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### **Policy Brief on impact assessment of networks – 2015**

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## Executive Summary

This document is Deliverable 3.2 entitled 'Policy Brief on impact assessment of networks – 2015' under the ERA-LEARN 2020 project. The Brief draws on the results of two strands of research:

- Strand 1: advanced statistical analysis of existing evidence and data collected through the 2013 IPTS NETWATCH impact survey (Doussineau, et al. 2013), the Commission's surveys carried out annually (Niehoff 2014; Bertrand and Niehoff 2013; Jekova and Niehoff 2012); and
- Strand 2: a small scale survey based on interviews of JPI members (26 in total).

The first strand of research dealt with evidence and data about FP7 ERA-NETs, while the second strand addresses the Joint Programming Initiatives (JPIs).

### Key factors affecting impacts in P2P networks

The existing data that was further statistically elaborated were of three main types: a) network features describing the networks, organisations and respective calls of FP7 ERA-NETs, b) information about activities carried out by these networks and c) insights about perceived impacts from participating in the networks (FP7 ERA-NETs) that were retrieved during the 2013 IPTS NETWATCH survey.

The statistical analysis of this data revealed the significance of '**programme interoperability**' or '**operational alignment**' that is, compatible timing across different programmes, common or compatible rules in funding and participation in research activities and monitoring / evaluation of projects. Specifically, it was shown that a) common evaluation procedures, b) common funding rules and c) joint project monitoring were key factors for achieving benefits in relation to supporting transnational research in an area requiring transnational cooperation. These factors relate to achieving some degree of 'interoperability' at the operational level across the various national programmes. In addition, all the other types of benefits also presented dependence on at least one of these factors. The other impact types examined were 'Opening up to transnational cooperation national programmes in existing or new research areas', 'Higher quality projects funded at national level (through joint calls / programmes)', 'New types of research projects funded (through joint calls/programmes)', and 'New researchers, with no prior international or European experience, benefiting from joint activities'.

However, the benefits in relation of '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-NETs and the existence of cooperation agreements between the participating national programmes. This set of factors relate to the '**alignment**' at **programme level** that has to exist among the various national programmes, as well as between the national programme and the ERA-NET. 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**, such as joint training activities and personnel exchange schemes, are important for achieving high impacts both in relation to 'higher quality of research 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 of the impact types examined.

The JPI interviews confirmed some of the results produced by the statistical exercise although they targeted a different cohort (JPIs instead of FP7 ERA-NETs). 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. Interestingly, despite the different focus of the two research strands, this factor was highly stressed in both cases.

On the positive side, certain initiatives were reported that could be considered good practices to tackle these issues. For instance, initiatives such as 'mirror groups', or 'reference groups' or the 'networking platforms' reported may prove effective in enhancing coordination among the various ministries and agencies at the national level. The development of strategic research and innovation agendas (SRIAs) can be quite demanding due to different national interests and expectations and it may prove wise to conduct a series of 'pilot actions' as test-beds for JPI-type collaborations while or even before the full strategic SRIA is developed. Such activities will help build trust and may serve as a showcase of what can be achieved through collaboration, thus encouraging JPI partners to proceed to collaboration at the more strategic level and achieve a certain degree of alignment between national priorities and JPI areas of interest.

For financial sustainability, certain JPIs have found ways to overcome this by applying 'transition fees,' although effectiveness of such measures is always dependent on the availability of funds at the national level and this is not straightforward for some countries especially in the era of financial crisis.

Programme interoperability (or operational alignment), on the other hand, seems to be more difficult to achieve. It is also worth noting that operational alignment may be a problem both across the different national systems but also within a national system, that is in the cases where there is no specific national programme to support JPI research and resources have to be combined through various national programmes and agencies.

### Major JPI impacts

Adopting and adapting the basic framework devised by Meagher (2013) impacts emerging from the JPI can be grouped under six categories; Capacity-building, Enduring Connectivity, Attitude/Cultural Change, Conceptual, Structural and Instrumental impacts. Despite the different stages of development of the JPIs, there is already some evidence emerging in the first five of the six categories and further indications of potential impacts that can be monitored.

The category of **enduring connectivity** relates to the on-going communication between the relevant actors and to the follow on collaborations that continue after the initial activity has been completed. This is connectivity that lasts beyond the first funded relationship. In the case of JPIs connectivity relates to both the JPI partners, that is ministries, funding agencies, programme managers as well as the beneficiaries of JPI activities, i.e. the research community, business and society. There was consensus among the interviewees that the networking and collaboration opportunities offered by the JPIs were highly appreciated both by the research community as well as by public officials. Benefits stemming from international collaboration were perceived by project beneficiaries while public officials appreciated the exchange of experience in managing international projects with foreign counterparts. They were also quite positive about 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. The JPI programmes are still at an early stage and the potential for enduring connectivity is an indicator that can be monitored and considered as the Initiatives progress and beyond.

**Capacity building** refers to the development of capabilities and skills. 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 relevant for research enabled by the JPIs in the areas of agricultural research, 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. Impact on capacity is evident across Member States in situations of reduced national duplication, for example, through the use of knowledge sharing / diffusion initiatives as knowledge hubs or shared used of infrastructures.

**Attitudinal/cultural change** relates to knowledge exchange and includes elements such as improved reciprocal understanding and willingness to work together. This is relevant for JPIs both at the level of ministries and agencies as well as the research and business communities, and society. Within Member States there are clearly impacts in attitudes manifested in multidisciplinary and interdisciplinary approaches being adopted in the research areas addressed by JPIs. As mentioned above several JPIs including Climate, AMR, Urban Europe, Cultural Heritage, More Years Better Lives, and FACCE-JPI have managed to apply a multi-disciplinary approach in their respective research areas, thus instigating a fundamental change in the mind-sets of the research communities involved and the various, associated ministries. JPI engagement has also promoted greater investment in specific topics in the JPI transnational arena. For example, in France, the National Funding Agency, ANR decided to orientate a substantial part of the funds of its environment program to multilateral international calls related, for instance, to FACCE, Climate, Oceans and Water JPIs as well as other programs such as ERANETs Biodiversa (I-II-III) and Belmont Forum calls. Another illustration related to the MACSUR Knowledge Hub. Based on the UK experience MACSUR is a large flagship alignment activity in modelling research all around Europe. While the UK devoted only 'glue' money, this activity highlighted millions in investment in modelling research from UK Research Councils and the Scottish National Government. There was a strong recognition amongst the interviewees that JPI supported research is generally seen as complementary to nationally funded research in the same area.

**Conceptual impact** refers to the impact on the knowledge, understanding and attitudes of policy-makers. In this category of impact we identify examples of changed thinking amongst policy makers, influences on policy issues and increased awareness in the policy world. There is already evidence of conceptual impact through participation in the JPIs and a resultant increased awareness amongst national governments to specific issues and topics. JPI participation is an argument to draw the attention of the national government to the relevant subject and there is some early indication that participation in a JPI by a Member State increases the visibility and draws more attention to that subject. This is the case for example for cultural heritage, climate change and anti-microbial resistance research. Adding to this, visibility of certain JPIs goes beyond the EU attracting attention from non-EU countries while also influencing international agendas in relevant research areas, for example JPND, JPI AMR and JPI Oceans.

**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. Structural impact in the form of changes to government organisation is realised broadly across the Member States. New, inter-ministerial forms or structures have been created responding to the need to coordinate national participation in P2Ps. JPI members mentioned that increased national coordination was an impact they anticipated and cited numerous examples from their knowledge of the participating Member States. These initiatives are expected to lead to a less fragmented national research

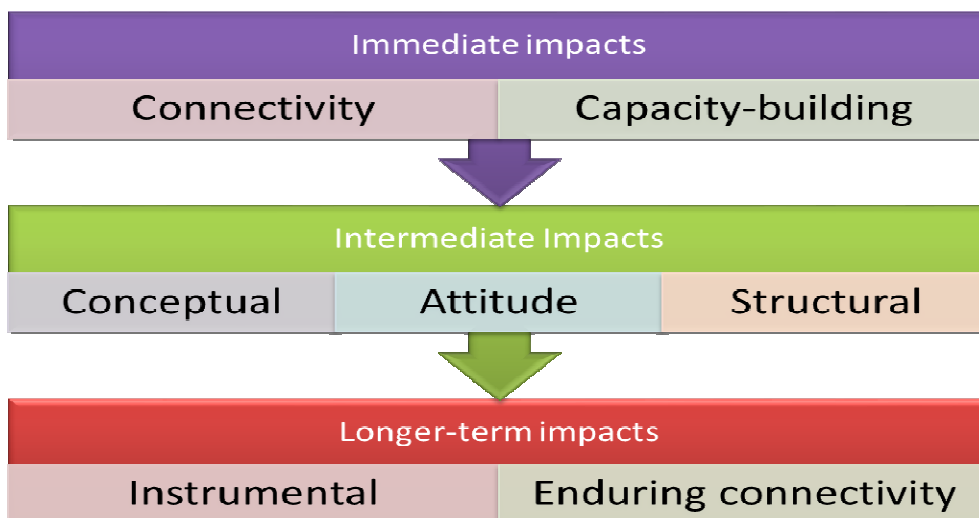
system, which in turn will yield instrumental impacts such as improvements in the environment and societal benefits for the Member States.

Structural impacts have also emerged from developing the SRIAs This impact can be of two main types, firstly, the development of a national strategy in the specific area that did not exist before as in the case of Cyprus and JPI Water or Norway and JPI Healthy Diet for Healthy Life (HDHL) and secondly the consideration of the SRIA in the national strategies in the respective areas or research.

**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.

The comments from the interviewees gave the impression that certain types of impacts have been achieved more than others. Whereas certain impacts need more time to occur they also need other types of impacts to have matured earlier. Thus, connectivity and capacity-building needs to take place and mature (based on pre-existing and on-going trust building) before attitudes are changed and bring about conceptual and structural impacts. The synergies among all these types of impact is expected to lead to enduring connectivity in all its various different forms while in parallel instrumental impacts can be anticipated through intense transnational collaboration. This is illustrated in the following impact framework. It should be borne in mind that this early assumption is based solely on this first impact assessment exercise and does need to be supported by further evidence and analysis that may be enabled in the second exercise to be conducted next year as a part of the ERA-LEARN 2020 project activity.

