruments is shown in figure 5. Note that JPI Calls exclude any that have been implemented using the ERA-NET Cofund instrument as these are included within the 'ERA-NET Cofund' category. Future reports will differentiate JPI actions using the Cofund instrument.

[1] Based on the thematic priorities of Horizon 2020

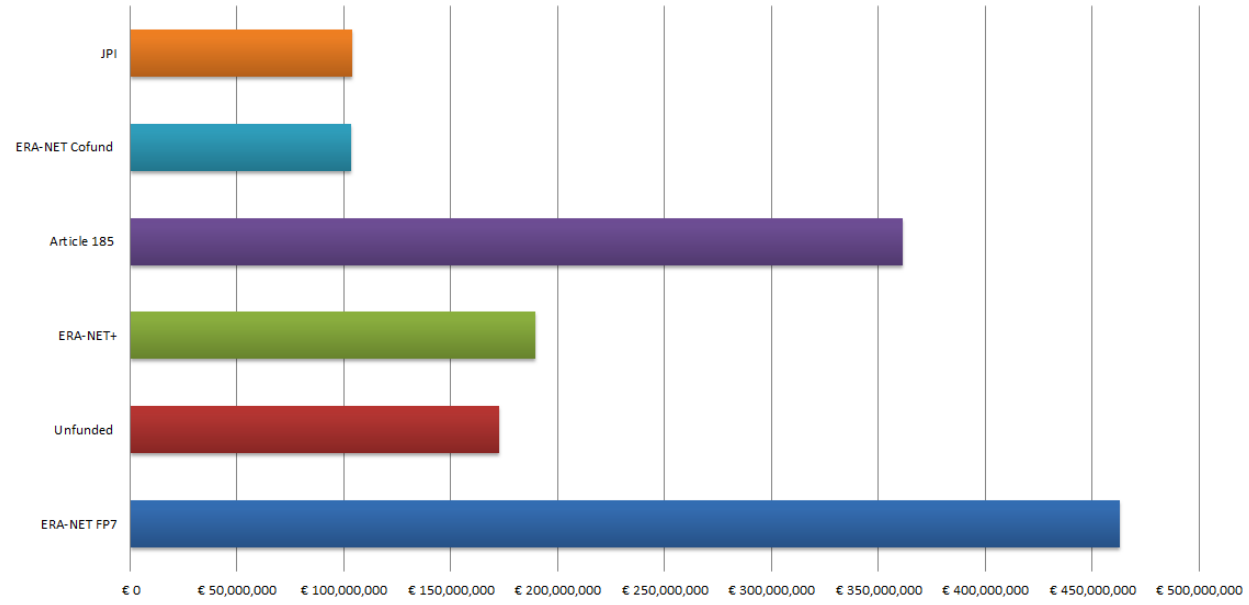

Figure 5: Call Budget, by Network Type

By comparing the pattern in figure 5 (call budget) with figure 3 (number of calls) it is apparent that the investment per call, as expected, is much greater for the Article 185s than for those that are implemented by the FP7 Coordination Action projects.

An analysis was made of the actual spend on projects versus the prior budget commitments for each call that closed in 2014. Complete data sets were available for 72% of calls and so only these were used in order to provide a comparative analysis. For 2014, the average spend on transnational projects was 87% of the pre-call budget. This covers all network types including ERA-NETS, JPIs and Article 185s. For JPIs the average percentage of budget used was 91% and for Article 185s it was 85%. For ERA-NET Plus and FP7 ERA-NET actions these figures were 82% and 87% respectively. There were 10 instances where networks invested more than the total pre-call budget; two of these were Article 185s, three were JPIs and the others were FP7 ERA-NETs. For this sample, the percentages that were actually spent on projects varied from 56% to 205% of the pre-call budgets. As additional data is collected going forward, it is anticipated that future reporting will include complete data sets of almost all calls undertaken by the P2P networks.

There was, again, wide participation in joint calls and figure 6 highlights the spread of budget for calls from January 2014 to June 2015. This breakdown is based on accurate country data for 91% of the calls.

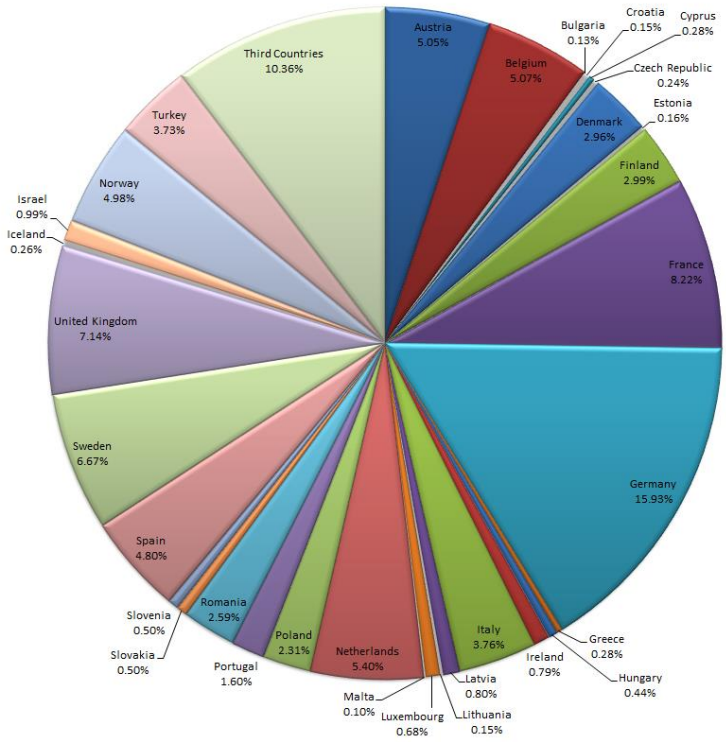

Figure 6: Country Involvement in Joint Calls, January 2014 to June 2015

Again, the distribution of funding commitment is further analysed (figure 7) to show the EU contribution, as well as that of the member states, associated countries and third countries.

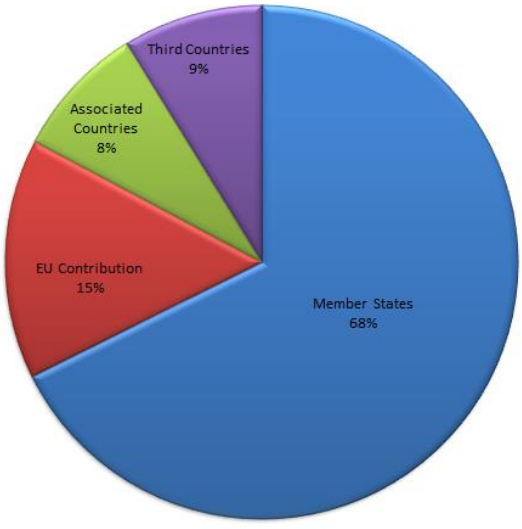

Figure 7: Distribution of Call Budget for the Review Period

Current Landscape

This section of the report provides an overview and analysis of the current position and cumulative investment in P2P joint calls since the dawn of the ERA-NET Scheme in 2003. It builds on the most recent report[2] on the ERA-NETs and extends the analysis to other P2P networks including Article 185 initiatives and the JPIs.

P2P Networks

The analysis indicates that around 80 P2P 'networks' were active during the reporting period from January 2014 to June 2015. This included JPIs, ERA-NET Cofunds, Article 185 Initiatives, ERA-NET Plus, FP7 Coordination Actions and other P2P networks that implement joint calls without any Commission funding (unfunded). Clearly, some (but not all) of the ERA-NET Cofund and ERA-NET Plus networks are linked either to a JPI or to one of the FP7 ERA-NETs and so the real population of active P2Ps is just over 70 thematic networks. A summary is provided in Annex 1 to demonstrate the current situation and the heritage of active networks.

It is interesting to note that the active networks cover a range of thematic areas as shown in figure 8 including some that are cross-thematic. There is also a trend toward collaborative joint calls between different networks (e.g. BiodivERsA and JPI FACCE). To avoid double counting, the allocation of cross-thematic network has been equally split between the relevant thematic areas.

