



Evaluation of Joint Programming to Address Grand Societal Challenges

Final Report of the Expert Group

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Evaluation of Joint Programming to Address Grand Societal Challenges

Final Report of the Expert Group

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FOREWORD FROM THE CHAIR

Thirteen years ago, the European Commission started a bottom up experiment on collaboration between national research funding agencies and ministries that led to a large mobilisation of resources. Remarkably, 71 networks were established by 2007, a success that was probably not expected to be that large.

Based on this reality, and the European spirit that was developed between Ministries, the Member States and the European Commission started an analysis that led (in 2008) to the EU communication 'Towards Joint Programming in Research', promoting the launch of the so-called Joint Programming Initiatives (JPIs), this time with the highest political ambition and a rationale for structuring ERA.

In fact, the JPIs were designed to address the main societal challenges that Europe has to face, like aging, environment, energy or cities, with their long list of interdisciplinary tasks that are to be accomplished.

This approach was confirmed by an encouraging response from the Member & Associated States, shown by the fact that a large proportion of them participate in the 10 initiatives that have been set up so far. This time, European challenges require the cooperation of other ministries, regulatory authorities, citizens, users, industry and other institutions like city councils. It is a fantastic opportunity to help flourish the European destiny, as the countries work together for better cities, better health and a better environment.

The task is enormous and the ability to translate research results into new solutions is a critical factor. In order to properly assess the difficulties of achieving success, we have to be conscious of the fact that, in many cases, the right alliance of stakeholders is not well organised at the national level today. The traditional configuration of Ministries and political priorities do not normally offer the national basis to ensure that the research community delivers what societal stakeholders really need. A coordinated European approach on societal challenges through JPIs requires at least a minimum level of stability and liaison of partners nationally.

A second factor influences this European construction. With very few exceptions, national research programmes are not sufficiently structured to align with societal challenges in Horizon 2020. They use a few large calls for all research areas, or even open, continuous, non-thematic calls for company and industrial innovation. Therefore, a European collaboration in a specialised topic area tends to create a small ad hoc national budget from the general research funds.

However, putting research in front of the societal challenges is the best way for Europe to progress. And all of those challenges are at least of a European dimension, which means that they should not be addressed solely at the national level.

Therefore, the political formulation of JPIs is an excellent means of fostering the European Open Vision for Research.

Now, the group I have had the honour to chair, had the mandate to enquire and evaluate what is happening with the actual operation of the 10 JPIs plus another four Public-Public Partnerships and, through the mandate, provide this assessment and recommendations for the next steps.

We have carried out a broad consultation involving all of the main stakeholders: the JPI chairs themselves, the European Commission, the High Level Group on Joint Programming and the Member States and Associated Countries. We have distinguished between internal opinions, facts and documentary evidence from different angles, and external views, provided by those who mandated the JPIs.

We have also provided a scoring system that enables us to depict the full 'movement' of JPIs in a more intuitive way, because the exercise of recording qualitative actions that have not been measured is not very useful.

We have also looked at how the participating countries are supporting the JPIs, realising that it is not sensible to expect that they can all support and benefit in the same way. Grouping them into different types helps to show that there are different ways to progress depending on the national situation.

But, although our duty is to follow a robust methodology, we will not be trapped by it. Scoring is only an exercise, and numbers are today not large enough to provide robust evidence.

Would you find it surprising that the first element of debate for each JPI is the 'impact' achieved? And that the study finds that the powerful involvement of stakeholders is not present in many cases?

Would you be shocked by the fact that countries do not plan to seriously increase their budgets for joint activities, while those volumes remain very modest today?

Perhaps at this point we could start re-reading the foreword.

This micro-analysis keeps spirit of the European dream of all countries putting together their commitment of resources according to the social challenges that are shared at a European level.

JPIs can be a new galvanising force to enable key societal stakeholders to join with the national and/or European research community to discuss and plan, with their colleagues, how to regulate, how to purchase or what to research towards the solutions for energy, water or Alzheimers.

We called them JPIs in 2008, and perhaps the name is still valid.

I hope that this study provides some positive light for their reformulation and for the renewed high level political commitment necessary, as well as practical advice related to their operation.

Juan Tomas Hernani

On behalf of:

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EXECUTIVE SUMMARY

This report presents the finding, conclusions and recommendations of the Expert Group that was established by the Commission in June 2015 to carry out an ***Evaluation of Joint Programming to Address Grand Societal Challenges***. During the later stages of the Evaluation there were two important conferences in Lund¹ and Brussels² that provided useful opportunities to both discuss some of the interim conclusions and gain broader insights from stakeholders.