**Figure 1: Perceived framework of reported JPI impacts**



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## 1. Introduction

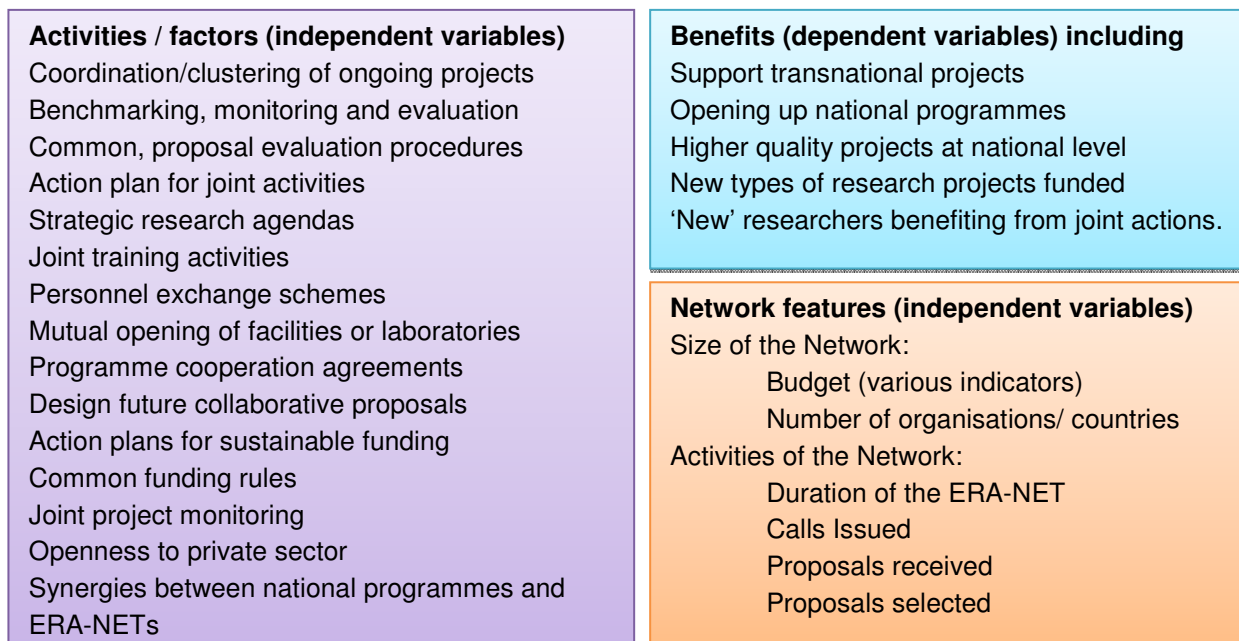
The ERA-LEARN 2020 project dedicates a specific work-package (WP3) to monitoring and impact assessment, which aims to implement a more integrated and systematic framework for monitoring and assessing the impact of P2P networks and associated co-funded projects. Task 3.2 in particular involves an annual series of focused impact assessment surveys to explore important policy issues for P2P networks. The present report is D 3.3, a Policy Brief drawing on the results of the first of those annual impact assessment surveys.

The research that the present report draws upon was carried out following a specific approach that was finalised in consultation with the ERA-LEARN 2020 consortium and Advisory Board. The approach consisted of two research strands:

- Strand 1: Focus on existing evidence and data collected through the 2013 IPTS NETWATCH impact survey and the European Commission’s annual surveys (Niehoff 2014; Bertrand and Niehoff 2013; Jekova and Niehoff 2012); and
- Strand 2: Conduct a small scale survey based on interviews of JPI members.

In more detail, under the first strand of research the data contained in NETWATCH and the European Commission’s datasets describing the networks, organisations and respective calls were linked with the information contained in the 2013 IPTS NETWATCH survey that provided insights about joint activities, impacts, broad policy objectives, and coordination mechanisms. The resulting dataset that mainly referred to FP7 ERA-NET projects was further analysed to try to find - connections and inter-dependences between network features and impacts, both perceived and realised from participating in networks. The variables that were eventually selected for further elaboration are shown in the following figure.<sup>1</sup>

**Figure 2: FP7 ERA-NET Variables selected for advanced statistical analysis**

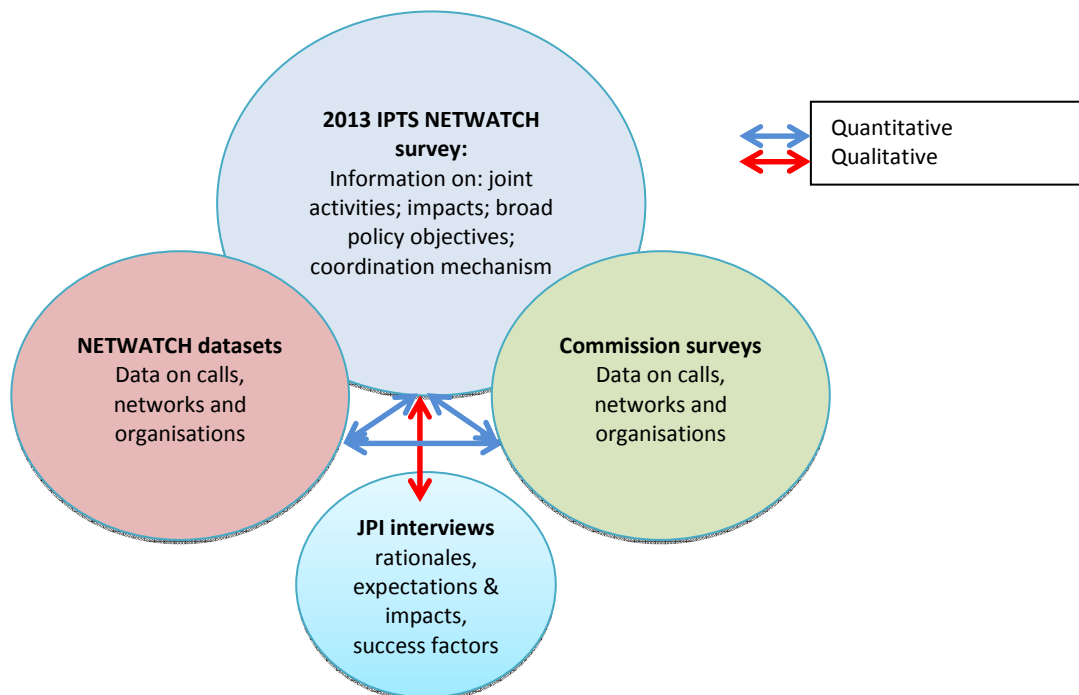


<sup>1</sup> The specific methodology and steps followed are analytically described in Annex III.

Under the second strand of research a small scale interview survey was conducted with JPI members (26 interviews). The selection of the interviewees and final focus of the discussion themes were finalised in coordination with the focus and mandate of the JPI Expert Group that was only then being set up by the Commission. The target group was decided to be JPI Managing or Executive board members (i.e. middle level of seniority). Interviewees represented several different cohorts, that is both research-intensive and less research-intensive countries, larger and smaller economies; EU-15 and New Member States and different types of agencies within the same country.<sup>2</sup> A specific template was used that helped structure discussions under three themes: a) rationale, extent and focus of participation, b) expectations and impacts at the levels of research organisation, research orientation and national research system, and c) good practices and obstacles/barriers for the JPI process as a whole as well as individual JPIs.<sup>3</sup>

The two strands of research were combined as illustrated in the following figure. The data and information included in the three datasets coming from NETWATCH and the Commission were statistically elaborated and lead to connections about which factors affect perceived impacts from participating in ERA-NETs. The JPI interviews were a qualitative input that revealed views on rationales, expectations and perceived impacts from participation in JPIs, as well as good practices and barriers in JPI operation. A cross-read between the results of the JPI interviews and the results from the statistical elaboration of the FP7 ERA-NETs, indicated that the factors that were deemed important for enhancing network performance and impacts of participation were not as different as one might expect, given the different timeframes of the two research strands and the different networks examined in each case. Thus the results of the JPI interviews could be commented upon in combination with the results of the statistical analysis.

**Figure 3: Approach for the first impact assessment survey (2015)**



<sup>2</sup> The list of the interviews per JPI is included in Annex I.

<sup>3</sup> The interview template is attached as Annex II.



This version of the report draws on comments received from both the ERA-LEARN 2020 consortium and the Advisory Board on presentations made during two project meetings (May and October 2015) and is considered the final version of Deliverable D3.3.

## 2. Results of advanced statistical analysis of collected data on FP7 ERA-NETs

As indicated in the introduction the level of impacts/benefits were examined in relation to the following areas:

1. Support to transnational projects in an area requiring transnational cooperation
2. Opening up to transnational cooperation national programmes in existing or new research areas
3. Higher quality projects funded at national level (through joint calls / programmes)
4. New types of research projects funded (through joint calls/programmes)
5. New researchers (with no prior international or European experience) benefiting from joint activities

**Table 1: Realised vs. Expected benefits from participating in FP7 ERA-NETs**

	Realised benefits		Expected benefits		Realised	Expected
	N	Mean	N	Mean	Std. Deviation	Std. Deviation
<b>1... Support Transnational Projects</b>	247	<b>2.33</b>	256	<b>2.57</b>	.711	.640
<b>2... Open to Transnational Coop</b>	243	<b>1.96</b>	254	<b>2.22</b>	.789	.794
<b>3... Higher Quality Projects Funded</b>	239	<b>1.83</b>	251	<b>2.02</b>	.743	.774
<b>4... New types of Research Funded</b>	237	<b>1.84</b>	246	<b>1.98</b>	.788	.785
<b>5... New Researchers</b>	225	<b>1.77</b>	239	<b>1.96</b>	.713	.760

Views of respondents to the 2013 NETWATCH survey were gathered both in relation to expected impacts in the above mentioned areas as well as realised impacts.<sup>4</sup> After examining the levels of impacts expected vs. those realised it became evident that the expectations of the participating organisations were not fully met.

In order to qualify this statement we looked at the ‘origin’ of these benefits and the factors that contributed to achieve them in the opinion and experience of the respondents. The activities listed in Figure 2 above may have been undertaken by the ERA-NET with or without the participation of the responding organisation. The network features listed in Figure 2 above were also considered as factors (covariates) that might affect achievement of impacts in the above areas.

Of the analyses performed certain results emerged that were statistically significant. These are summarised in the following table and explained further below.<sup>5</sup>

<sup>4</sup> The perceived / realised impact was measured on a 4 points Likert scale where 1=no benefit and 4=high benefit (1= no benefit; 2=little benefit; 3= some benefit; 4=high benefit).

<sup>5</sup> The methodology applied and the resulting regression models and results are analytically described in Annex III.

**Table 2: Summary of findings from statistical analysis of the collected data on FP7 ERA-NETs**

Benefits perceived by org.	Supporting transnational projects	Opening up to transnational coop. of national programmes in existing / new research areas	Higher quality projects funded at the national level	New types of research projects funded through joint calls and programmes	Involvement of 'new' researchers without previous experience in transnational research
Covariates	average number of proposals funded per call	Number of Countries in the ERA-NET		average number of proposals funded per call	average number of proposals funded per call
Factors					
Organisation has taken part in / enjoys...	common multinational proposal evaluation procedures	schemes for joint training activities, supervise theses or common PhD schemes	Schemes for personnel exchange	common, multinational proposal evaluation procedures	Action plan taking up common strategic issues / preparing joint activities
	development of common funding rules for transnational projects	specific cooperation agreements or arrangements between participating programmes	development of common funding rules for transnational projects	national programme is complemented by the ERA-NET	joint monitoring of transnational projects
	joint monitoring of transnational projects	national programme is complemented by the ERA-NET	low / little synergy between research activities conducted within the ERA-NET and through national programmes		larger experience in ERA-NET
					synergy between research activities within the ERA-NET and through national research programmes
ERA-NET has undertaken...	joint monitoring of transnational projects	specific cooperation agreements or arrangements between participating programmes	Schemes for personnel exchange	common, multinational proposal evaluation procedures;	joint monitoring of transnational projects
			development of common funding rules for transnational projects		

(\*) The same factors are coloured with the same colour to indicate commonalities / differences of factors across the different areas of benefits.

### **Benefits in supporting transnational research need common rules and procedures at project level**

Naturally, the larger the number of proposals funded per each call, the higher the cumulative odds<sup>6</sup> of achieving high perceived benefits for an organisation, in terms of supporting transnational projects in research areas requiring international cooperation.