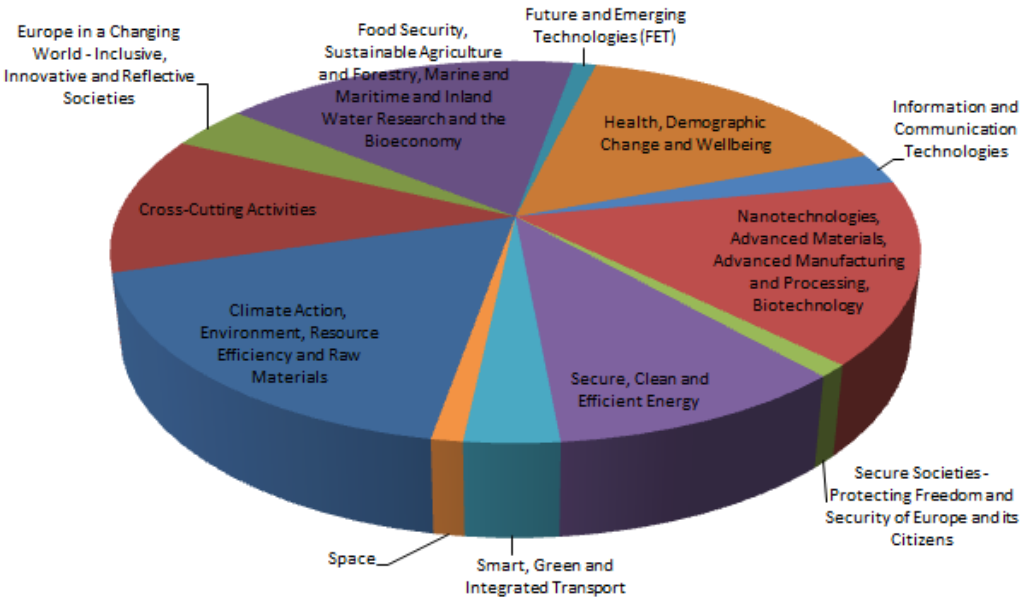

Figure 8: Thematic Coverage of Active Networks

2 The ERA-NET Scheme from FP6 to Horizon 2020, European Commission, October 2014

Joint Calls

Since 2004, more than 420 joint calls have been implemented, excluding those that had not closed before the end of June 2015 (the reference milestone for this report). By the end of 2015, the volume will be around 450. A summary of the calls that closed each year from 2004 is shown in figure 9 below.

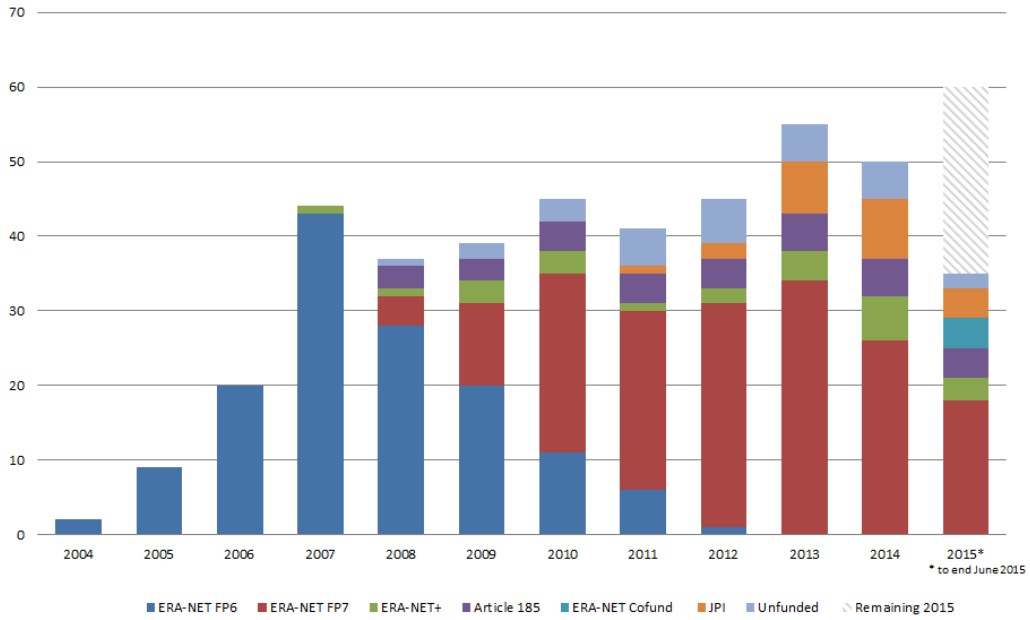

Figure 9: Number of Joint Calls (closed) between 2004 and 2015, by network type

Figure 9 also includes an indication of the total number of calls for 2015 (full year) for the purposes of comparison, although the breakdown by network is only detailed for the first half of the year. The cumulative picture for the number of joint calls since 2004 is shown below in figure 10.

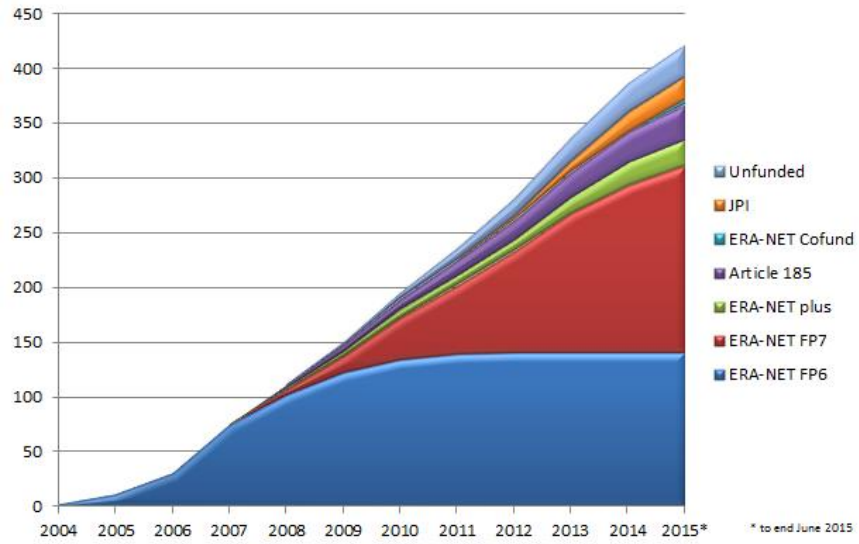

Figure 10: Cumulative Number of Joint Calls, since 2004, by network type

The total cumulative pre-call budget for all joint calls since 2004 is just over Euro 5 billion. The annual comparison, by funding instrument, is shown in figure 11 (again, provisional data has been provided for the second half of 2015 for the purposes of this report).