The Expert Group developed the report through an iterative process of stakeholder consultations, workshops, analysis and validation activities. This commenced with a review of the extensive volume of documentary information that had been produced by the JPIs and the High Level Group on Joint Programming (GPC) including a previous review of the Joint Programming Process in 2012. Each of the 10 JPIs was consulted to gain their perspective along with three other more mature P2P networks that are also aimed at addressing particular societal challenges (BiodivERsA, E-Rare, Metrology 185). The Commission-led SET Plan initiative was also included for comparison. This was complemented by survey responses from policy-level stakeholders in 33 countries, selective follow up interviews and discussions with the GPC. Meetings were also organised with the relevant Commission Directors that have thematic synergy with the JPIs.

Key Facts

The factual analysis shows broad participation of Member States in the JPIs and also associated countries like Norway, Turkey and Israel. Canada and Switzerland are the most prominent of the participating 3rd countries but another 10 have participated in at least one of the Joint Calls of FACCE or Water JPI. Those EU Member States that are not members of any JPI are involved in at least some as observers or joint call participants. At the end of 2015, almost €265m had been committed to transnational projects as a result of 32 Joint Calls involving 37 countries. However, nearly two-thirds of this investment is from just seven countries (Germany, Sweden, Netherlands, France, UK, Italy and Norway). The JPIs are now taking full advantage of the Horizon 2020 ERA-NET Cofund instrument and so the scale of aggregated investment could increase rapidly over the coming years. The financial support from the Commission (through CSAs and the ERA-NET instrument) has clearly been vital to the initial development of the JPIs and it appears that this will continue to be the case.

Stakeholder Perspectives

The qualitative feedback from interviews and the survey is presented as a descriptive analysis of feedback from the perspective of both JPI Management and National Stakeholders.

Consultations with JPI Chairs revealed four main concerns including; the commitment of member countries, the role of the Commission, the strong need to involve end users and the sustainability of their action. They believe that their SRA/SRIAs are having some influence on the alignment of research and policy, mobilising more interdisciplinary research, demonstrating world leadership and joint capacity building. They also feel that the main risks for them are the lack of long term commitment from their members, not being able to share infrastructure and funding constraints. A more consolidated Statement of the 10 JPI Chairs was presented on the occasion of the Lund Conference with 11 proposals for influential stakeholders to significantly improve the leverage and long term effects of the joint programming process in the coming years.

For the national stakeholders, it is clear that the level of commitment, participation and willingness to establish complementary structures is quite variable across the EU Member States and associated countries. The analysis suggests that participating countries can be grouped into three main categories: leaders, selective players and marginal players. Less than 50% of the 33 countries that responded to the survey invitation consider that they are actively participating in the JPIs at a high level. The feedback on strategic alignment, based on adaptation of national research policy and systems, was also quite disappointing. Most countries appear to be 'satisfied' with the JPIs but a significant minority (30%) indicate that they are 'unsatisfied'. The main barrier that limits participation is, of course, financial but there are also structural barriers related to a lack of emphasis on challenge-based, or even thematic, research in many countries as well as the more obvious variable geometry of the national research systems. On the positive side, access to

¹ 'Lund Revisited' High Level Conference on Tackling Societal Challenges, 3-4 December 2015

² ERA-LEARN 2020 Annual Joint Programming Conference (Building and Sustaining Commitment to Public-Public Partnerships, 14-15 January 2016

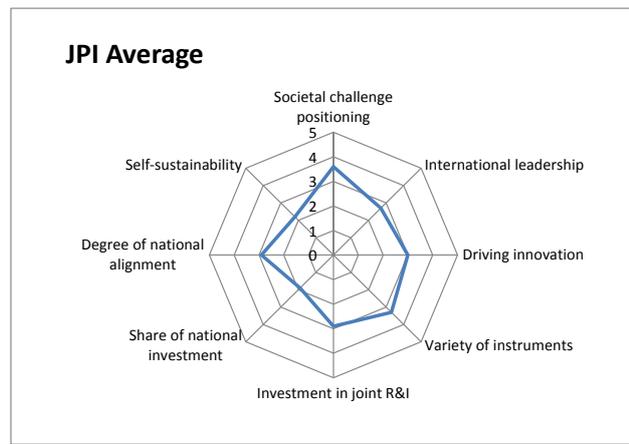
knowledge and international capacity building is seen as an important benefit but many are concerned about the lack of industrial players and societal challenge owners in the joint actions so far. Most of the participating countries expect to maintain, or moderately increase, their current level of participation. Many countries would like to see a stronger involvement of the Commission and believe that this would also help to increase political attention. Some consider that the GPC needs to be stronger and more influential in promoting the need for better top down action at the national level to align research & innovation systems with the need for new solutions to address societal challenges.