In addition, when organisations participated in activities of 1) establishment of common multinational proposal evaluation procedures; 2) development of common funding rules for transnational projects and 3) joint monitoring of transnational projects within the network, this increased the cumulative odds of scoring higher achieved benefits in relation to supporting transnational projects.

For the network overall, it was sufficient that the ERA-NET undertook activities in relation to joint monitoring of transnational projects (irrespective of whether the organisation participated in this activity or not). This indicates the importance of achieving a certain degree of harmonisation at project funding, evaluation and monitoring levels in order to enjoy increased benefits from supporting transnational research and that, overall, in order to achieve these benefits, organisations need to participate in the activities of the network.

### **Cooperation and complementarity at programme level are needed for opening up of national programmes in those areas where transnational research is necessary**

The number of countries participating in the ERA-NET benefited the organisation in terms of higher cumulative odds in perceived benefits, from opening up to transnational cooperation of national programmes in existing or new research areas.

Benefits in this area of impact were also enhanced when organisations participated in 1) schemes for joint training activities, supervising theses or common PhD schemes and 2) specific cooperation agreements or arrangements between participating programmes. This shows the importance of employing 'softer' activities in introducing areas for transnational research into existing national research programmes and thus preparing the ground for jointly developing strategic research agendas.

Moreover, organisations operating in countries where the national programme was complemented by the ERA-NET increased the cumulative odds of scoring higher achieved benefits in the specific area. The establishment of specific cooperation agreements between participating programmes was sufficient at the network level for benefits of this type to be realised more by organisations, independently of whether the organisations undertook this activity or not.

Thus, it is interesting to see that opening up of national programmes to areas of transnational research is facilitated by ensuring cooperation and complementarity, not only between the national programmes and the ERA-NET but also among the participating programmes themselves.

### **Higher quality research at national level is possible but needs facilitated access to expertise and joint research projects**

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<sup>6</sup> The perceived impact is measured on a 4 points Likert scale where 1=no benefit and 4=high benefit (1= no benefit; 2=little benefit; 3= some benefit; 4=high benefit). For more information on the methodology applied please visit Annex III.

Achieving higher quality projects funded at the national level is quite an important variable. It implies that participation in the ERA-NET leads to a higher quality of research, through international collaboration, which can then be transferred to the national level and reflected at the quality level of the proposals funded through the national programmes.

Interestingly the level of quality of projects funded at the national level was not linked with the number of calls organised or the number of proposals funded within the ERA-NET. Cumulative higher odds of benefits in this area were increased when organisations participated in 1) schemes for personnel exchange and 2) development of common funding rules for transnational projects. In other words, achieving higher quality projects at national level is facilitated both when knowledge exchange is encouraged (through personnel exchange schemes) as well as when joint research activities are enabled (through common project funding rules). This shows the importance of both actual transnational research as well as access to foreign expertise through, other than research, activities. These two activities need to be taken up by the network in order to lead to enhanced impacts in this area without the necessary participation of the organisation.

This type of impact presents another interesting result. It was found that low or little synergy between research activities conducted within the ERA-NET and through national research programmes increases the cumulative odds of scoring higher achieved benefits in terms of higher quality of projects funded at the national level. At the same time, no synergy or high synergy were not at all linked with higher scores of impact in this area. This indicates that there needs to be a certain level of synergy between national programmes and the ERA-NET that influences the quality of national projects, beyond which there is no effect. However, this can only be considered an indication of the existence of a non-linear relation between research quality and synergy with national research programmes.

### **Common operational procedures as well as complementarity at the programme level bring new types of joint research projects**

The relation between the average number of proposals funded per call through the ERA-NET and benefits to the organisation in terms of new types of research projects funded through joint calls and programmes was positive, i.e. higher average number of proposals funded would in fact increase the cumulative odds of accruing more benefits in this area. Furthermore, increased benefits in this area were linked with whether the organisation participated in the establishment of common, multinational proposal evaluation procedures as well as with whether the respective national programme was complemented by the ERANET research areas.

Establishment of common, multinational proposal evaluation procedures was the only activity that needed to be carried out at network level (without necessarily the participation of the organisation) that helped increase this type of impacts.

Thus, new types of research projects emerge in the ERA-NET when not only joint projects are enabled through common evaluation procedures at project level, but also when complementarity exists at the programme level.

### **Experienced organisations, supported by synergistic national programmes and actual engagement in joint activities bring more benefits for 'new' researchers, i.e. with no prior experience in transnational research**

Naturally, the more proposals funded per call the more benefits in relation to 'new' researchers, i.e. without any prior experience in transitional research, benefit from joint activities. Impacts in this area were also strengthened when organisations participated in 1) action plan taking up common strategic issues / preparing joint activities; and 2) joint monitoring of transnational projects. In fact, when the ERA-NET carried out joint monitoring of transnational projects, this was enough for increasing benefits in this area irrespective of whether the organisation undertook this activity or not.

In addition, this type of impacts was enhanced when organisations enjoyed larger ERA-NET experience (in the 6<sup>th</sup> Framework programme and/or through ERANET+) as well as when there were synergies – in this case the higher the better - between research activities conducted within the ERA-NET and through national research programmes.

As a result, it can be concluded that increased benefits for 'new' researchers accrue when organisations have prior ERA-NET experience and go a step further to setting and implementing action plans for joint activities and monitoring of projects, while they are facilitated by high synergies between their national programmes and the ERA-NET research areas.

#### **'Interoperability' and 'alignment' factors important for most areas of impact**

Reading the findings across the different types of benefits some interesting conclusions emerge. Firstly, of the network features it seems that the number of proposals funded per call is the major factor affecting achievement of almost all of the impact types examined.

Secondly, certain factors were identified as key factors for a number of impact areas that refer to common evaluation procedures and funding rules as well as joint project monitoring. These factors relate to achieving some degree of 'interoperability' at the operational level across the various national programmes. Thus they are crucial for enabling actual transnational research. This is probably the reason why benefits in this area (supporting transnational research) were largely dependent on these 'interoperability' factors. In addition, all the other types of benefits presented dependence on at least one of these factors.

This was not the case however for the benefits in relation to 'opening up national programmes to transnational research areas'. This type of benefits showed reliance on another set of factors that both had to do with the level of complementarity between the national programme and the ERA-NET and the existence of cooperation agreements between the participating national programmes. This set of factors relate to the 'alignment' at programme level that has to exist among the various national programmes as well as between the national programme and the ERA-NET. Complementarity and synergies between the national programme and the ERA-NET are also important for achieving high impacts in relation to new types of research projects and 'new' researchers benefiting from joint activities.

Finally, it is worth noting that joint activities that relate to knowledge access and sharing (joint training activities and personnel exchange schemes) are important for achieving high impacts both in relation to higher quality of research at the national level as well as opening up the scope of national programmes to transnational research areas.

### 3. Results of JPI Interviews

This section presents a synthesis of the information and views expressed in the JPI interviews<sup>7</sup>. It is structured in three main sub-sections following the template that was used<sup>8</sup>. The style adopted is a consideration of the JPI programme overall with examples taken as illustrations from selected JPIs.

#### 3.1 Strategies and rationales

Although it is not common for strategies dedicated to the internationalisation of research to exist at the national level, the theme of international collaboration in research enjoys a prominent position in the national research strategies.

Rationales for participating in JPIs usually reflect the expectations of the participating countries / organisations. Yet, there is an underlying recognition of the *international context of research* and the fact that there are certain *capacities of scientific endeavour that cannot be achieved through narrow programmes or within national borders*. The primary country rationale is always *compatibility of interest in the specific research area across the national and international level*. Participation in a JPI has to be in line with the national strategy and its pillars. In a reciprocal mode, *Member States also envisage being able to influence EU priorities*.

Apart from the research areas of national interest, the JPI subject area also has to *fit with organisational strategies and focus of research*. Motives at the organisational level for international collaboration are to gain *access to additional European funding* for the local research community and collaboration with other funding agencies to gain *experience in relation to managing internationalisation*, through such activities as the joint development of the strategic research agenda, organisation of joint calls and research proposal evaluations. From another perspective participation in JPIs may also be incentivised by the *possibility to continue collaboration in a H2020 project*; in other words JPIs are seen as an “entry point” to H2020 than a replacement of H2020.

#### 3.2 Expectations and impacts

The presentation of reported expectations and impacts adopts a framework of impact articulated by Meagher (2013)<sup>9</sup> and adapted and applied by Cox, Rigby and Barker in an evaluation of the ESRC Genomics Forum (2014).<sup>10</sup> Following this framework, there are five main types of impact considered - *Capacity-building, Enduring Connectivity, Attitude/Cultural Change, Instrumental and Conceptual* impacts. These categories are drawn from academic papers that discuss the impact of research but here this is adapted and broadened to consider not only the impact of the research commissioned by the Joint Programming Initiative (JPI) but also the network and policy-related effects. Given that JPIs also influence institutional and structural settings in the national research and innovation systems, we have added another category, that of *structural impacts*. Although the different JPIs are at different stages of development there is already some evidence emerging of some impact under these categories and certainly some identification of potential impacts that can be further monitored. The methodology is somewhat impressionistic and based upon a small number of interviews (26) although coverage of all the JPIs has been undertaken.

<sup>7</sup> A previous and more extended version of the synthesis of the findings was sent to all the interviewees to allow for final comments and approval.

<sup>8</sup> The interview template is attached in Annex II.

<sup>9</sup> Meagher, L. R. (2013). Research impact on practice. Case Study Analysis Report to the ESRC

<sup>10</sup> Rigby, J., Cox, D., Barker, K. (2014) Case studies of Impact from the ESRC Genomics Forum.

### 3.2.1 Enduring Connectivity

Enduring connectivity relates to the on-going communication between the relevant actors and to the follow on collaborations that continue after the initial activity has been completed. This is connectivity that lasts beyond the first funded relationship. In the case of JPIs connectivity relates to both the JPI partners, i.e. Ministries, funding agencies, programme managers as well as the beneficiaries of JPI activities, i.e. the research community, business and society.

In the JPI initiatives there is evidence of the potential for Enduring Connectivity through **increased international collaboration** of the research communities in the Members States and associated participating countries. In many countries research organisations in national programmes usually promote internal collaboration between academia and industry, whereas JPI supported projects focus on establishing transnational collaboration. In seeking to promote connectivity JPIs have had an impact in the **design of novel means of bringing people together to work**. The Knowledge Hubs in FACCE-JPI, for example, is considered a good practice case that facilitated collaboration in modelling research in a network of some 300 researchers and that is building significant capacity in the field. Another example is the two pilot projects carried out under JPI Oceans. These two projects enabled joint-use of marine infrastructure for research and monitoring purposes. They helped build trust among participants and establish common understanding, which made the development of the SRIA easier.

The inclusion in the JPIs in the management committees and boards of both representatives from various Ministries and Funding Councils is establishing a **well-connected network of influential actors** from Member States, who can continue to shape and influence the programmes of research in the areas of societal challenge. The cooperation that is triggered in the JPIs between basic and applied research agencies is also an interesting and unexpected impact for some JPI members. For instance the Netherlands Organisation for Scientific Research (NWO) has always participated in several international networks but due to the JPI experience they are now working with a larger variety of research agencies allowing support to different types of activity. Similar impacts in connecting different funding agencies to allow support of broader projects integrating various types of research were also mentioned in the case of the UK. The JPI programmes are still in their earliest days and the **potential for enduring connectivity** is an indicator that can be monitored and considered as the initiatives progress and beyond.