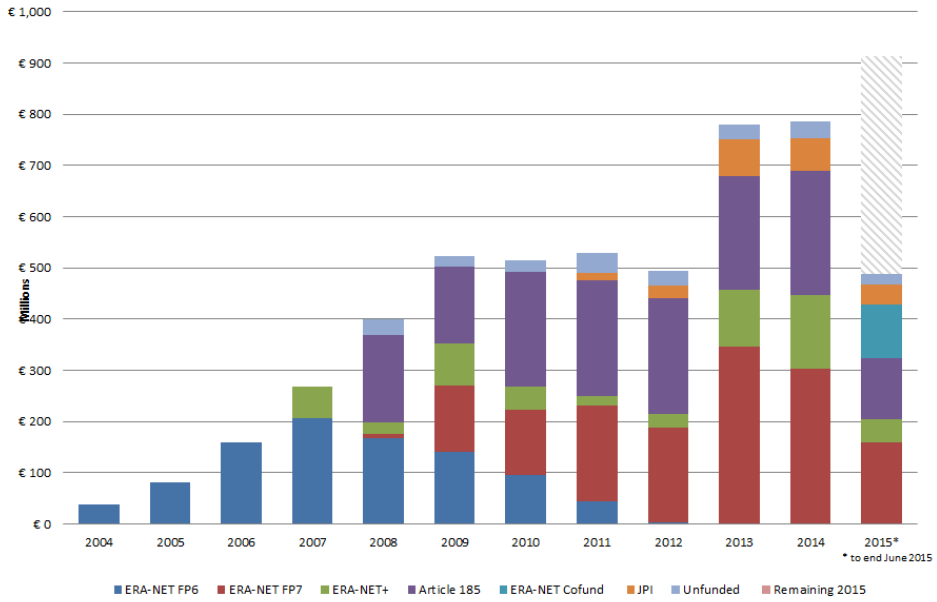

Figure 11: Joint Call Budget for all Calls (closed) between 2004 and 2015, by network type

As indicated previously, in many calls, the total pre-call budget is not fully utilised and so the actual investment in projects can be lower than the budgeted amounts. Figure 12 below indicates the cumulative actual investment in projects. Clearly this is lower than the numbers shown above but investment still reaches almost Euro 4.5 billion. It should be noted that actual data was not available for all networks and calls and work will be ongoing to gather this information in order to present an accurate picture of public funding for transnational projects.

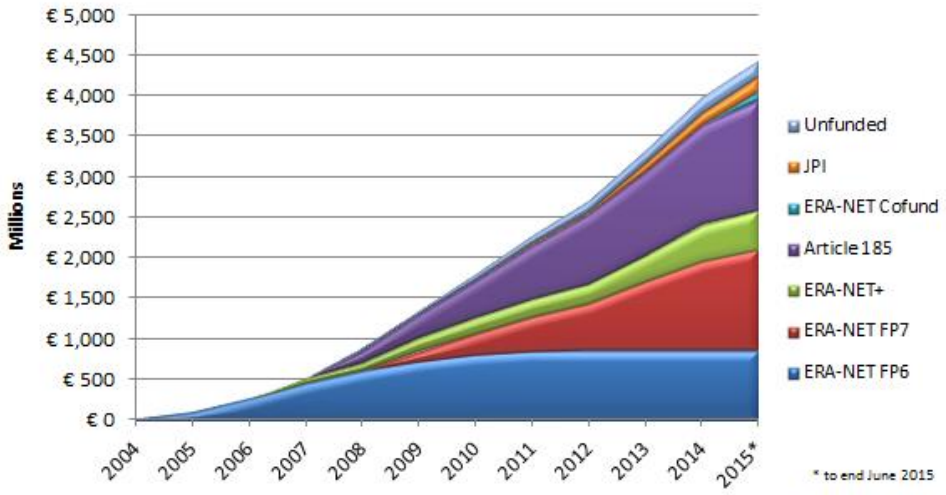

Figure 12: Cumulative investment in Joint Calls between 2004 and 2015

Portfolio of Funded Projects

The number of projects funded by joint calls since 2004 is around 4,500. Figure 13 shows the annual volume by network type.

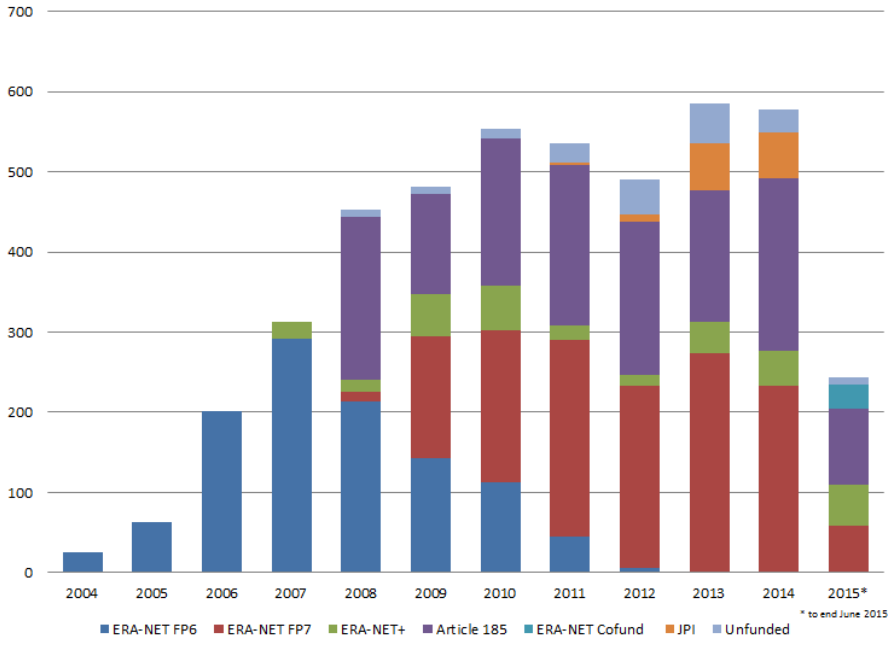

Figure 13: Number of Transnational Projects Emerging, by year and by network type

The cumulative picture since 2004 is shown in figure 14.

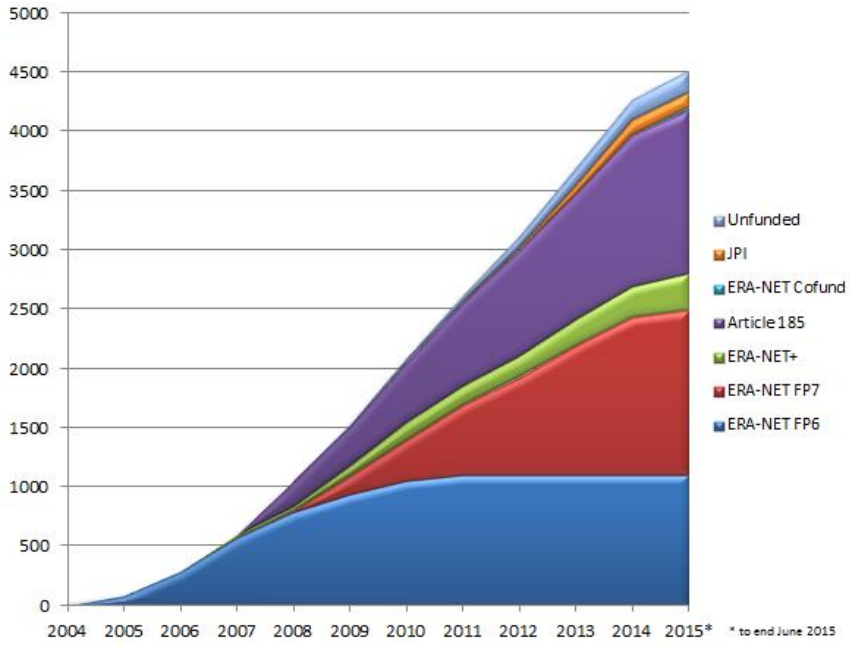

Figure 14: Cumulative Number of Transnational Projects Funded

Based on the data available at this stage, an estimate of the average project size has been made in table 2 below. Over time, additional data (both new and historic) will become available and so these estimates will improve in subsequent reports.

	Average Project Size
ERA-NET FP6	€ 729,762
ERA-NET FP7	€ 825,669
ERA-NET Plus	€ 1,479,488
Article 185	€ 944,725
ERA-NET Cofund	€ 1,434,133
JPI	€ 1,111,806
Unfunded	€ 803,789

Table 2: Average Project Size Estimates

It should also be noted that the estimated overall investment of Euro 4.5 billion to June 2015 as well as the average project size estimates do not include in-kind contributions to projects nor (apart from the Metrology Article 185) complementary investment of institutional funding in Joint Actions, particularly by JPIs. This is a subject that could be explored further in future reports if sufficient quality of data can be provided by the P2P networks.

Outlook

This section of the report considers joint calls that were implemented before the end of June 2015 but had still to reach the funding stage, joint calls that will close during 2016 and the outlook for P2P networks in the medium term.