Performance Indicators for Joint Programming

It is clear that it is still too early in the Joint Programming Process to evaluate the impact of the JPIs on their particular societal challenges and so the Expert Group considered different ways of assessing whether they appear to be going in the right direction. This led to the development of a framework with eight indicators to enable a qualitative assessment with respect to their:

- Progress towards impact on the societal challenge, and
- Mobilisation of co-investment and alignment actions

Each of the 10 JPIs and the other four P2P networks were qualitatively assessed using this framework. This revealed some quite different patterns and the relative immaturity of some JPIs. The scores should be regarded as indicative (as they are not based on a detailed evaluation of each JPI) but the profiles offer an interesting view of their perceived strengths and weakness at this stage of their development. These, of course, are simply snapshots of the JPIs in the middle of 2015. It is clear that they are evolving at different rates and so such profiles could be useful for mutual learning and replication of good practice. Some of this is elaborated in the report.



The evaluation (and parallel work by the ERA-LEARN 2020 project) has also highlighted good examples at the national level on how the Joint Programming Process and/or individual JPIs have influenced national research & innovation policy and/or led to supporting structures and processes. These are, however, generally the exception rather than the rule but (as for the JPIs) could be the basis for mutual learning. Also, a 'one-size-fits-all' would not be appropriate as the degree and form of national alignment is very much situation dependent. The new EU Policy Support Facility could be an opportunity to support those countries that need some help to adapt their national research system to better participate in joint programming and this is being explored by the GPC.

Conclusions

The Expert Group has framed its conclusions to align with the main research questions for the evaluation, namely:

Progress in addressing Grand Societal Challenges: this has been considered in terms of:

- The extent to which the necessary elements are being put in place,
- The four indicators that were used to assess progress towards impact on the societal challenges (i.e. positioning within the European societal challenge landscape, international research leadership, driving demand for innovative new solutions and the variety of joint actions and instrument that have been implemented), and
- The progress that has been made on the recommendations of the 2012 review of the joint programming process (Acheson Report)

National commitment and alignment: this was considered at two main levels of the policy hierarchy:

- Top down policies and structures
- Bottom up influence of the JPIs including the four indicators that were used to assess mobilisation of co-investment and alignment actions (i.e. investment in joint research & innovation projects, the share of relevant national investment that is coordinated through the JPI, degree of national alignment and sustainability of the JPI infrastructure)

Success factors and bottlenecks: The evaluation highlighted eight factors that seem to be particularly important to the relative success of joint programming to help address societal challenges.

The more detailed conclusions on bottlenecks are elaborated in the 'Key Issues' section.

Key Issues

The evaluation also highlighted a wide range of issues that are inhibiting progress and these provide the logic for the main recommendations. Some of these are specific to a particular stakeholder group. Others are more cross-cutting. The main issues appear to be concerned with:

Ambition: the societal challenges of the JPIs were selected by the national representatives of the GPC because of their importance and commonality but the overall level of ambition to really support them is disappointing.

Commitment: the level of co-investment so far in joint calls and actions is no greater than for the best ERA-NETs and the survey feedback does not indicate that this will increase significantly. Also, it seems that most countries are unwilling or unable to co-invest in the central executive resource that is needed to effectively implement the strategic agendas of the JPIs.

National alignment: whilst there are some notable exceptions it seems that most countries are neither adapting their national research activities towards the SRA/SRIAs nor the activities of the JPIs.

National structures for coordination, funding and management of JPIs: the situation on development of national inter-ministerial structures to support the joint programming process is rather mixed. Some have mirror groups, or have already embraced societal challenge research, and therefore demonstrate high level commitment but too many have not really made any progress.

Role of the Commission: the provision of financial support through CSAs and the ERA-NET instruments has clearly been vital to the development of the JPIs. Perhaps more important has been the role of the Commission in helping the JPIs to position themselves within both the European and international societal challenge landscape but some feel that "the Commission does not support the JPIs equally". There is a general feeling that the MS-led joint programming process is not sustainable, especially during times of severe economic austerity in many countries, without a stronger role for the Commission.

Operational bureaucracy: it is obvious that there is a high degree of operational inertia that is affecting the progress and potential impact of the JPIs. Too much of the scarce executive resource seems to be devoted to securing financial support from the Commission, supporting the GPC and dealing with national delegates that do not have sufficient decision making authority.

Short Term Recommendations

The Expert Group has made fourteen (14) specific recommendations aimed at the main stakeholders of the joint programming process.

Firstly, **national stakeholders** in EU Member and Associated States should take this report into account in their national ERA Roadmaps ; ensure that they have a national coordination system for joint programming that is fit-for-purpose; and (where appropriate) explore the potential synergies with their Smart Specialisation Strategies.

Secondly, **the GPC** should implement a process, with review milestones, to enable evolution of the JPI portfolio; utilise the proposed Mutual Learning Exercise to explore new ideas and solutions to

address the key issues highlighted in this report; improve the communication channels with the JPIs; and establish a common monitoring & evaluation framework for JPIs.