There are also identified examples where connectivity can be improved. For instance in sectors, such as marine, there are established transnational research infrastructures and science policy interface organisations with which the respective JPI needs to strengthen linkages. This is also relevant for JPIs and other public-to-public networks (Article 185s, other JPIs) that address complementary research areas. This in turn will enhance the potential for enduring connectivity. The JPI initiative has the potential to ensure a significant, long-standing and on-going engagement amongst international policy makers, scientists, industrialists and NGOs.

### 3.2.2 New capacity-building

Capacity building refers to the development of capabilities and skills. There is already 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. For example, prior to the establishment of JPI Cultural Heritage the only initiative in which Ministries of Culture had previously worked together is 'digital libraries'. This is not the case for all JPIs, some of which are supported by decades of ministerial collaborations on topics, such as food regulation for example.

Due to learning and information exchange that takes place within JPIs, the **knowledge of funding agencies** in some countries is enhanced in relation to project/programme management, evaluation and monitoring along with the **project experience of researchers**. From participating in nationally-funded projects that may be relatively small in scale and budget, researchers now participate in larger scale, international projects. This enhances their overall project experience.

This capacity building is not only focused upon the networking aspect of the JPI work but also on the research initiatives being conducted and launched by the JPIs. For JPI Cultural Heritage there was no previous cooperation on this size in terms of countries or public organisations involving this wide area of researchers, stakeholders and NGOs on research programming. Equally JPND reports strong and effective **international collaborations** have been established.

A further element of capacity building where the JPI initiative can potentially create significant impact is in terms of **multidisciplinary**.<sup>11</sup> For instance JPI Climate is seeing the integration of climate change issues in many other areas, while it contributes to a move to research being driven by the users of the information as well as being science informed. AMR research now is being done in a much more multidisciplinary mode than before considering several other aspects (environmental and social) apart from the health side of it. JPI Urban Europe, FACCE-JPI and JPI Cultural Heritage also apply a multidisciplinary approach as does demographic research being undertaken by JPI MYBL.

Impact on capacity is importantly being directly affected within the Member States in **reduced national duplication**, for example through the use of the FACCE-JPI MACSUR initiative. MACSUR is a knowledge hub that is working to develop a pan-European capability in the development, use and interpretation of models to perform risk assessments of the impacts of climate change on European agriculture. MACSUR co-operates closely with other international research networks including AgMIP, interacts with political stakeholders and organises workshops and conferences for knowledge exchange among experts. MACSUR is considered beneficial for building capacity in less-research intensive countries. At the same time, the key benefit is the awareness raised amongst scientists, policy makers and funding council staff of existing research in other Member States, which can lead to reduction of duplication.

Further, the establishment of units at national level for the coordinator of participation in JPI network structures and events helps Member States **to identify the appropriate level to address priorities** and to decide if they should be national or international. Those considered more appropriate to be dealt with at international level are put forward in the JPI context.

### 3.2.3 Attitude / Cultural impacts

Attitudinal/cultural change relates to knowledge exchange and includes elements such as improved reciprocal understanding and willingness to work together. This is relevant for JPIs both at the level of ministries and agencies as well as the research and business communities and society.

There is some evidence that Attitude/Cultural change can be brought about through JPI activities. Within Member States there are clearly impacts in attitudes manifesting in **multidisciplinary and interdisciplinary approaches** being adopted. As mentioned above several JPIs (Climate, AMR, Urban Europe, Cultural Heritage, More Years Better Lives) have managed to apply a multi-disciplinary approach in their respective research areas, thus causing a change in the mind-sets of the research communities involved as well as of

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<sup>11</sup> Impact related to multi-disciplinarity are also discussed in the sub-section about Attitude / Cultural impacts.



the various associated ministries. Yet, it has not been easy though to integrate all the different disciplines into the JPis' strategic research agendas and make people sitting in the various JPI boards to collaborate with each other as they are still blocked in scientific silos.

JPI engagement has also promoted **greater investments in specific topics** in the JPI transnational arena. For instance, in France, the National Funding Agency, ANR decided to orientate a substantial part of the funds of its environment program to multilateral international calls related for instance to FACCE, Climate, Oceans and Water JPis as well as other programs like ERANETs Biodiversa (I-II-III) and Belmont Forum calls. Another illustration related to the MACSUR Knowledge Hub. Based on the UK experience MACSUR is a big flagship alignment activity in modelling research all around Europe. While the UK devoted only 'glue' money, this activity highlighted millions in investment in modelling research from UK RCs and the Scottish National Government. There was a strong recognition amongst the interviewees that JPI supported research is generally seen as complementary to nationally funded research in the same area.

### 3.2.4 Conceptual impacts

Conceptual impact refers to the impact on the knowledge, understanding and attitudes of policy-makers. In this category of impact we identify examples of changed thinking amongst policy makers, influences on policy issues and increased awareness in the policy world.

There is some evidence of conceptual impact through participation in the JPis and a resultant **increased awareness amongst national governments** to specific issues and topics. JPI participation is an argument to draw the attention of the national government to the relevant subject and there is some early indication that participation in a JPI by a Member State increases the visibility and draws more attention to that subject. This has certainly been true in Italy on the topic of cultural heritage. Cultural heritage is now part of the Italian national dialogue to a greater degree than at the outset of the JPI process.

JPI Climate has contributed significantly in terms of conceptual impact to the recognition and integration of climate change research in a number of different societal challenges. JPI Climate has also had an impact in **shaping H2020 investment** through leadership of a DG R&I working group to develop the roadmap to inform H2020 investment in this area. The impact here is quite significant as that roadmap has been employed to develop the calls issued in October 2015 and is being used for the future calls for H2020.

JPI Urban Europe also reports influencing the H2020 framework programme content in the fields of urban issues and sustainable development. JPI Oceans managed to raise marine research as a strategic area at the European level with a new, special unit of DG Research and Innovation being dedicated to it. JPI Water has contributed to developing water strategy in Cyprus (JPI Water) while JPI AMR brought up the importance of research in relation to anti-microbial resistance in Norway in a way that led the Research Council Norway (RCN) to reorganise the way they work on this topic and there is now a person responsible for AMR in the RCN.

The invitations to consultation to certain policy areas in the EC have been a positive externality. While the JPis, as formal structures, allow greater influence on lobbying in the EC, their input also seems to be appreciated by EC officials. Adding to this, visibility of certain JPis beyond the EU is increasing. For instance JPND attracted attention from the US; JPI AMR enjoys increased networking with the EU Trans-Atlantic network on AMR with USA and Canada. JPis report **influencing international agendas** in relevant research areas. JPND for example, helped realise the ambition of G7 in dementia research by highlighting certain

activities in this area. Due to the activities being undertaken by JPI Oceans the oceans issue has attracted attention at the G7 and Heads of State level.

Another type of conceptual impact comes from the knowledge creation and diffusion within JPIs. The idea of a Knowledge Hub developed within FACCE-JPI and replicated in other JPIs was mentioned in this regard with some countries thinking about implementing this idea at the national level. Mobility schemes also attracted attention and contributed to the development of mobility culture in certain countries that did not exist before. The discussion on living labs under the frame of JPI Urban Europe inspired an internal dialogue at the national level which may lead to designing a new instrument in Austria.

### 3.2.5 Structural impacts

Structural impacts may relate to changes in institutions and structures in national or European research landscape due to changed thinking amongst policy makers and influences on policy issues stemming from the acquired knowledge.<sup>12</sup>

Structural impact in the form of **changes to government organisation** is realised broadly across the Member States. In some instances new forms or structures have been created responding to the need to coordinate national participation in P2Ps. JPI members mentioned that increased **national coordination** was an impact they anticipated and cited numerous examples from their knowledge of the participating Member States. For instance, in France an intra-ministerial group, that is a mirror group under the leadership of the Ministry of Research, was created to coordinate all the French representatives in the JPIs in the Environment – Agriculture areas to work together with all the ministries involved. This group brings together all key actors interested in JPIs facilitating the decision-making process and also coordinates with the research community through associations like the French Alliance for Environment (ALLENVI). In Germany, similarly to France, a mirror group was created that organises inter-ministerial meetings prior to the meetings of the JPI Oceans Management Board to define and guide discussion issues. In Estonia informal meetings are organised twice a year with all JPI members involving all relevant Ministries – Agriculture, Science and Environment to coordinate national participation.

These initiatives are expected to lead to a **less fragmented national research system**. Austria organises 'networking platforms' that mirror the subject areas of the JPIs in order to map the interests of the national research community, to connect research organisations from different fields and to stimulate industry engagement. In the case of JPI Water for instance 'platforms' were organised by the Ministry of Agriculture together with the Ministry of Research to identify areas of national interest to bring forward to the JPI level. This also helped coordination and collaboration across the two ministries, which is vital particularly as the Ministry of Environment has no budget for water related research. These platforms also help to improve networking within the water community and this should assist the process of strategy development within Austria.

The development of the SRIA and the associated process has already had some impact on the national strategies of the Member States. This impact can be of two main types, firstly, the **development of a national strategy in the specific area** that did not exist before as in the case of Cyprus and JPI Water or Norway and JPI Healthy Diet and secondly the **consideration of the SRIA in the national strategies** in the respective areas or research. In the countries where the national strategies and consequently the resulting

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<sup>12</sup> This category has been added to the Meagher (2013) typology of impacts as the specific framework fails to capture such impacts on institutions and structures of research and innovation systems.

programmes have already been structured along the lines of societal challenges in a similar way as defined in the H2020, alignment of national with JPI priorities is easier than in other cases. Nonetheless, most JPI members interviewed stated there is adequate level of alignment between national programmes and the JPI priorities so that the implementation of the agreed activities has started.

### **3.2.6 Instrumental impacts**

Instrumental impact refers to the direct impact on policy and practice decisions in areas environmental improvement, risk mitigation, service improvement, societal benefits and productivity improvements. In the case of the JPIs this type of impacts relates to the actual solutions that are sought to deal with the societal challenges addressed by the JPIs. As noted by the interviewees, these impacts would be the ultimate success of the JPIs in fulfilling the role they were created for. However, it is too early to seek such types of impacts.

## **3.3 Good practices**

### **3.3.1 Coordination at national level to facilitate alignment at international level**

JPIs aim to coordinate policies at the international level by pursuing jointly agreed objectives. This can be facilitated by effective coordination in the research area at the national level. The existence of a national programme that is relevant to the JPI area is helpful although this is not always the case in each of the Member States participating in the JPI. Within a country there may be a variety of ministries that have to be addressed within a given area and there may not be a specific national programme addressing the exact area of research. This makes coordination at the national level as difficult as it is desirable. In this regard initiatives, such as the mirror groups, or reference groups, or the networking platforms mentioned above, may prove effective in enhancing coordination of the various ministries and agencies at the national level.

### **3.3.2 Development of the Strategic Research and Innovation Agendas (SRIAs)**

JPI members stated that the development of the SRIAs should be characterised by inclusiveness, taking account of wide range of inputs. A series of 'pilot actions' was also suggested as test-beds for JPI-type collaborations, while or even before the full strategic SRIA is being developed. This is the case for example with JPI Oceans that launched two pilot actions that enable shared use of marine infrastructure for research and monitoring purposes.

### **3.3.3 Financial sustainability**

Financial sustainability is a key challenge for all JPIs. While the ability to ensure financial support through various FP or H2020 instruments like CSAs or ERA-NET projects has been appreciated, the delays that may exist between one funding cycle and another as well as the administrative burden are still a problem. Certain JPIs have found ways to overcome this by applying 'transition fees' to support JPIs secretariat between funding periods. However, effectiveness of such measures is always dependent on the availability of funds at the national level, and this is not straightforward for several countries especially in the era of financial crisis.