Plans for Future Joint Calls

There are 25 joint calls that have been launched and will close in the period July – December 2015. These calls have a combined budget of around Euro 387 million. Further details will be available for these calls in the 2nd annual report but figures 7 and 9 have attempted to show how these will impact on the overall picture of joint calls during 2015 as a whole.

During 2016, it is estimated that around Euro 1 billion will be committed to joint calls across the different network types. ERA-NETs (including FP7, EN+ and Cofunds) will have a value of Euro 646 million, of which Euro 123 million relates to Cofunds to be implemented by the JPIs. Article 185 calls will have a budget of around Euro 380 million for calls closing in 2016.

For the period 2017-2020, based on current data, there are already an estimated 155 joint calls planned, with a total budget of more than Euro 2.5 billion. These figures include estimates for the additional joint calls planned for Cofunds beyond the initial EU cofunded call. This excludes investments based on new Cofund networks beyond the 2016/17 work programme.

Specific details of upcoming calls can be found on the ERA-LEARN 2020 website at www.era-learn.eu.

Plans for new networks

A number of Cofund proposals were successfully submitted in 2015 and these will start to implement cofunded calls, which are due to close during 2016. Table 3 below provides an overview of the new Cofund networks.

ERA-NET CO-FUND		Call Closure	Expected Number of Follow-on Calls
ACT	Accelerating CCS technologies as a new low-carbon energy vector	2016	2
BESTF3	Bioenergy Sustaining the Future (BESTF) 3	2016	3
ERA4CS	European Research Area for Climate Services (JPI Climate)	2016	
DemoWind2	DemoWind 2 ERA-NET Cofund action - delivering cost reduction in offshore wind	2016	
ENSUF	ERA-NET Cofund Smart Urban Futures (JPI Urban Europe)	2016	
ERA-CVD	ERA-NET on cardiovascular diseases to implement joint transnational research projects and set up international cooperations	2016	3
ERA-GAS	ERA-NET for Monitoring and Mitigation of Greenhouse Gases from Agri- and Silvi-Culture (JPI FACCE)	2016	1
ERA-HDHL	ERA-NET Biomarkers for Nutrition and Health (JPI HDHL)	2016	3
ERA-Planet	The European network for observing our changing planet	2016	
JPI-EC-AMR	ERA-NET for establishing synergies between the Joint Programming Initiative on Antimicrobial Resistance Research and Horizon 2020 (JPI AMR)	2016	3
M-ERA.NET 2	ERA-NET for materials research and innovation	2016	2
NEURON	ERA NET NEURON in the area of brain-related diseases and disorders of the nervous system	2016	4
PhotonicSensing	Photonics based sensing	2016	
Solar-ERA.NET	SOLAR-ERA.NET Cofund	2016	
SUSAn	European Research Area on Sustainable Animal Production Systems (JPI HDHL, JPI AMR, JPI Water, ERA-GAS)	2016	1
WaterWorks2015	Water Works 2016-2020 in Support of the Water JPI (WaterWorks2015) - Sustainable water use in agriculture, to increase water use efficiency and reduce soil and water pollution (JPI Water, JPI FACCE)	2016	

Table 3: New ERA-NET Cofund Networks - submitted in 2015

Seven of these 16 new Cofund networks are directly linked to one or more of the JPIs and have an overall pre-call budget for the 2016 calls of Euro 123 million. The overall pre-call budget for the 2016 calls in table 3 is just under Euro 340 million, of which over Euro 130 million makes up the planned European Union contribution.

The Horizon 2020 Work Programme for 2016/17 has now been approved and a budget of up to Euro 246.8 million has been allocated for ERA-NET Cofund actions. This spans various work programmes including Excellent Science, Industrial Leadership, Societal Challenges and Science with and for Society.

In addition, a new instrument (EJP Cofund) will be piloted on two health-related topics with a budget of Euro 85 million.

Strategic Analysis

As well as providing information and learning materials for the P2P community, the scope of the ERA-LEARN 2020 project also includes the preparation of policy briefs on the impact assessment of networks and analysis of alignment modalities. Two interim reports have been produced and these are summarized below.

Analysis of the performance of P2P networks: emergence of impacts and good practice

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The ERA-LEARN 2020 project dedicates a specific work-package on monitoring and assessing the impacts of P2P networks on an annual basis. The first impact assessment exercise that was carried out this year (2015) included two strands of research: Strand 1: advanced statistical analysis of existing evidence and data collected through the 2013 IPTS NETWATCH impact survey on FP7 ERA-NETs and the Commission's surveys carried out annually on P2P networks; Strand 2: a small scale survey based on interviews of JPI members (26 in total) about rationales, expectations and impacts, good practice and obstacles in JPIs.

The statistical analysis of this data revealed the key factors affecting perceived impacts of FP7 ERA-NETs. Firstly, 'programme interoperability' or 'operational alignment', that is, compatible timing across different programmes, common or compatible rules in funding and participation in research activities and common procedures for project monitoring / evaluation, was found to be of major importance affecting almost all types of perceived impacts. Secondly, benefits in relation to 'opening up national programmes to transnational research areas' presented reliance on a different set of factors that related to the level of complementarity between the national programme and the ERA-NET and the existence of cooperation agreements between the national programmes. This set of factors relate to alignment at programme level. Complementarity and synergies between the national programme and the ERA-NET were also important for achieving high impacts in relation to 'new types of research projects' and 'new researchers, with no prior international or European experience, benefiting from joint activities'. A third key finding worth noting is that joint activities that relate to knowledge access and sharing are important for achieving high impacts both in relation to 'higher quality of research funded at the national level' as well as 'opening up the scope of national programmes to transnational research areas'. The organisation of joint calls is another major activity as of the network features it was the number of proposals funded per call that mainly affected the degree of achievement of almost all impact types.

Although coming from a different cohort, the JPI interviews confirmed some of these findings. Together

with the difficulty in ensuring financial sustainability and coordination at the national level, programme interoperability or alignment at the operation level was reported as a key obstacle for the smooth operation of the JPIs. Nonetheless, certain initiatives were reported that could be considered good practices to tackle overcome these obstacles.

The JPI interviews also indicated the emergence of a number of different types of impacts that can be grouped under six categories; Capacity-building, Enduring Connectivity, Attitude/Cultural Change, Conceptual, Structural and Instrumental impacts. The category of enduring connectivity relates to connectivity that lasts beyond the first (funded) relationship. In the case of JPIs connectivity relates to both the JPI partners, i.e. Ministries and funding agencies as well as the beneficiaries of JPI activities. The networking and collaboration opportunities offered by the JPIs were highly appreciated by the research community as well as by public officials. JPI members were also quite positive about the cases of improved collaboration across different ministries and with different funding agencies at the international but even more importantly at the national level, aspiring to less fragmentation in the national research and innovation systems.

There is identifiable evidence of new capacity-building being produced by the JPI programme in subject areas where previously transnational collaboration amongst Member States was poor or non-existent. This is the case for the areas of neuro-degenerative research, cultural heritage, anti-microbial resistance or water research for instance. The multi-disciplinary approach promoted by the JPIs is also an important aspect of capacity building. Attitudinal/cultural change relates to knowledge exchange and includes elements such as improved reciprocal understanding and willingness to work together. Within Member States there were clearly impacts in attitudes manifested in multidisciplinary and interdisciplinary approaches instigating a fundamental change in the mind-sets of the research communities involved and the various, associated ministries. Conceptual impact refers to the impact on the knowledge, understanding and attitudes of policy-makers. JPI participation has managed to draw the attention of the national government to the relevant subject and there is early indication that participation in a JPI increases the visibility and draws more attention to that subject. Adding to this, visibility of certain JPIs goes beyond the EU attracting attention from non-EU countries while also influencing international research agendas.