Thirdly, **JPIs** should promote how they are helping stakeholders beyond the research community to address societal challenges through case studies; carry out a forward-looking readiness level review of their governance structure and executive management team; and establish a cross-JPI strategy team to share knowledge, develop common positions/methodologies and explore options for collaboration and shared infrastructure.

Fourthly, the **European Commission** should continue to support the ERA-LEARN 2020 project in its aspiration to provide expert input to the joint programming process ; explore the possibilities to set up an Observatory on societal challenge research at the national level ; exploit possibilities to take the SRA/SRIAs of the JPIs more into account when designing the Horizon 2020 biennial work programmes ; and develop clear conditions and criteria under which JPIs can be supported for the remainder of Horizon 2020.

Longer Term Recommendations

The key message from this report is that the Joint Programming Process does not yet have sufficient **Commitment** from national stakeholders to achieve its potential. Whilst the short term recommendations should improve the situation, it seems unlikely that all of the current JPIs will be able to secure sufficient national commitment to becoming truly joint programmes. Since there is not yet any procedure or milestone to change this situation then there is a long term risk to the JPI portfolio beyond the current Framework Programme.

The final recommendation of the Expert Group is therefore addressed to all policy stakeholders that will play an influential role in the planning process, due to start in 2017, for the next Framework Programme.

Each of the JPIs (and any other prospective ones) should be invited to consider their longer term strategy in terms of socio-economic impact objectives/deliverables and what support instruments they would need from the next Framework Programme. Any such proposals should, of course, include firm commitments from national stakeholders (including how they will integrate the JPI within national programming) and, where appropriate other, societal challenge stakeholders such as industry.

1. INTRODUCTION

1.1 Background

The Joint Programming Process was intended to be one of the building blocks of the European Research Area (ERA) when it was launched in 2008. The logic was that it should result in a systematic way of programming research policy between Member States. This should start with a joint definition of common societal challenges, mobilising the necessary resources to adequately tackle the challenges and leading to a clear division of labour between the national, transnational and EU-level. If considered successful, the Joint Programming process could also be expanded to new societal challenges.

It is now some years since the first of the Joint Programming Initiatives (JPIs) were launched and there was a general feeling that the Joint Programming Process needed a renewed push to develop its full potential. The perception was that not all of the JPIs are developing equally well and 'alignment' of national research structures and activities is progressing rather slowly, if at all. Also, their implementation appeared to depend strongly on financial support from the European Commission and this may be unduly influencing their direction.

1.2 Purpose and Scope of the Evaluation

The purpose of the evaluation was, therefore, to take stock of the current situation and how it is developing. It had four main objectives:

1. Evaluate the progress made by Member (and Associated) States on Joint Programming in addressing Grand Societal Challenges
2. Assess the current commitment and progress to align national research programmes to common priorities
3. Define success criteria and identify success factors/bottlenecks
4. Consider priorities for operational follow-up for Member (and Associated) States, JPIs and their stakeholders and the European Commission

Within each of these, a number of more specific research questions were posed.

1.3 Methodology

The evaluation was carried out by an Expert Group from five countries with assistance from Commission staff. All of them had complementary experience of ERA initiatives, including JPIs and other P2P (public-to-public) networks, at both the practical and policy level. The first step was to review the substantial body of documentary evidence that had been produced to monitor and support the implementation of the JPIs. Additional evidence was gathered through a survey of national policy stakeholders and selected follow on interviews. In addition, the relevant European Commission Directors with responsibility for the societal challenge domains of the JPIs were also consulted. The 10 JPIs (and four other P2P networks) assisted by producing Fact Sheets, providing data on joint calls and other joint activities, participating in interviews and validating the analysis of the experts. Additional evidence was provided from parallel work by both the ERA-LEARN 2020 project and the GPC (High Level Group on Joint Programming).

The members of the Expert Group met formally on eight occasions to review evidence and formulate their conclusions. They also participated in a meeting of the GPC in September 2015, the 'Lund Revisited' Conference on Tackling Societal Challenges in December 2015 and the annual ERA-LEARN 2020 conference in January 2016 (Building and Sustaining Commitment to Public-Public Partnership). All of these provided opportunities to both validate emerging conclusions and improve the transparency and robustness of the evaluation.

2. THE VISION

2.1 Overview of Joint Programming

Joint Programming was conceived within the context of the revised Lisbon Strategy and regarded as a process whereby Member States engage on a voluntary basis in the definition, development and implementation of common research agendas addressing a specific field or topic. This could involve the coordination of existing programmes (e.g. the ERA-NET Scheme) or the setting up of entirely new ones with the aim of improving the efficiency of public funding and addressing major societal challenges. Towards Joint Programming in Research³ was, therefore, one of five policy initiatives proposed by the Commission in 2008 in response to the 2007 Green Paper on the European Research Area (ERA)⁴.