### **3.3.4 The role of the Secretariat and the Governing Boards**

The crucial role of the secretariat was highlighted by all the interviewees. The JPI secretariat can ensure the constructive and fruitful cooperation of the JPI members in the organisation of the joint calls and activities and can help foster effective coordination throughout the JPI life. It can also foster trust building through transparency of processes, effective communication and consensus building among the participating countries paying particular attention to communication and outreach. The secretariat can also play a role in activating all members of the management boards/committees by organising them in smaller working groups

and supporting their work. A shared secretariat among the JPI partners was considered good practice by some JPI members supported by well-developed IT tools. The rest of the governing bodies need to be small rather than large to allow for smooth operation, and rapid decision-making.

### **3.3.5 Monitoring and evaluation**

Peer review processes and two-stage evaluation of proposals are considered good practice as well as using an international panel for evaluation of proposals. For certain JPIs as those related to health issues the engagement of the public, charity sector and patient associations is appreciated. Open science agendas and requirements are considered by some to be important. Attention to the evaluation of activities should be taken into account from the start of the process. A well thought through monitoring and evaluation framework is particularly relevant in this regard. The example of JPND and FACCE-JPI were quoted in this regard.

### **3.3.6 Joint activities other than joint calls**

The implementation of additional joint activities such as knowledge hubs, competence centres, etc. would further strengthen the alignment potential. Shared use of infrastructure also proved to be a beneficial experience for the participating countries in JPI Oceans. The fast track projects in JPI MYBL were also highly appreciated. Fast Track projects can be thematic working group or workshops to prepare the themes of joint actions (e.g. calls). Using foresight to develop the strategic research agendas was also considered a good approach to follow in developing strategic research agendas.

### **3.3.7 Communication and synergies**

Several JPI members noted that communication to the research community of the existence, scope and opportunities offered by the JPIs needs to be strengthened. Linking up with other scientific networks and other JPIs is also significant. The experience of FACCE-JPI on organisation of joint calls together with other P2P initiatives has proved positive in this regard. Considering the global dimension is also essential with some JPIs enjoying collaboration with a number of non-EU countries (JPND, JPI AMR, etc.)

## **3.4 Obstacles**

### **3.4.1 Commitment and financial sustainability**

Long-term commitment is a basic pre-requisite to ensure financial viability. Although there are variations in the commitment shown by different countries, overall the level envisaged to ensure sustainability without the support of the EC has not been achieved yet. The financial situation in the participating countries is another obstacle especially in those countries still in economic recession as well as overall, given that research budgets have been decreasing in several European countries.

Low levels of human resources in research are another bottleneck. For some countries with small research communities absorption of the national contribution may be difficult. In this regard the reference groups, carried out for example in Sweden, to inform potential beneficiaries and increase interest are important. It is also encouraging that specific sub-groups that work occasionally on such issues and challenges and try to find solutions are established within some JPIs.

### **3.4.2 Programme interoperability (or operational alignment)**

The differences and incompatibilities in the rules and procedures that exist in the various Member States concerning timing, funding and participation in research activities is another major obstacle. In the opinion of some JPI members, establishing rules similar to FP or now H2020 would avoid major confusion for researchers and would allow a large degree of alignment at the operational level, although this may not be

shared among all JPI members. Joint monitoring of projects also presents challenges given the multi-source funding as overall responsibility of monitoring the project is not easy to assign across the several different national officials funding the specific project.

### **3.4.3 Lack of coordination at national level and across P2Ps**

The lack of coordination between organisations and agencies at the national level is a significant obstacle to the smooth operation of the JPI. Related to this are also obstacles due to internal rules of funding agencies. Some for instance are not allowed to fund other activities (related e.g. to networking) than those relate to research projects, while some others may not be entitled to fund private sector entities.

Another element related to governance refers to the external environment of the JPI and its relations to other relevant P2P initiatives (like ERA-NETs or Art 185s). Some JPIs enjoy good links to other initiatives. In some others however the links with established science policy interface organisations is at the moment relatively weak. This entails the risk that separate research agendas may be developed in similar areas by different and not well connected initiatives.

As noted by an interviewee people need to be willing to be coordinated and collaborate with each other. A mentality of collaboration may be lacking within and across the national and transnational levels. New thinking about strategic coordination is also needed. This needs to be solution-oriented whereas most of today's institutions are fragmented in scientific or policy silos.

### **3.4.4 Multidisciplinarity**

Applying a multidisciplinary approach in research is an on-going challenge for several JPIs. One obstacle is developing a common language. People are from different backgrounds, applied, basic research, social science, technology etc. all bring different perspectives to the JPI. Bringing all these people to work together is a challenge on its own. In addition, multidisciplinarity is not reflected in the mandates and foci of the funding agencies or research institutions. The focus of calls needs to be broad enough. While this enables coverage of a broad spectrum of research topics and thus research communities, lack of clarity may prove problematic.

Overall, the barriers for future implementation of the JPIs can be grouped in relation to a) the process of alignment of national programmes (mainly at the operational level), b) lack of political support and long-term commitment, c) low visibility of JPIs and their outcomes at national level, and d) low levels of available resources (human and financial).

## 4. Conclusions

The first strand of analysis based on existing information and data on FP7 ERA-NETs provided useful insights about the key factors affecting achievement of impacts in the ERA-NET community. The key factors reported across the majority of impact areas included 'programme interoperability' or 'operational alignment' as well as 'alignment' at programme level. The examination of the ERA-NET data also revealed the importance of organising joint calls as well as joint activities that relate to knowledge access and sharing like joint training activities and personnel exchange schemes.

The JPI interviews confirmed some of these results although they targeted a different cohort (JPIs instead of FP7 ERA-NETs) and reflected experience along different time-scales. 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, there are certain initiatives identified as good practice that might help overcome these obstacles.

Apart from key obstacles and good practices, the second strand of research revealed emerging impacts in the JPI community. These impacts can be grouped under six categories; Capacity-building, Enduring Connectivity, Attitude/Cultural Change, Conceptual, Structural and Instrumental impacts. Despite the different 'ages' of the JPIs, there is already some evidence emerging in the first five of the six categories, while there is also evidence of potential impacts that can be further monitored.

Enduring connectivity relates to the on-going communication between the relevant actors and to the follow on collaborations that continue after the initial activity has been completed. This is connectivity that lasts beyond the first funded relationship. In the case of JPIs connectivity relates to both the JPI partners, i.e. Ministries, funding agencies, programme managers as well as the beneficiaries of JPI activities, i.e. the research community, business and society. There was consensus among the interviewees that the networking and collaboration opportunities offered by the JPIs were highly appreciated both by the research community as well as public officials. The JPI programmes are still in their earliest days and the potential for enduring connectivity is an indicator that can be monitored and considered as the initiatives progress and beyond.

There is already 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, for example in neuro-degenerative research, cultural heritage, anti-microbial resistance or water research. 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. This is relevant for JPIs both at the level of Ministries and agencies as well as the project beneficiaries. Within Member States there are clearly impacts in attitudes manifested in multidisciplinary and interdisciplinary approaches being adopted in the research areas addressed by JPIs. JPI engagement has also promoted greater investments in specific topics in the JPI transnational arena.

Conceptual impact refers to the impact on the knowledge, understanding and attitudes of policy-makers. In this category of impact we identify examples of changed thinking amongst policy makers, influences on policy issues and increased awareness in the policy world. There is existing evidence of conceptual impact

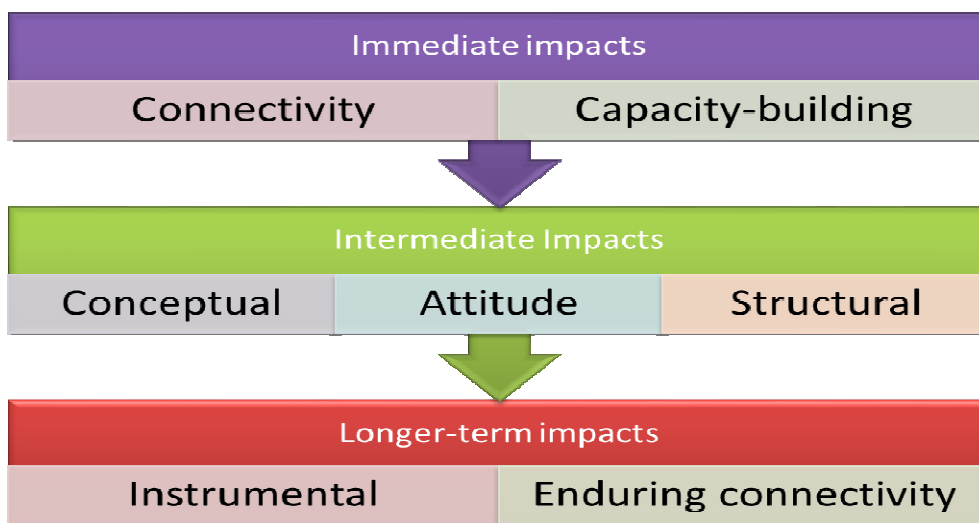
as JPI participation increases the visibility and draws more attention to the subject addressed influencing both national and international agendas.

Structural impact in the form of changes to government organisation is realised broadly across the Member States. In some instances new forms or structures have been created responding to the need to coordinate national participation in P2Ps. JPI members mentioned that increased national coordination was an impact they anticipated and cited numerous examples from their knowledge of the participating Member States. These initiatives are expected to lead to a less fragmented national research system, which in turn will yield instrumental impacts such as improvements in the environment and societal benefits for the Member States.

Last but not least, instrumental impact refers to the direct impact on policy and practice decisions in areas environmental improvement, risk mitigation, service improvement, societal benefits and productivity improvements. In the case of the JPIs this type of impacts 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.

The interviewees' comments gave the impression that certain types of impacts have been achieved more than others. Whereas certain impacts need more time to occur they also need other types of impacts to have matured first. Thus, connectivity and capacity-building needs to take place and mature (based on pre-existing and on-going trust building) before attitudes are changed and bring conceptual and structural impacts. The synergies among all these types of impact are expected to lead to enduring connectivity in all its various different forms, while in parallel instrumental impacts can be anticipated through intense transnational collaboration. This is illustrated in the following impact framework. It should be borne in mind that this early assumption is based solely on this first impact assessment exercise and does need to be supported by further evidence and analysis that may be enabled in the second exercise to be conducted next year as a part of the ERA-LEARN 2020 project activity.