Structural impacts relate to changes in institutions and structures in the national or European research landscape due to changed thinking amongst policy makers and influences on policy issues stemming from the acquired knowledge. JPI members mentioned that several structures were created to increase national coordination of JPI participation citing numerous examples of the participating Member States. Instrumental impact refers to the direct impact on policy and practice decisions in areas of environmental improvement, risk mitigation, service improvement, societal benefits and productivity improvements. In the case of the JPIs this type of impact relates to the actual solutions that are sought to deal with the societal challenges addressed by the JPIs. These impacts would be the ultimate success of the JPIs in

fulfilling the role they were created for. Yet, it is too early for such types of impacts to emerge.
A more analytical discussion of the results of both the two strands of research is available in the full report that can be downloaded from the ERA-LEARN 2020 website under 'Monitoring and Assessment' (www.era-learn.eu).

ERA-LEARN2020 Report on Developing a Common Definition and Typology of Alignment

Author: Caroline Lesser, FACCE-JPI Secretariat, Institut National de la Recherche Agronomique (INRA)

In December 2008, the Council of the European Union endorsed the concept of Joint Programming to promote the pooling of national research efforts. Joint Programming aims to make better use of Europe's public research and innovation resources and structure European research efforts, in order to strengthen the European Research Area and tackle societal challenges in a more effective manner. The practical implementation of Joint Programming mainly relies on the alignment of existing or planned national (and regional) research programmes and activities. There are, however, various interpretations of what alignment means. The report aims to foster greater mutual understanding regarding this concept, by proposing a common definition of alignment and outlining how it can be implemented in practice in public-to-public research and innovation partnerships.
The Report recommends adopting the definition proposed in 2014 by the *High Level Group for Joint Programming* (GPC) of the European Research Area and Innovation Committee (see Box 1 below).[3]

Box 1. Definition of alignment in public-to-public partnerships

"Alignment is the strategic approach undertaken by Member States to modify their national research programmes, priorities or activities as a consequence of the adoption of joint research priorities in the context of Joint Programming, with a view to improve the efficiency of investment in research at the level of Member States and the European Research Area".

- ⇨ Alignment of national research programmes and activities occurs around common strategic priorities (e.g., common Strategic Research and Innovation Agenda). In practical terms, alignment requires changes in the orientation and content of national research, the volume of research, the way the national programme or activity is executed and changes in research outputs.
- ⇨ Alignment is a bi-directional process, hence common strategic priorities and agendas should take account of Member States' national research priorities and interests, and vice-versa.

Furthermore, the Report proposes a typology that classifies 30 actions and instruments currently in use by European public-to-public research and innovation partnerships that facilitate the practical implementation

[3] ERAC-GPC 1305/1/14, REV1, 30 October 2014

of alignment. These are organised according to the research programming stage in which they usually occur. In addition, the typology allows users to search for alignment actions according to the following (inter-related) criteria:

- *Overall approach*: Alignment actions can rely on strategic, operational and/or financial approaches. Joint Programming Initiatives (JPIs), which concern the entire research programming cycle, can give rise to alignment actions that rely on all three approaches. Successful alignment across a JPI usually combines bottom-up and top-down approaches, e.g. cooperation at the operational/researcher level as well as at the financial/research funding and strategic/policymaker levels

- *Actors*: In the same vein, alignment actions can involve various actors, including: European and national policymakers; national research funding organisations; national research performing organisations (e.g. research institutes and universities) and/or individual researchers

- *Cooperation mode*: The mode of cooperation on which the action relies. The proposed typology for example distinguishes between strategic partnerships; programme integration; programme cooperation; institutional cooperation; networking and capacity building amongst researchers; etc.

- *Intensity*: Within a single mode of cooperation (e.g., institutional cooperation), actions can have varying levels of intensity. Some actions aim at promoting *cooperation* amongst national research programmes and activities (e.g. the establishment of an association or alliance of research performing organisations) while other actions aim at their *full integration* via the development of joint transnational institutes/programmes/activities/infrastructures (e.g. the set-up of a joint research centre)

- *Available instruments*: Some alignment actions rely on European Commission (Horizon 2020) instruments (e.g. ERA-NETs), while others mainly rely on Member States' research and innovation tools (e.g. knowledge hubs)

- *Financing:* Likewise, alignment actions can rely on various financing sources, including funding from participating Member States (cash and/or in-kind), from the European Commission or a combination of the two

While there are a variety of alignment actions, these are often not mutually exclusive but rather complementary to each other (cf. FACCE-JPI, which currently has 10 ongoing or forthcoming joint research actions, including knowledge hubs and networks amongst researchers; joint calls for research proposals amongst Member-States as well as joint ERA-NET Cofunds with other JPIs). While there are a multitude of modalities to facilitate alignment in public to public research and innovation partnerships, there are still several stumbling blocks that hinder the latter, including:

- A lack of understanding of what alignment is and what benefits it could bring within Member States' national research funding and performing organisations;

- Insufficient inter-operability between various national rules and procedures for funding and executing research;

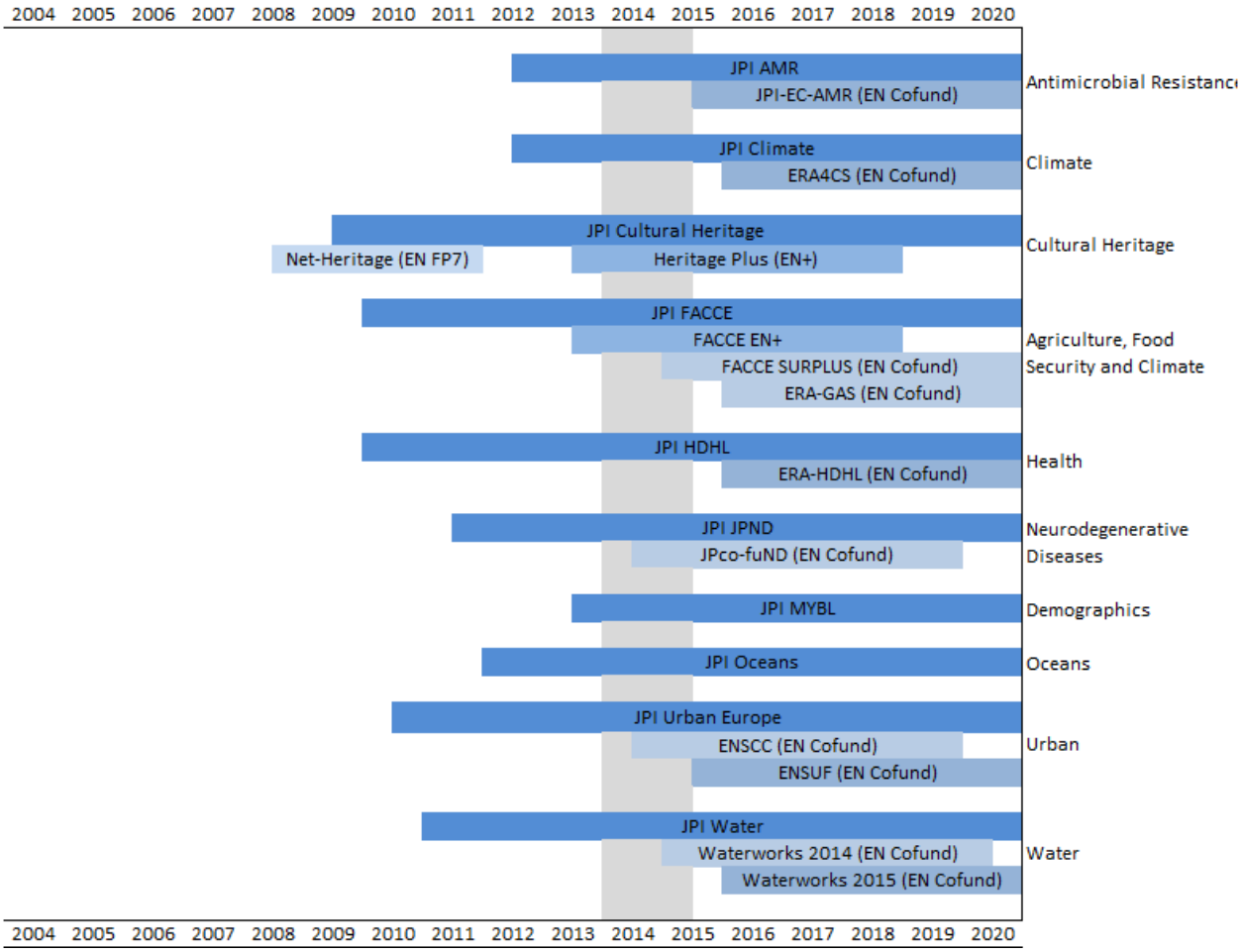
- Weak in-country coordination and consultations on strategic research priorities (e.g. across Ministries and research funding and performing agencies of one same country);
- Lack of sufficient national funding to support transnational coordination ("glue money"); and
- Challenges to show concrete results from alignment in the short-term.