The hypothesis at this time was that:

"Carrying out research through trans-national cooperation can increase its impact and bring other important benefits such as addressing common challenges jointly and developing common solutions, overcoming barriers to entry such as high start-up and operating costs in certain S&T fields, pooling data and expertise, achieving higher scientific, technological and innovation impacts, eliminating cross-European programme duplication, increasing programme depth and reducing management costs."

2.2 Objectives of the Joint Programming Process

The hierarchal objectives⁵ of the policy initiative on Joint Programming in 2008 included:

General Policy Objectives

- To contribute to the objectives of the revised Lisbon Strategy
- To help Europe respond more effectively through research to key societal challenges such as climate change, energy supply, ageing population

Specific Objectives

- To strengthen the coordination of national public research programmes in Europe in areas which can provide solutions to important societal challenges and where there is evidence of an added value from adopting a joint cross-border approach
- In this way, to increase the impact of these programmes, both S&T impacts (scientific excellence, pooling of resources, data and expertise, achievement of critical mass, facilitating programme optimisation) and economic and societal impacts

Operational Objectives

- To provide an effective process which will promote a more strategic approach to coordinating national research programmes aimed at helping tackle Europe's societal challenges
- To ensure that this process and the ensuing public research programming initiatives enjoy a high level of stakeholder support and ownership
- Through the process, and the use of appropriate instruments, to promote cross-border public research programme integration and structuring effects, notably the critical mass of R&D efforts
- To provide a process that allows for a graduated response in terms of Joint Programming instruments, as well as variable geometry in terms of country participation
- To ensure that joint initiatives are based on up-to-date and accurate information on national and regional programming activities
- To promote stronger horizontal policy consistency

³ COM(2008) 468

⁴ COM(2007) 161

⁵ Commission Staff Working Document SEC(2008) 2281: Accompanying Impact Assessment to COM(2008) 468

Four policy options were considered to achieve these objectives: 1) business-as-usual, 2) Article 169⁶ maximisation, 3) community-driven strategic process and 4) strategic European process. The first two could be characterised as continuation of the bottom-up approach using existing instruments including ERA-NETs. The third option (community driven strategic process) would be led by the Commission and an example is the SET Plan. The fourth option (strategic European process) differed from the community-driven one in that it would be the Member and Associated States that both identified topics and selected, or developed, the most appropriate instruments for the respective field. Clearly, the policy option chosen was No 4 with 10 JPIs being established under the Governance of the GPC. The role of the Commission was to be one of facilitator.

2.3 Evolution of the Joint Programming Process

The main milestones relating to evolution of the Joint Programming Process (JPP) including the original Lund Declaration in 2009 and the Joint Programming Initiatives (JPIs), were:

2007: The Green Paper on the European Research Area introduced the idea of Joint Programming as one of the six main elements of its vision.

2008: The **Communication of the European Commission** to the Council (15 July 2008) 'Towards Joint Programming in Research: Working Together to Tackle Common Challenges more Effectively' proposed an ambitious new approach for making better use of Europe's R&D investments, through enhanced cooperation to tackle common societal challenges.

The **Council Conclusions** (2 December 2008) endorsed the concept of Joint Programming as a Member State-driven process, supported by the Commission, carried out on a voluntary basis and according to the principle of variable geometry and open access.

In addition, the Conclusions established the **High Level Group for Joint Programming** (GPC) as a dedicated configuration of CREST (now ERAC) with the mandate to identify Joint Programming themes following broad stakeholder consultation.

2009: Kick-off meeting of the **Alzheimer Pilot Joint Programming Initiative (JPND)**.

1st meeting of the High Level Group for Joint Programming (GPC).

The **2009 Lund Declaration** concluded that "*Europe needs to find effective ways to prioritise research and innovation targeting the Grand Challenges that are widely inclusive and cross boundary in their character*".

The 1st **wave of three additional JPI themes** (Agriculture & Climate Change, Cultural Heritage and Healthy Diet Healthy Lives) was approved following their identification via the GPC, the Commission Recommendations and the Council Conclusions.

2010: The GPC identified the 2nd wave of six JPI themes.

GPC 1st Biennial Report was submitted to the ERAC mainly describing the procedure followed for the selection of the JPIs and the preparation of the Guidelines on Framework Conditions for Joint Programming.

2011: The Council approved the recommendation of the Commission on the 2nd Wave of JPIs.

The Strategic Research Agendas of the 1st Wave JPIs were launched.

2012: An independent **Expert Group**, set up by the Commission, analysed the progress of the Joint Programming Process and made recommendations (the 'Acheson' Report) on how Member States, Associated Countries and the Commission could improve the Joint Programming Process. The main conclusions and recommendations are summarised below.

Second Biennial Report of the GPC, describing in detail the formative phase of the JPIs in the years 2011 and 2012.