**Figure 4: Perceived framework of reported JPI impacts**



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## Abbreviations

JPIs	Joint Programming Initiatives
FACCE-JPI	JPI Agriculture, Food Security and Climate Change
JPI AMR	JPI Antimicrobial Resistance- The Microbial Challenge - An Emerging Threat to Human Health
JPI Climate	JPI Connecting Climate Knowledge for Europe
JPI Cultural Heritage	JPI Cultural Heritage and Global Change: A New Challenge for Europe
JPI Healthy Diet	A Healthy Diet for a Healthy Life
JPI MYBL	JPI More Years, Better Lives - The Potential and Challenges of Demographic Change
JPI OCEANS	JPI Healthy and Productive Seas and Oceans
JPI URBAN EUROPE	JPI Urban Europe - Global Urban Challenges, Joint European Solutions
JPI WATER	JPI Water Challenges for a Changing World
JPND	JPI Alzheimer and other Neurodegenerative Diseases
P2P	Public to Public
SRIA	Strategic Research and Innovation Agenda



## Annex I: Number of interviews per JPI

	No. of interviewees	Countries of interviewees' affiliation
JPI AMR	2	Sweden, Norway
JPI Climate	2	Netherlands, United Kingdom
JPI Cultural Heritage	1	Italy
FACCE-JPI	4	Estonia, France, Poland, United Kingdom
JPI Healthy Diet	4	Cyprus, Spain, Norway, Ireland
JPI MYBL	2	Austria, Netherlands
JPI OCEANS	2	Belgium, Germany
JPI URBAN EUROPE	2	Austria, Sweden
JPI WATER	2	France, Austria
JPND	3	Denmark, Germany, United Kingdom
Overall view on JPIs	2	Norway, Malta
<b>Total</b>	<b>26</b>	

## Annex II: JPI Interview template

### *Discussion theme 1: Rationales, extent and focus of participation*

1. Are there any overall national strategies for your participation in transnational activities, either at a general level or with regard to specific research/science/innovation areas?
2. What are your rationales for participating in JPIs at the more general, national level?
3. Are there significant areas of research competence where you would like to take part as a country but do not?
4. With regard to your country, to what extent does Joint Programming address the innovation dimension and involve industry and end users?
5. Are there any general organisational strategies for your participation in transnational activities?
6. What are your rationales for participating in JPIs at organisational level?
7. Are there significant areas of research competence where you would like to take part as an organisation but do not?

### *Discussion theme 2: Expectations, and impacts*

8. What were your expectations from your participation in the JPI(s)?
9. To what degree have those been realised?
10. What impact has Joint Programming on the way research is organised and conducted in the selected societal challenges in question?
11. What impact has Joint Programming had on the national research system?
12. To what extent have national research and innovation programmes been aligned to the JPI priorities?
13. Have any unforeseen impacts been realised?
14. How would you define success in the JP process overall?
15. How would you define success in the specific JPI?
16. With which criteria would you try to measure success in the JP process and individual JPIs?
17. Has the JPI implemented a monitoring and evaluation plan? How far is this plan?
18. Who/Which organisation is in charge of implementing this plan?

### *Discussion theme 3: Obstacles and good practice elements*

19. What have been the good practice elements in the JP process?
20. What obstacles have occurred so far in the JP process? Have they been tackled and how?
21. What have been the good practice elements in the design, operation and management of the specific JPI?
22. What obstacles have occurred in the design, operation and management of the specific JPI? Have they been tackled and how?
23. Which are the main barriers for the JPIs' future implementation and for achieving their objectives?
24. In what way could there be improvements in the current role of the European Commission and how is the support that was provided via FP7 and is now provided by Horizon 2020 adequate?
25. Has the JPI implemented a stakeholder involvement plan/concept? How far is this plan?
26. Who/Which organisation is in charge of implementing this plan/concept? (main point of contact)?

## Annex III: Methodology of statistical elaboration of FP7 ERA-NET data

### Statistical analysis of impact perceived by organisations participating in ERANET under the 7<sup>th</sup> Framework Programme from the NETWATCH Survey results

#### Data sources and dataset:

IPTS NETWATCH dataset integrated with information from the EC Comm\_Raw data for Uniman

#### Methodology and Steps followed in Data Matching

In order to match the data, we first analysed the single sources of information available (the five separate datasets) in order to find a unique identifier, i.e.: a variable which would allow to identify unique observations across the datasets and link them avoiding overlapping of different observations.

The five available databases considered are:

1. **Networks:** this database contains information on mostly on research targets at the network level such as: thematic priorities; collaborations; research fields of the network; type of research carried out.
2. **Calls:** this database has information on calls the network has participated to such as: number of funded proposals; fund initially reserved for the call; funding mode.
3. **Organisations:** the database collects information on the organisations participating to networks, such as: country; acronym and original name.
4. **NETWATCH survey content cleaned:** impact evaluation of the ERA-NET network, with information on: joint activities; impacts; broad policy objectives; coordination mechanism.
5. **Comm-Raw-data for UNIMAN:** this database contains information at the organisation level but grouped by network on: start/end date; project duration; country; framework; and requested budget at the organisation level

The datasets present both unique and overlapping information and do not employ the same unit of analysis as summarised in the table below:

Database	Unit of analysis	Number of observations	Number of unique observations	Organisation name	Network acronym	Unique identifier
<b>Networks</b>	Network	216	216	NO	YES	NO But Network acronym available
<b>Calls</b>	Number of calls by Network	235	112	NO	YES	NO But Network acronym available
<b>Organisations</b>	Organisations parts of a Network	1024	1024	YES	NO	NO
<b>NETWATCH survey</b>	Projects by Network	265	63	YES (Full name)	YES	NO But Network acronym available
<b>Commission Raw Data for UNIMAN</b>	Number of organisations by Network	3053	174	YES (organisation original legal name)	YES	NO But Network acronym available

Data across the available databases present a nested structure where calls, organisations and networks are taken as unit of analysis. In this respect two main issues arise linked to the absence of a unique identifier; and the degree of completeness of the available information.

Specifically, although data show a degree of complementarity such complementarity cannot be exploited due to the impossibility (from available data) to evaluate the bias arising from missing information. This issue can only partially be overcome because of the lack of a unique identifier (PIC number) which connects networks to organisation to calls.

In order to perform the analysis, we adopted the Network acronym as first level unique ID in order to match NETWATCH Survey with Commission raw data with Calls. However, a second level identifier was necessary in order to verify the identity of respondents – as NETWATCH survey contains a sub-sample of organisations belonging to networks; Commission raw data contains information on all the organisation belonging to a Network; Calls contains information at the Network level alone.

The second unique identifier chosen for this purpose was Organisation legal name which is present in the two surveys having organisations as unit of analysis. The process followed was then:

- Matching of Networks with Calls: first match between Commission raw data and Calls
- Matching between the above and NETWATCH survey

The second stage was manually performed as in one survey Organisation legal names (second level unique identifier) are reported in English (NETWATCH) whilst in the other they are reported in the original language. The procedure for this task was then to look each single organisation by country and manually validate by collecting information on available website whether or not the organisation was a match.

Once those steps were completed, the three database were finally matched in a unique one with NETWATCH as the recipient survey, i.e.: the survey to which the other available information were adapted for the match.

This process generated 171 matches and the additional information retrieved was added to the NETWATCH survey dataset. Given the high and not consistent spread of missing items in the NETWATCH survey dataset (some 30% of the questions of the survey were unanswered) this generated a poor N counts in the overall descriptive statistics.

In order to remedy to this shortcoming, we trawled through each respondent of the NETWATCH survey and identified manually the PIC of each organisation and the ERA-NET for which they were responding. With this strategy we managed to map further 85 data strings across the datasets of interest. This brought the count of matched observations to 256. Descriptive statistics confirmed, that, notwithstanding the high proportion of missing data we could proceed with our exercise with a satisfactory number of observations covering a large proportion of the respondents and ERANETS (detailed N are provided below).

The variables of interests relate to the benefits realised by the organisations by participating to the ERA-NET. Therefore the impact perceived (i.e. benefits accrued by participating to the ERA-NET in the 7<sup>th</sup> Framework Programme) refers to the organisations.

### **Key variables and descriptive statistics**

The key variables relate to the benefits expected and realised by the organisations with regard to their participation to the ERA-NET in the 7<sup>th</sup> Framework Programme (excluding the top-up initiative ERA-Net +).

### **Variables descriptives**

#### **Variables of interest (dependent variables)**

Q. What were/are the benefits realised with regard to participation in the ERA-NET?

- 1. Support transnational projects in an area requiring transnational cooperation**
- 2. Opening up to transnational cooperation national programmes in existing or new research areas**

3. *Higher quality projects funded at national level (through joint calls / programmes)*
4. *New types of research projects funded (through joint calls/programmes)*
5. *New researchers (with no prior international or European experience) benefiting from joint activities*

The perceived impact is measured on a 4 points Likert scale where 1=no benefit and 4=high benefit (1= no benefit; 2=little benefit; 3= some benefit; 4=high benefit).

	N	Min	Max	Mean	Std. Deviation
1... Support Transnational Projects	247	1	3	2.33	.711
2... Open to Transnational Coop	243	1	3	1.96	.789
3... Higher Quality Projects Funded	239	1	3	1.83	.743
4... New types of Research Funded	237	1	3	1.84	.788
5... New Researchers	225	1	3	1.77	.713

Q. What were/are the expected benefits with regard to participation in the ERA-NET?

	N	Min	Max	Mean	Std. Deviation
Support transnational projects... Expect	256	1	3	2.57	.640
Open to transnational coop... Expect	254	1	3	2.22	.794
Higher quality projects funded ... Expect	251	1	3	2.02	.774
New types of research funded ... Expect	246	1	3	1.98	.785
New researchers ... Expect	239	1	3	1.96	.760

**Independent Variables: factors referring to the activities undertaken by the organisations (ORGS Variables)**

The idea is to evaluate the impact on these aspects of ERA-Nets in FP7 (ONLY) in areas such as for activities undertaken by the organisation surveyed:

**Other experience in ERA-NET (i.e. in 6th Framework Programme or EERA-NET+)**

Openness of the Funding Programme to private sector organisations and SMEs

The main group of variables upon which evaluate the organisation's benefit in participating in ERA-NET are obtained from the following question:

**-Did your organisation participate in the activities undertaken by the FP7 ERA-NET?**

- A. *Coordination/clustering of ongoing nationally funded research projects*
- B. *Benchmarking and methodologies, monitoring and evaluation of national projects*
- C. *The establishment of common, multinational proposal evaluation procedures (common evaluation criteria and methods of implementation)*
- D. *Action plan taking up common strategic issues and preparing for joint activities*
- E. *Develop a strategic research agenda*
- F. *Schemes for joint training activities (supervised theses or common PhD schemes)*
- G. *Schemes for personnel exchange*

- H. Schemes for mutual opening of facilities or laboratories**  
**I. Specific cooperation agreements or arrangements between participating programmes**  
**J. Design proposals for future research programme collaboration when ERA-NET ended.**  
**K. Produce action plans for a future sustainable funding framework for programme cooperation.**  
**L. Development of common funding rules for transnational projects**  
**M. Joint monitoring of transnational projects**

Moreover, two other variables have been extracted from the survey that may contribute to evaluate the impact on the organisations in participating to the ERA-NET:

**N. The national Programme is complemented by the ERA-NET**

*The level of integration/complementarity (synergy) between national programmes and the research fields covered by the ERANET*

Descriptive Statistics:

	N		Std. Dev	Range	Min	Max	Percentiles		
	Valid	Missing					25	50	75
OTHER_EXP_ERANet	264	1	.497	1	0	1	0.00	0.00	1.00
Funding programme open to private sector	249	16	.460	1	0	1	0.00	1.00	1.00
A - Coordination/clustering of ongoing nationally funded research projects...	235	30	.483	1	0	1	0.00	1.00	1.00
B - Benchmarking and/or methodologies for monitoring and evaluation of national projects...	223	42	.493	1	0	1	0.00	1.00	1.00
C - The establishment of common, multinational proposal evaluation procedures (common evaluation criteria and methods of implementation)...	249	16	.392	1	0	1	1.00	1.00	1.00
D - Action plan taking up common strategic issues and preparing for joint activities...	250	15	.326	1	0	1	1.00	1.00	1.00
E - Develop a strategic research agenda...	241	24	.440	1	0	1	0.00	1.00	1.00
F - Schemes for joint training activities (supervised theses or common PhD schemes)...	219	46	.395	1	0	1	0.00	0.00	0.00
G - Schemes for personnel exchange...	222	43	.396	1	0	1	0.00	0.00	0.00
H - Schemes for mutual opening of facilities or laboratories...	213	52	.380	1	0	1	0.00	0.00	0.00