The table in Annex 2 provides a synthetic overview of the proposed typology. The full typology is available from the ERA-LEARN 2020 website under 'Publications' (www.era-learn.eu).

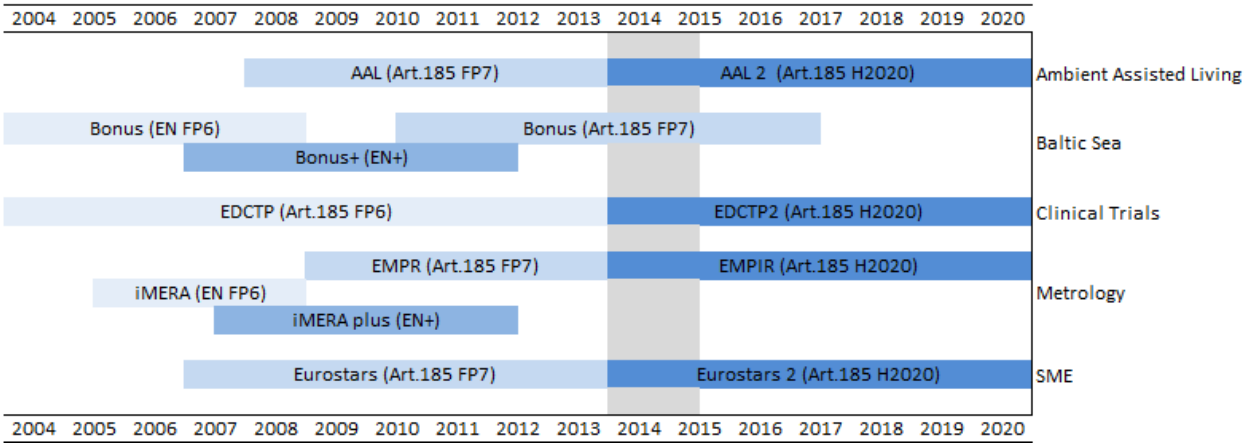
Annex 1 – Heritage of Active Networks

The shading in the figures below is simply used to differentiate between the different network types.