⁶ Now Art.185 of TFEU

The '**JPIs ToCoWork**' project was launched, with the objective to support the 10 JPIs in applying the Framework Conditions prepared by the GPC.

2013: The main conclusion of the **Dublin Conference** during the Irish Presidency of the EU gave huge emphasis on the '**alignment of strategies and research programmes and their joint implementation**'.

On the basis of the recommendations of the Acheson Report and the Dublin Conference, the GPC decided to establish four Working Groups (How to pursue and deepen relations between the GPC and JPIs; Alignment; Framework Conditions for Joint Programming; and Measuring JPIs' Progress and Impact) in order to bring forward the actions that had been identified.

2014: The Council Conclusions (20/21 February 2014) considered that the development of the **ERA Roadmap** should take into account alignment, where possible, of national strategies and research programmes with the Strategic Research Agendas of the JPIs. The third Biennial Report of the GPC, summarised in particular the results of the four Working groups.

The Commission included a Call Topic in the Horizon 2020 work programme for a Coordination and Support Action (CSA) that would help the P2P community, including the JPIs, to better move 'Towards Joint Programming under Horizon 2020'. Included within the scope of this was the subject of modalities for alignment of national activities under common research agendas. This brought together a consortium of agencies and experts with experience ranging from ERA-NETs to JPIs ToCoWork under the framework of the ERA-LEARN 2020 project.

2015: The GPC established three Implementation Groups as a follow up of the Working Groups.

The ERA-LEARN 2020 project commenced in January 2015.

The Commission established this **Expert Group** on 'Evaluation of Joint Programming to Address Grand Societal Challenges' to launch an assessment of the JPP and the 10 JPIs with a view to take stock of the past five years in terms of the progress made in alignment of national programmes and in addressing societal challenges.

In December, a high level conference, entitled Lund Revisited: Tackling Societal Challenges, was organised to discuss the progress that had been made since the Lund Declaration 2009 (to align and coordinate resources and shift the focus towards society's major challenges) and propose an updated **Lund Declaration 2015**. The updated Declaration identifies four priority areas (alignment, frontier research and European knowledge base, global cooperation and achieving impact on challenges) and calls on all stakeholders to take these priorities into account in their field of responsibility.

2016: The ERA-LEARN 2020 project organized the 1st of its planned Annual Joint Programming Conferences in January - including a specific session to allow interested participants to discuss the key issues that had been identified by the Expert Group.

Summary of the 'Acheson Report' (October 2012)

A previous Expert Group was invited by the Commission to undertake the first formal review of the Joint Programming process and suggest ways for improvement.

The overall conclusion reached by the Expert Group is that the Joint Programming process has got off to a good start, although the process can only reach its full potential if commitment and financial support from national level continues.

The Group regards the degree of progress as very satisfactory believing that sustainable JPIS require time to build up the necessary trust to engage in multi-annual joint programming. MS are unexpectedly highly motivated to engage in Joint Programming and to seek to integrate national research activities according to SRAs. A wide range of activities (stakeholder consultation, development and adoption of SRAs, launching joint calls etc.) have been undertaken so far by the JPIS. By comparing what has been achieved so far with what was set out in the original high-level political vision for joint programming, the Group has reached the following conclusions: significant issues are being addressed that are beyond the scope and resources of individual countries; a wide range of activities are being undertaken by JPIS that will help reduce duplication and effort across Europe; scientific excellence is being promoted through joint calls which follow the Guidelines for Framework Conditions; and through their Visions and SRAs, JPIS show evidence that they are coordinating data and expertise.

However, the full delivery of "joint programming" as originally envisaged, that is going beyond programme alignment and joint calls, remains uncertain - no JPI has reached the stage of implementing multi-annual joint programmes and cooperation throughout the policy cycle. The Expert Group is concerned that the necessary level of commitment to this ultimate objective at the national level is not yet evident. MS need to move away from the idea that Joint Programming is about bringing new funds to address specific research ideas in single joint calls, to a realisation that it is about aligning existing national programmes to tackle major societal challenges.

Using the longest running JPI (JPND) as an example, the Group has concluded that the political, structural and organisational challenges facing Joint Programming can be met and overcome. The Group is therefore optimistic about the future for Joint Programming, particularly given the opportunities that are emerging from Horizon 2020.

The Group recommendations were grouped according to the main recipients as follows:

The 10 JPIS should:

- enhance trust between the participants - when the necessary level of trust has been achieved, JPIS should further explore the use of Article 185 and other ERA instruments,
- maintain the principle of open participation for MS and use trans-disciplinary inputs, including from industry and other societal actors, where appropriate,
- promote their achievements, particularly to the national and EU level policy makers in order to demonstrate impact and be more effective at communicating the SRAs back to all national levels, and
- promote shared use of existing key infrastructures and make "smart" use of H2020 instruments.