<b>I - Specific cooperation agreements or arrangements between participating programmes...</b>	219	46	.477	1	0	1	0.00	0.00	1.00
<b>J - Design proposals for future research programme collaboration when ERA-NET ended...</b>	239	26	.467	1	0	1	0.00	1.00	1.00
<b>K - Produce action plans for a future sustainable funding framework for programme cooperation...</b>	234	31	.475	1	0	1	0.00	1.00	1.00
<b>L - Development of common funding rules for transnational projects...</b>	229	36	.495	1	0	1	0.00	1.00	1.00
<b>M - Joint monitoring of transnational projects...</b>	240	25	.457	1	0	1	0.00	1.00	1.00
<b>National programme complemented by ERA-NET</b>	257	8	.363	1	0	1	1.00	1.00	1.00
<b>Rate synergy between research domain covered by the ERA-NET and by national programme(s)</b>	251	14	.804	3	0	3	2.00	2.00	3.00

**Independent Variables: factors referring to the activities undertaken by the ERA-NET (NETW variables)**

A further set of complementary variable are also taken into consideration: **Which of the following joint activities did your FP7 ERA-NET undertake?**

- A. Coordination/clustering of ongoing nationally funded research projects
- B. Benchmarking and methodologies, monitoring and evaluation of national projects
- C. The establishment of common, multinational proposal evaluation procedures (common evaluation criteria and methods of implementation)
- D. Action plan taking up common strategic issues and preparing for joint activities
- E. Develop a strategic research agenda
- F. Schemes for joint training activities (supervised theses or common PhD schemes)
- G. Schemes for personnel exchange
- H. Schemes for mutual opening of facilities or laboratories
- I. Specific cooperation agreements or arrangements between participating programmes
- J. Design proposals for future research programme collaboration when ERA-NET ended.
- K. Produce action plans for a future sustainable funding framework for programme cooperation.
- L. Development of common funding rules for transnational projects
- M. Joint monitoring of transnational projects

## Descriptive Statistics

	N		Std. Dev	Range	Min	Max	Percentiles		
	Valid	Missing <sup>g</sup>					25	50	75
<b>A - Coordination/clustering of ongoing nationally funded research projects...</b>	258	7	.491	1	0	1	0.00	1.00	1.00
<b>B - Benchmarking and/or methodologies for monitoring and evaluation of national projects...</b>	252	13	.497	1	0	1	0.00	1.00	1.00
<b>C - The establishment of common, multinational proposal evaluation procedures (common evaluation criteria and methods of implementation)...</b>	253	12	.342	1	0	1	1.00	1.00	1.00
<b>D - Action plan taking up common strategic issues and preparing for joint activities...</b>	256	9	.287	1	0	1	1.00	1.00	1.00
<b>E - Develop a strategic research agenda...</b>	253	12	.444	1	0	1	0.00	1.00	1.00
<b>F - Schemes for joint training activities (supervised theses or common PhD schemes)...</b>	248	17	.422	1	0	1	0.00	0.00	0.00
<b>G - Schemes for personnel exchange...</b>	248	17	.424	1	0	1	0.00	0.00	0.00
<b>H - Schemes for mutual opening of facilities or laboratories...</b>	246	19	.394	1	0	1	0.00	0.00	0.00
<b>I - Specific cooperation agreements or arrangements between participating programmes...</b>	249	16	.492	1	0	1	0.00	0.00	1.00
<b>J - Design proposals for future research programme collaboration when ERA-NET ended...</b>	255	10	.447	1	0	1	0.00	1.00	1.00
<b>K - Produce action plans for a future sustainable funding framework for programme cooperation...</b>	249	16	.465	1	0	1	0.00	1.00	1.00
<b>L - Development of common funding rules</b>	248	17	.492	1	0	1	0.00	1.00	1.00



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<b>for transnational projects...</b>									
<b>M - Joint monitoring of transnational projects...</b>	250	15	.375	1	0	1	1.00	1.00	1.00

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**Independent Variables (Covariates referring to characteristics of the ERA-NET):**

Variables indicating size and operations of the network and of the organisations participating are also taken into consideration:

Size of the Network:

Budget (various indicators)

Number of organisations/countries participating

Activities of the Network:

Duration of the ERA-NET

Calls Issued

Proposals received

Proposals Selected

Descriptive Statistics

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	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Std. Deviation</b>
<b>TOTAL_COST</b>	265	.00	3638673. 41	2040248.89 1	762169.195
<b>EC_CONTR</b>	265	.00	3166533. 00	1722256	668049.233
<b>Number of Organisations per Network</b>	252	8.00	38.00	21.456	6.311
<b>N_COUNTRIES</b>	230	2.00	151.00	39.643	35.565
<b>DURATION_in_MTHs</b>	250	27.00	66.00	45.444	8.474
<b>N_CALLS</b>	232	.00	13.00	3.470	2.315
<b>SUBMITTED PROPOSALS</b>	224	.00	541.00	133.754	149.570
<b>PROPOSALS RETAINED FUNDED</b>	227	.00	122.00	22.432	23.678
<b>Valid N (listwise)</b>	219				

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The idea is to look at those areas where it is expected that ERANET is beneficial. The point of view is that of the organisations participating in ERANET during the 7<sup>th</sup> Framework Programme (2007- 2013). The main data source is the NETWATCH survey undertaken by EC JRC IPTS in 2013, integrated with information obtained from the Commission Services.

The dataset compiled is available as: NETWATCH enhanced Survey Set in .sav (SPSS)

The datasets includes 265 respondent organisations, not all respondents answered to all items of the questionnaire, therefore the number of cases taken into consideration is generally lower (approximately, 30% lower) – N will be noted per each variable/set of variables used.

The 5 variables selected as dependent variables for the regression exercise. The variables are Likert scores on a scale 1 to 4 where 1 indicates no benefit accrued by participating in the ERA-NET and 4 high levels of benefit accrued by participating to the ERA-NET.

The response 'high levels of benefit' realised by participating to ERA-NET has not been selected by the respondents. This raised some concerns regarding the consistency of the data used in this exercise. We checked for consistency by calculating the Cronbach's alpha. Results are as such:

<b>Cronbach's Alpha</b>	<b>Cronbach's Alpha Based on Standardized Items</b>	<b>N of Items</b>
.748	.749	5

We considered the internal consistency of the data sufficient (Nunnally, 1978), and proceeded with the analysis keeping the ordinal variables on a 3 items scale.

#### Comparing expectations with realised benefits

##### Wilcoxon signed Ranks Test

<b>Benefits realised – Benefits expected</b>		<b>N</b>	<b>Mean Rank</b>	<b>Sum of Ranks</b>	<b>Z</b>
<b>1... Support Transnational Projects</b>	Neg. Ranks	64 <sup>a</sup>	37.77	2417.50	-5.695***
	Positive Ranks	11 <sup>b</sup>	39.32	432.50	
	Ties	172 <sup>c</sup>			
	Total	247			
<b>2... Open to Transnational Coop</b>	Neg. Ranks	66 <sup>d</sup>	39.27	2592.00	-5.582***
	Positive Ranks	12 <sup>e</sup>	40.75	489.00	
	Ties	164 <sup>f</sup>			
	Total	242			
<b>3... Higher Quality Projects Funded</b>	Neg. Ranks	52 <sup>g</sup>	32.42	1686.00	-4.679***
	Positive Ranks	12 <sup>h</sup>	32.83	394.00	
	Ties	174 <sup>i</sup>			
	Total	238			
<b>4... New types of Research Funded</b>	Neg. Ranks	46 <sup>j</sup>	33.15	1525.00	-3.191***
	Positive Ranks	19 <sup>k</sup>	32.63	620.00	
	Ties	170 <sup>l</sup>			
	Total	235			
<b>5... New Researchers</b>	Neg. Ranks	58 <sup>m</sup>	42.66	2474.00	-3.928***
	Positive Ranks	24 <sup>n</sup>	38.71	929.00	

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Ranks	
Ties	143 <sup>o</sup>
Total	225

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\*\*\* sig. 1%; \*\* sig. 5%; \* sig 10%

With the proviso that a benefit can be realised without having been expected and an expected benefit may not be realised, it appears evident that the expectations of the organisations participating to the ERA-NET under 7<sup>th</sup> Framework Programme have not been fully met.

In order to qualify this statement we look at the 'origin' of these benefits and the factors that have contributed to achieve them in the opinion and experience of the respondents. To do so, we run 5 ordinal regression models in order to look at which factors (activities carried out by the organisation within the ERA-NET) affect the realised benefits (ORG-ORG models). We then compare the results with the relative ordinal regressions considering the factors that have been undertaken within (or by) the ERA-NET but not necessarily by the organisation (ORG – NETW models).

**Mod 1 -SPSS ver22 – mod Ordinal Regression – Proportional Odd models - link function logit**

Main Effect

**Reference category ALWAYS highest**

Dependent variable: Benefits realised by the organisations in **supporting transnational projects in an area requiring transnational cooperation**

1=No Benefits

2=Little Benefits

3=Some Benefits (Reference variable)

Factors' reference variable is var.=1 or highest score

ORGS - ORGS

Ind. Variables	Estimates (st error)	Wald	Odd Ratio
<b>Factors</b>			
<b>C - Establishment of common multinational proposal evaluation procedures</b>	-0.938** (0.034)	5.334	2.555
<b>L - Development of common funding rules for transnational projects</b>	-0.668** (0.319)	4.378	1.950
<b>M - Joint monitoring of transnational projects</b>	-1.314*** (0.366)	12.861	3.721
<b>Covariates</b>			
<b>Av. N Proposals Funded per Call</b>	0.093*** (0.034)	7.346	1.097
<b>Model Fit</b>	Chi-Square=52.295	Df 4	P value=0.000
<b>Proportional Odds (Parallel Lines) = Yes</b>	Chi-Square=0.170	Pvalue=0.997	
<b>Pseudo R<sup>2</sup> Nagelkerke= 0.284</b>			N 186

\*\*\* sig 1%; \*\* sig. 5%; \* sig 10%

**Covariate:**

Number of average proposals funded per calls in the ERA-NET

Clearly the number of proposals funded per each calls benefits the organisation in terms of supporting transnational projects in research areas requiring international cooperation (p value <0.01). A unit change in the average number of proposals funded in each of the calls launched increases the odds of increasing the benefit score perceived by the respondent by 1.097.

**Factors:**

Controlling for the average number of proposals funded per each call, organisations entertaining activities of **1) establishment of common multinational proposal evaluation procedures; 2) development of common funding rules for transnational projects** and **3) joint monitoring of transnational projects** within the network increases the cumulative odds of scoring higher achieved benefits from participating in the ERA-NET by 2.555, 1.950 and 3.721 respectively.

**ORG-NETW Model**

Controlling for the same covariate, Average number of proposals funded in each call, the benefits perceived by the organisations is sensitive on whether the activities are undertaken by the organisation within the network or by the network itself. In fact **1) establishment of common multinational proposal evaluation procedures; 2) development of common funding rules for transnational projects** are not significant. **Monitoring of transnational projects** is however statistically significant (at the 5% level) and the odd ratio is 2.421.