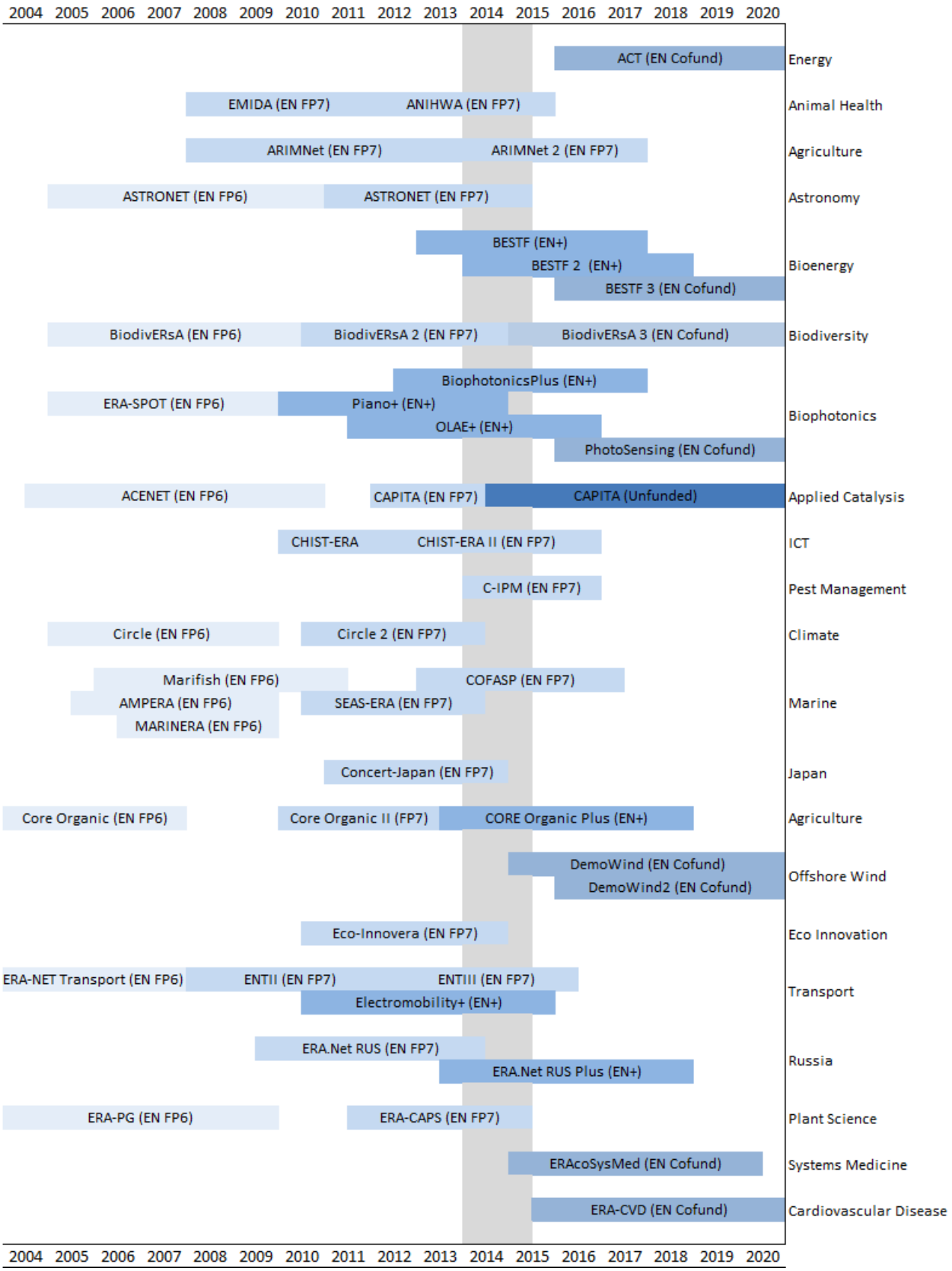
JPI Networks

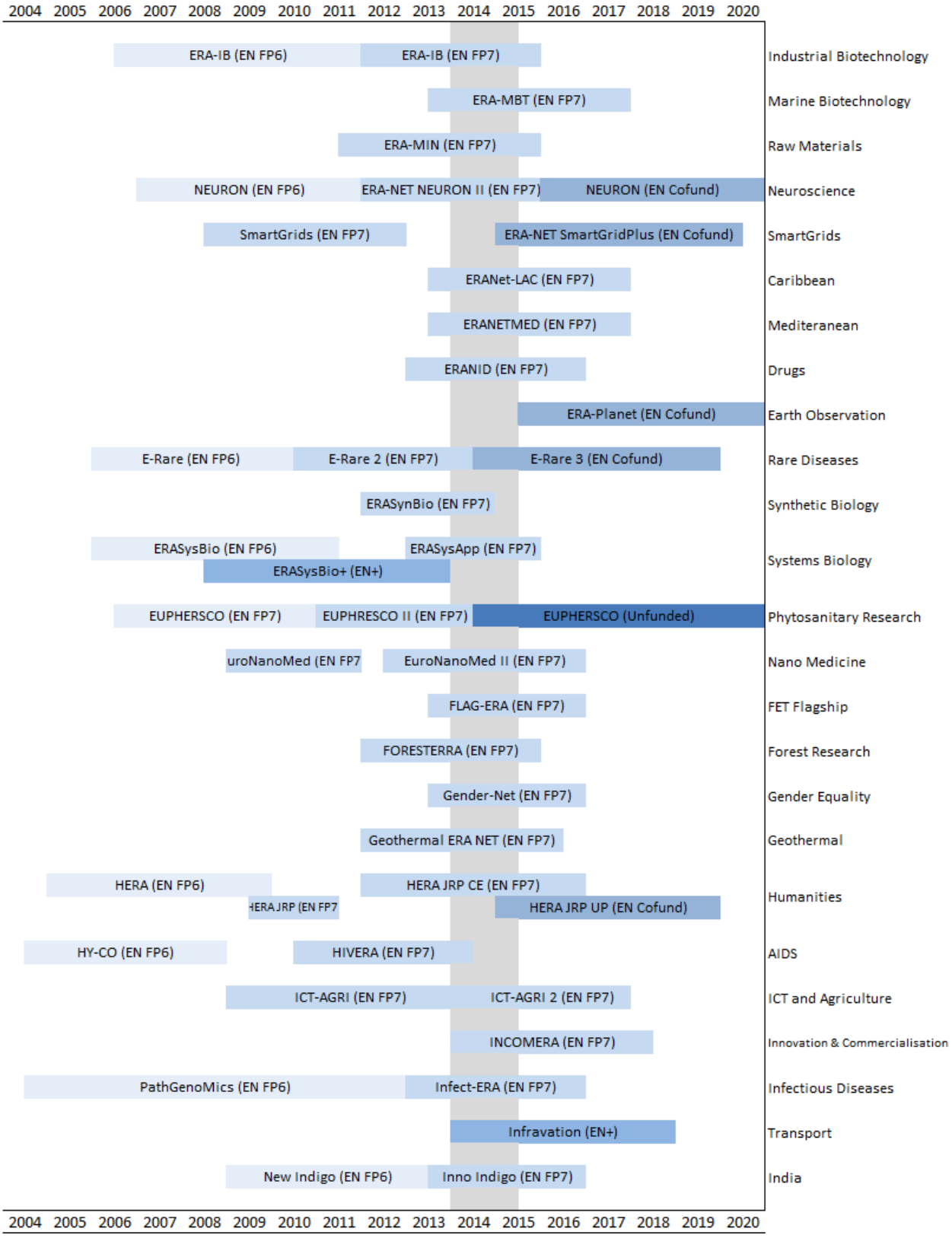


Article 185 Networks



ERA-NET FP6, ERA-NET FP7, ERA-NET+ and ERA-NET Cofund Networks




2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020
ERA-IB (EN FP6)
ERA-IB (EN FP7)
Industrial Biotechnology
ERA-MBT (EN FP7)
Marine Biotechnology
ERA-MIN (EN FP7)
Raw Materials
NEURON (EN FP6)
ERA-NET NEURON II (EN FP7)
NEURON (EN Cofund)
Neuroscience
SmartGrids (EN FP7)
ERA-NET SmartGridPlus (EN Cofund)
SmartGrids
ERANet-LAC (EN FP7)
Caribbean
ERANETMED (EN FP7)
Mediteranean
ERANID (EN FP7)
Drugs
ERA-Planet (EN Cofund)
Earth Observation
E-Rare (EN FP6)
E-Rare 2 (EN FP7)
E-Rare 3 (EN Cofund)
Rare Diseases
ERASynBio (EN FP7)
Synthetic Biology
ERASysBio (EN FP6)
ERASysApp (EN FP7)
ERASysBio+ (EN+)
Systems Biology
EUPHERSCO (EN FP7)
EUPHRESCO II (EN FP7)
EUPHERSCO (Unfunded)
Phytosanitary Research
uroNanoMed (EN FP7
EuroNanoMed II (EN FP7)
Nano Medicine
FLAG-ERA (EN FP7)
FET Flagship
FORESTERRA (EN FP7)
Forest Research
Gender-Net (EN FP7)
Gender Equality
Geothermal ERA NET (EN FP7)
Geothermal
HERA (EN FP6)
HERA JRP CE (EN FP7)
HERA JRP (EN FP7
HERA JRP UP (EN Cofund)
Humanities
HY-CO (EN FP6)
HIVERA (EN FP7)
AIDS
ICT-AGRI (EN FP7)
ICT-AGRI 2 (EN FP7)
ICT and Agriculture
INCOMERA (EN FP7)
Innovation & Commercialisation
PathGenoMics (EN FP6)
Infect-ERA (EN FP7)
Infectious Diseases
Infravation (EN+)
Transport
New Indigo (EN FP6)
Inno Indigo (EN FP7)
India
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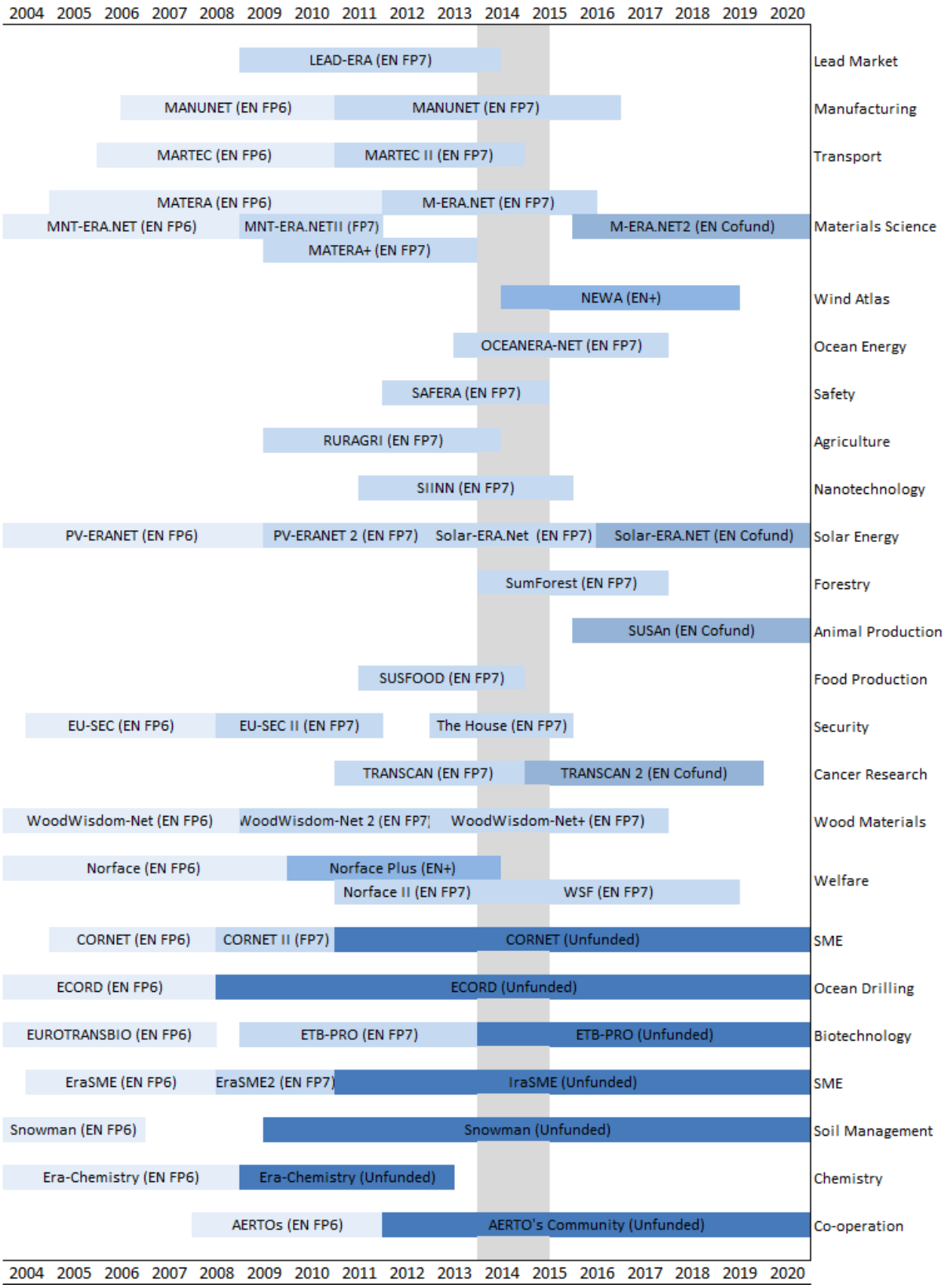
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Lead Market
MANUNET (EN FP6)
MANUNET (EN FP7)
Manufacturing
MARTEC (EN FP6)
MARTEC II (EN FP7)
Transport
MATERA (EN FP6)
M-ERA.NET (EN FP7)
MNT-ERA.NET (EN FP6)
MNT-ERA.NETII (FP7)
M-ERA.NET2 (EN Cofund)
Materials Science
MATERA+ (EN FP7)
NEWA (EN+)
Wind Atlas
OCEANERA-NET (EN FP7)
Ocean Energy
SAFERA (EN FP7)
Safety
RURAGRI (EN FP7)
Agriculture
SIINN (EN FP7)
Nanotechnology
PV-ERANET (EN FP6)
PV-ERANET 2 (EN FP7)
Solar-ERA.Net (EN FP7)
Solar-ERA.NET (EN Cofund)
Solar Energy
SumForest (EN FP7)
Forestry
SUSAn (EN Cofund)
Animal Production
SUSFOOD (EN FP7)
Food Production
EU-SEC (EN FP6)
EU-SEC II (EN FP7)
The House (EN FP7)
Security
TRANSCAN (EN FP7)
TRANSCAN 2 (EN Cofund)
Cancer Research
WoodWisdom-Net (EN FP6)
WoodWisdom-Net 2 (EN FP7)
WoodWisdom-Net+ (EN FP7)
Wood Materials
Norface (EN FP6)
Norface Plus (EN+)
Norface II (EN FP7)
WSF (EN FP7)
Welfare
CORNET (EN FP6)
CORNET II (FP7)
CORNET (Unfunded)
SME
ECORD (EN FP6)
ECORD (Unfunded)
Ocean Drilling
EUROTRANSBIO (EN FP6)
ETB-PRO (EN FP7)
ETB-PRO (Unfunded)
Biotechnology
EraSME (EN FP6)
EraSME2 (EN FP7)
IraSME (Unfunded)
SME
Snowman (EN FP6)
Snowman (Unfunded)
Soil Management
Era-Chemistry (EN FP6)
Era-Chemistry (Unfunded)
Chemistry
AERTOs (EN FP6)
AERTO's Community (Unfunded)
Co-operation
2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020