The MS should:

- increasingly inform and align national strategies and programmes with the JPI SRAs,
- acknowledge that acting alone cannot solve societal challenges and invest their resources in order to experience the benefits arising from Joint Programming,
- consider how many JPIS they can maintain a sustainable commitment to and ensure that national administrations are sufficiently involved, and
- use the Smart Specialisation Strategy process to identify, prioritise and engage in JPI - related research and innovation activities.

The European Commission should:

- provide greater clarification on the role and focus of each instrument on the ERA landscape, and their respective interdependencies,
- continue to support the JPIS with CSAs in H2020 and the EFFLA work as it could be a supportive partner for the GPC for future priority setting,
- undertake an evaluation of the JPIS at the end of FP7 and at the mid-term point of H2020,
- consider the ERA-FRAME option if the renewed political will, called for in the Commission's 2012 ERA Communication, does not materialize, and
- open a dialogue between the JPIS and the H2020 Programme Committees

The GPC should consider and prepare a systematic process that can be used for deciding on future Challenges and revisit the Voluntary Guidelines on Framework Conditions in order to integrate new operational requirements.

2.4 The role of the GPC

Launching (2009-2010)

During the period 2009-2010, after the launch of the JPND pilot, the GPC's⁷ work related to two main initial tasks assigned by the Council, namely the 'Identification of Themes for JPIs' and the 'Development of Voluntary Guidelines for the Framework Conditions'. The GPC identified the first wave of three JPIs (out of six proposals) during the Swedish Presidency of the Council of the EU (Nov 2009) which included:

- Agriculture, Food security & Climate Change (FACCE)
- Cultural Heritage, Climate Change and Security (JPI CH)
- Health, Food and Prevention of Diet Related Diseases (JPI HDHL)

During the Spanish Presidency of the Council of the EU, the GPC proceeded (May 2010) to the identification of the second wave of themes, which included the following six JPIs:

- The Microbial Challenge - An Emerging Threat to Human Health (JPIAMR)
- Connecting Climate Knowledge for Europe (JPI Climate)
- More Years, Better Lives - The Potential and Challenges of Demographic Change (JPI-MYBL)
- Urban Europe - Global Challenges, Local Solutions (JPI UE)
- Water Challenges for a Changing World (Water JPI)
- Healthy and Productive Seas and Oceans (JPI Oceans)

The main criteria applied to the identification of these themes were: (i) the area addresses a pan-European/global socio-economic or environmental challenge, (ii) publicly funded research is central to addressing the challenge, (iii) there is a clear added value in Joint Programming (JP) in the area e.g. the scale and scope are beyond the capabilities of individual Member States (MS), (iv) the area is sufficiently focused so that clear and realistic objectives can be set, (v) the initiative contributes to overcoming fragmentation and wasteful duplication of publicly funded research and (vi) involvement of the key public initiatives.

The Belgian Presidency focused on the endorsement of the **Framework Conditions**, which are concerned with the administrative, normative and regulatory factors considered essential for the effective planning and implementation of JP. The Framework includes guidelines related to peer review procedures, foresight activities, evaluation and funding of cross-border research, optimum dissemination and use of research results and the protection, management and sharing of IPRs. Although voluntary, the GPC strongly recommended their use, as appropriate.

Building-up (2011-2012)

During this period the 10 JPIs' focus was on developing common visions, establishing governance structures and designing strategic research agendas and joint activities. Being a new process, some JPIs developed innovative activities, methodologies and ways of cooperating.

In November 2011, the GPC adopted new rules of procedure. The main changes included new governance based on the **election⁸ of a Chair and a Vice-chair** for a period of three years and the introduction of a 24-month rolling **Work Programme**. At the operational level, two major issues were dealt with, namely the "*GPC contribution to the ERAC input to a proposal on the ERA Framework*" and the "*Recommendation on ways to involve industry*".

The GPC's contribution to the ERA Framework focused on issues relevant to its mandate, in particular on the operation of JPIs and their role in the European research / innovation landscape and more broadly on transnational research. The main conclusion, is that the policy measures included in the ERA Framework should support effective cross-border operations, while at the same time stimulate the efforts to engage MS and Associated Countries (AC) in meaningful participation and in a manner that is conducive to reaching the goal of excellence and relevance in research.

⁷ At its constitutive meeting (13 Feb. 2009) during the Czech Presidency of the Council of the EU, the GPC adopted a framework of GPC working methods. As a basic principle, the GPC decided to follow the CREST rules of procedure.

⁸ Rolf Annerberg and Mr Armel De La Bourdonnaye were elected as the first Chair/Vice-chair person of the GPC, followed by Fulvio Esposito and Martin Schmid.