**Mod 2-SPSS ver22 – mod Ordinal Regression – Proportional Odd models - link function logit**

Main Effect

**Reference category ALWAYS highest**

Dependent variable: **Opening up to transnational cooperation national programmes in existing or new research areas**

1=No Benefits

2=Little Benefits

3=Some Benefits (Reference variable)

Factors' reference variable is var.=1 or highest score

**ORGS - ORGS**

Ind. Variables	Estimates (st error)	Wald	Odd Ratio
<b>Factors</b>			
<b>A – Coordination/clustering of ongoing nationally funded research projects</b>	-0.513 (0.318)	2.600	
<b>F – Schemes for joint training activities, supervised theses or common PhD schemes</b>	-0.967** (0.430)	5.060	2.654
<b>I – Specific cooperation agreements or arrangements between participating programmes</b>	-0.967*** (0.323)	8.983	2.654
<b>N - The national programme is complemented by the ERANET</b>	-1.112** (0.434)	6.554	2.050
<b>Controls/Covariates</b>			
<b>N. of Countries</b>	0.014*** (0.005)	9.628	1.014
<b>Model Fit</b>	Chi- Square=	Df 4	P value=0.000
<b>Proportional Odds (Parallel Lines) = Yes</b>	Chi-Square=3.559		Pvalue=0.614
<b>Pseudo R<sup>2</sup> Nagelkerke= 0.211</b>			<b>N 171</b>

\*\*\* sig 1%; \*\* sig. 5%; \* sig 10%

**Covariate:**

Number of Countries in the ERA-NET

The number of Countries participating to the ERA-NET benefits the organisation in terms of opening up to transnational cooperation national programmes in existing or new research areas (p value <0.01). Based on the observations in our survey sample, adding an extra country to the ERA-NET increases the odds of scoring higher benefits perceived by the respondent by 1.014.

**Factors:**

Having controlled for the number of countries participating in the ERA-NET, organisations participating to design and implementation of **1) schemes for joint training activities, supervise theses or common PhD schemes** and **2) specific cooperation agreements or arrangements between participating programmes** increases the cumulative odds of scoring higher achieved benefits from participating in the ERA-NET by 2.654.

Moreover, organisations operating in countries where **the national programme is complemented by the ERANET**, increases the cumulative odds of scoring higher achieved benefits from participating in the ERA-NET by 3.040.

ORG – NETW model

Evaluating the benefit accrued by the organisation on the basis of the activities carried out by the ERA-NET (independently on whether the organisation undertake such activities or not) it emerges that **2) specific cooperation agreements or arrangements between participating programmes** contribute to the likelihood of cumulative higher scores for benefits perceived by the organisations (p-value <0.05 and Odd ratio of 2.050)

**Mod 3 -SPSS ver22 – mod Ordinal Regression – Proportional Odd models - link function logit**

Main Effect

**Reference category ALWAYS highest**

Dependent variable: Higher quality projects funded

1=No Benefits

2=Little Benefits

3=Some Benefits (Reference variable)

Factors' reference variable is var.=1 or highest score

ORGS - ORGS

Ind. Variables	Estimates (st error)	Wald	Odd Ratio
<b>Factors</b>			
G – Schemes for personnel exchange	-0.800** (0.375)	4.541	2.225
L – Development of Common Funding Rules for Transnational Projects	-1.200*** (0.335)	12.868	3.320
M – Joint monitoring of Transnational Projects	-0.642* (0.353)	3.318	-
No Synergy with National Programmes (Ref. = high Synergy)	-1.178 (0.776)	2.306	-
Little synergy with national Programme (Ref. = high Synergy)	-1.329*** (0.511)	6.768	3.777
Some Synergy with National Programme (Ref. = high Synergy)	-0.194 (0.319)	0.370	-

Controls/Covariates			
Duration in moths	-0.046*** (0.017)	4.531	0.995
<b>Model Fit</b>	Chi-Square=45.485	Df 7	P value=0.000
<b>Proportional Odds (Parallel Lines) = Yes</b>	Chi-Square=9.668		P value=0.208
<b>Pseudo R<sup>2</sup> Nagelkerke= 0.255</b>			N 180

\*\*\* sig 1%; \*\* sig. 5%; \* sig 10%

**Covariate:**

Duration in months

The relation between duration in months of the ERA-NET and benefits to the organisation in terms of higher quality of projects funded is inverse (p value <0.01). Based on the observations in our survey sample, adding an extra month to duration of the ERA-NET decreases the odds of scoring cumulative higher benefits perceived by the respondent by 0.995.

**Factors:**

Having controlled for the duration of the ERA-NET, organisations participating to design and implementation of **1) Schemes for personnel exchange;** and **2) Development of Common Funding Rules for Transnational Projects** increases the cumulative odds of scoring higher achieved benefits from participating in the ERA-NET by 2.225 and 3.320 respectively.

Moreover, low or little synergy between research activities conducted within the ERA-NET and through national research programmes increases the cumulative odds of scoring higher achieved benefits in terms of **higher quality of projects funded** by participating in the ERA-NET by 3.777.

**ORG – NETW Model**

Evaluating the benefit accrued by the organisation on the basis of the activities carried out by the ERA-NET (independently on whether the organisation undertake such activities or not) it emerges that **1) Schemes for personnel exchange;** and **2) Development of Common Funding Rules for Transnational Projects** contribute to the likelihood of cumulative higher scores for benefits perceived by the organisations with Odd ratio of 2.136 (p-value <0.05) and Odd Ratio of 2.291 (p-value<0.01) respectively.

**Mod 4 -SPSS ver22 – mod Ordinal Regression – Proportional Odd models - link function logit**

Main Effect

**Reference category ALWAYS highest**

Dependent variable: **New types of research projects funded through joint calls and programmes**

1=No Benefits

2=Little Benefits

3=Some Benefits (Reference variable)

Factors' reference variable is var.=1 or highest score

**ORGS - ORGS**

Ind. Variables	Estimates (st error)	Wald	Odd Ratio
<b>Factors</b>			
<b>A – Coordination and Clustering of ongoing Nationally funded Projects</b>	-0.537* (0.326)	2.717	-
<b>B – Establishment of common, multinational proposal evaluation</b>	-0.794** (0.316)	6.328	2.212

<b>procedures</b>			
<b>National Programme complemented by ERANET</b>	-1.026** (0.436)	5.534	2.790
<b>Controls/Covariates</b>			
<b>AV. Proposals Funded per Call</b>	0.094*** (0.032)	8.723	1.095
<b>Model Fit</b>	Chi-Square=26.535	Df 4	P value=0.000
<b>Proportional Odds (Parallel Lines) = Yes</b>	Chi-Square=1.355		P value=0.852
<b>Pseudo R<sup>2</sup> Nagelkerke= 0.161</b>			N 172

\*\*\* sig 1%; \*\* sig. 5%; \* sig 10%

**Covariate:**

AV. Proposals Funded per Call

The relation between average number of proposals funded per call through the ERA-NET and benefits to the organisation in terms of new types of research projects funded through joint calls and programmes is positive (p value <0.01). Based on the observations in our survey sample, a unit increase in the average number of funded proposals through the ERA-NET increases the cumulative odds of scoring higher benefit perceived by the respondent by 1.095.

**Factors:**

Having controlled for the duration of the ERA-NET, organisations participating to the **Establishment of common, multinational proposal evaluation procedures**; increases the cumulative odds of scoring higher achieved benefits from participating in the ERA-NET by 2.212.

Moreover, organisations operating in countries where **the national programme is complemented by the ERANET**, increases the cumulative odds of scoring higher achieved benefits from participating in the ERA-NET by 2.790.

**ORG – NETW Model**

Evaluating the benefit accrued by the organisation on the basis of the activities carried out by the ERA-NET (independently on whether the organisation undertake such activities or not) it emerges that the **Establishment of common, multinational proposal evaluation procedures** contributes to the likelihood of cumulative higher scores for benefits perceived by the organisations with Odd ratio of 2.048 (p-value <0.05).

**Mod 5 -SPSS ver22 – mod Ordinal Regression – Proportional Odd models - link function logit**

Main Effect

**Reference category ALWAYS highest**

Dependent variable: **Researchers with no prior experience in Transnational research benefitting from Joint activities**

1=No Benefits

2=Little Benefits

3=Some Benefits (Reference variable)

Factors' reference variable is var.=1 or highest score

**ORGS - ORGS**

Ind. Variables	Estimates (st error)	Wald	Odd Ratio
<b>Factors</b>			

<b>Other Experience in ERANET (FP6/ERANET+)</b>	-1.141*** (0.343)	11.035	3.130
<b>D – Action plan taking up common strategic issues / preparing joint activities</b>	-1.059** (0.521)	4.141	2.883
<b>G – Schemes for personnel exchange</b>	-0.503 (0.400)	1.579	-
<b>M – joint monitoring of transnational projects</b>	-1.055*** (0.403)	6.869	2.872
<b>No Synergy with National Programmes (Ref. = high Synergy)</b>	-0.520 (0.816)	0.406	-
<b>Little synergy with national Programme (Ref. = high Synergy)</b>	-1.321** (0.547)	5.832	3.747
<b>Some Synergy with National Programme (Ref. = high Synergy)</b>	-1.351*** (0.369)	13.431	3.861
<b>Controls/Covariates</b>			
<b>Av. Proposal funded per Call</b>	-0.059* (0.034)	2.977	-
<b>Model Fit</b>	Chi-Square=41.448	Df 8	P value=0.000
<b>Proportional Odds (Parallel Lines) = Yes</b>	Chi-Square=2.342		P value=0.969
<b>Pseudo R<sup>2</sup> Nagelkerke= 0.259</b>			N 171

\*\*\* sig 1%; \*\* sig. 5%; \* sig 10%

#### Factors:

Having controlled for the average number of proposals funded per call through the ERA-NET, organisations participating to design and implementation of **1) Action plan taking up common strategic issues / preparing joint activities;** and **2) joint monitoring of transnational projects** increases the cumulative odds of scoring higher achieved benefits from participating in the ERA-NET by 2.883 and 2.872 respectively. Organisations having larger experience in ERA-NET (in the 6<sup>th</sup> Framework programme and/or through ERANET+) increase the likelihood of cumulative higher score for benefits accrued by participating in the ERA-NET by an odd ratio of 3.130 (p-value<0.01)

Moreover, synergy between research activities conducted within the ERA-NET and through national research programmes increases the cumulative odds of scoring higher achieved benefits in terms of **Involvement in transnational projects of researchers without previous experience in international research** by participating in the ERA-NET by an odd ratio of 3.737 (for low synergy) and 3.861 (for some synergy) relative to the highest level of synergy taken as a reference category.

#### ORG – NETW Model

Evaluating the benefit accrued by the organisation on the basis of the activities carried out by the ERA-NET (independently on whether the organisation undertake such activities or not) it emerges that **Joint Monitoring of transnational projects** contribute to the likelihood of cumulative higher scores for benefits perceived by the organisations with Odd ratio of 4.195 (p-value<0.01).

#### Conclusions:

Overall, in the 5 areas considered, participating to the activities of the network contributes to the realisation of higher benefits for the organisation. In some cases, some benefits can be achieved by organisations only by 'ratifying' the decision, plans of process established by the network. Of course, either these conclusion need a case – by – case evaluation.