Annex 2 - A synthetic typology of existing alignment actions and instruments

Alignment action	Approach	Cooperation mode	Instruments
RESEARCH PLANNING			
1. Conduct of joint foresight	Strategic	Joint analysis	* Joint foresight study * Standing Committee on Agricultural Research (SCAR)
2. Conduct of joint mapping	Strategic	Joint analysis	* Posters * Joint mapping meetings
RESEARCH STRATEGY			
3. Adoption of common strategic research priorities	Strategic	Strategic partnership	* Joint foresight and mapping meetings * Common vision * Strategic Research (and Innovation) Agenda
4.Adoption of a common strategic Implementation / Action Plan	* Strategic *Operational * Financial	Strategic partnership	* Consultations at national level * Implementation Plan
5.Conduct of joint stakeholder consultations	Strategic	Strategic partnership	n/a
6. Cooperation between JPIs	Strategic	Meta-level/ Cooperation across P2P initiatives	* Joint ERANET Cofund (EC instrument) * Joint advocacy activities * Joint outreach activities
7. Cooperation between a JPI and other European Research and Innovation initiatives	Strategic	Meta-level/ Cooperation across P2P initiatives	* Joint ERANET Cofund (EC instrument) * Joint advocacy activities * Joint outreach activities
RESEARCH FUNDING			
8. Synchronisation of national calls for research proposals	Financial	Project coordination	Standardised peer review system for research proposals

9.Organisation of a joint transnational call for research proposals[4]	Financial	Project cooperation	n/a
10. Organisation of a joint transnational call for research proposals (H2020 call)	Financial	Project cooperation	ERANET Cofund (EC instrument)
11.Establishment of several (interlinked and/or successive) transnational calls	Financial	Programme cooperation	Framework Partnership Agreement (EC instrument)
12.Joint calls between ERA-NETS and other European initiatives	Financial	Cooperation across P2P initiatives	Joint ERANET Cofund (EC instrument)
RESEARCH IMPLEMENTATION			
13.Establishment of an integrated joint research programme	* Operational * Financial	Programme integration	European Joint Programme Cofund (EC instrument)
14.Establishment of a *long-term*, strategic integrated joint research programme	* Strategic *Operational * Financial	Programme integration	Article 185 Initiative (EC instrument)
15.Establishment of a (loose) network or association of research performing organisations	Operational	Institutional cooperation	* Memorandum of understanding (MoU) outlining the mission and activities of the network
16.Establishment of a Research Alliance	Operational	Institutional cooperation	* MoU outlining the mission and operation of the alliance * Joint programme of work
17.Establishmnent of a Joint Research Centre	* Strategic *Operational * Financial	Institutional cooperation	Agreement establishing a new legal entity
18.Establishment of a virtual Network of Excellence	Operational	Institutional cooperation	* Joint Programme of Activities (EC instrument)

[4] Joint calls can rely on a virtual common pot, real common pot or a mixed mode between participating countries,.

19.Set-up of a network of researchers	Operational	Networking and capacity building amongst researchers	European Cooperation in Science and Technology (COST) (EC instrument)
20.Set-up of a network of individual researchers for a narrow thematic area of research (relevant to a JPI Strategic Research Agenda)	Operational	Networking and capacity building amongst researchers	Knowledge Hub
RESEARCH IMPLEMENTATION (RESEARCH METHODOLOGY)			
21.Coordination of scientific techniques and methodologies	Operational	Project coordination	Consultations
22.Standardisation of scientific techniques and methodologies	Operational	Project cooperation	* Consultations * Common research protocols and models
RESEARCH EVALUATION AND REPORTING			
23.Alignment of (ex-post) evaluation frameworks	Operational	Project/Programme cooperation	Common Monitoring & Evaluation framework
24.Harmonised reporting	Operational	Project/Programme cooperation	Standardised reporting template
TRAINING AND CAPACITY BUILDING OF RESEARCHERS			
25.Joint training of researchers	Operational	Networking and capacity building of researchers	* Joint workshops and training sessions * Training and mobility grants * Marie Curie training networks (EC instrument)
RESEARCH INFRASTRUCTURES AND DATA			
26. Shared use of existing national research infrastructures	* Operational * Financial	Common research infrastructure and data	Agreement on the procedures, rules, fees for the common use of research infrastructure

27.Establishment of a new joint European research infrastructure facility	*Strategic *Operational *Financial	Common research infrastructure and data	The European Research Infrastructure Consortium (ERIC) is a legal form designed to facilitate the joint establishment and operation of research infrastructures
28. Open access to national scientific research data	*Operational	Coordinated data management and storage	* Joint open data strategy (incl. IPR aspects) * Joint data management or data-sharing plan (which also covers compatibility across data protocols)
RESEARCH DISSEMINATION AND UPTAKE			
29.Coordinated or joint dissemination of scientific results	*Strategic *Operational	Joint outreach	Joint outreach and communications material
30. Joint outreach towards industry	*Strategic *Operational	Strategic partnership	*Joint public-private partnership agreements * Cooperation with EIP and KIC (EC instruments)