The GPC's 'Recommendation on ways to involve industry' (March 2012) states that *"as appropriate, in some of the 10 JPIs, it could be of key importance to better incorporate as needed relevant stakeholders, in particular industry and end-users, while fully respecting the character of JP as a public-public cooperation platform. These could help JP to better fulfil its objective of tackling the societal challenges and moreover to contribute to the competitiveness of industry."*

Implementation Phase (2013-2014)

Following the recommendations given by the Acheson Report and the Dublin Conference, the GPC adopted (September 2013) an opinion on its function and working methods. Thus, the GPC established four Working Groups (WGs) for the preparation of GPC discussions, proposals and opinions.

Working Groups (WG)

The WG **"Relations between the GPC and JPIs"** main conclusion relates to the need for a properly structured relationship between the main actors involved in Joint Programming (GPC, JPIs and the Commission) in order to ensure the best possible fulfilment of their respective mandates. The WG's recommendations were:

- The role of the Commission, as a key player that has both the resources and the ability to support the JPP, can be further improved
- GPC should be the key actor to promote the implementation of JPIs. The JPIs should consider the GPC as the political forum for addressing their difficulties, not only for registering their achievements and successes
- The 2008 commitment of the MS towards JP should be renewed and strengthened and active participation by Countries is needed to promote cohesion, to maintain a high level of interest and to maximize the utilisation of resources

The WG **"Alignment"** developed the following definition: *"Alignment is the strategic approach taken by Member States to modify their national programmes, priorities or activities as a consequence of the adoption of joint research priorities in the context of Joint Programming with a view to implementing changes to improve efficiency of investment in research at the level of Member States and ERA"*. The relevant WG recommendations were:

- The MS should (i) create stronger inter-ministerial coordination involving commitment and funding, (ii) develop a coordinated approach for institutional and project-based funding, and (iii) support alignment activities when there is a national top-down programme
- The JPIs should look into aligning all actions spanning the programming cycle (from joint foresight to implementation and ex-post evaluation) and further develop good practices
- The GPC should develop a common approach and monitor the alignment activities
- The EC should facilitate the process of alignment by mapping, monitoring and evaluating the synergetic actions taken in the domains of societal challenges

According to the WG **Framework Conditions for Joint Programming**, the term 'Framework Conditions' has two aspects: (i) the 'Joint Programming Functions' addressing the components that have to be implemented by the JPIs, and (ii) the 'Enabling Environment' addressing the conditions for this implementation within the ERA. The relevant WG recommendations were:

- The JPIs should be strategic hubs or platforms for research and innovation in their respective challenge. Such an undertaking needs to be developed over time, built in an environment of trust and commitment and using new forms of collaboration
- There is a need for simplification and development of common guidelines on terminology, rules and procedures for Research and Innovation (R&I) funding, to be applied throughout the ERA on all levels
- Continuous evaluation of the effectiveness of the governance system of each JPI is needed, taking into account developments or change of priorities over time
- The core elements (strategic objectives, vision, strategic research agenda (SRA/SRIA), implementation plan) of the strategic process has to be understood as a continuous cycle and revised in the light of new developments and experience gained through implementation

- The JPIs should design and implement strategies with regard to the dissemination and use of research findings

The WG "**Measuring JPIs' Progress and Impact**" focused its work⁹ on the development of a set of criteria and a questionnaire for the Self-Assessment of the JPIs. The WG recommended that the purpose of the Self-Assessment, as well as of the Evaluation foreseen in 2015, should not be to undertake a ranking of JPIs, but to assess all JPIs with respect to their initial vision. The WG also suggested that the measuring of the societal impact of JPIs takes time, so a good 'proxy' is the implication of key stakeholders in the definition and in the governance of each JPI.

Self- Assessment of JPIs

Following the recommendation of the WG 'Measuring JPIs' Progress and Impact' the GPC asked the JPIs to provide a Self-Assessment, using the questionnaire designed by the WG. The main lessons from the JPI Self-Assessments were:

The Challenges Addressed: Eight of the 10 JPIs had adopted a SRA/SRIA and two were planning to define their agendas later in 2015.

Joint calls and Actions: By the end of 2014, the 10 JPIs together will have launched 25 Joint Calls, investing about €200 million.

Third-country Participation: Most JPIs are interacting with third countries and multilateral organisations. Canada is the most active third country – all continents are currently associated to at least one JPI.

JPI Governance: Researchers and stakeholders have been involved in the definition of the JPI's SRIAs, thus ensuring that the programming of the research reflects the views of both communities. The involvement of key decision makers and key partners has been more challenging.

Using Framework Conditions for Joint Programming: All JPIs have been using the six Framework Conditions identified in 2010, whilst not striving to specifically identify which of the practices suggested by the Guidelines each JPI has used. One condition that is less developed is the exploitation of results.

Alignment of National Programmes: Alignment of national research has been the focus of most JPIs since 2013, but it was proving particularly difficult for JPIs addressing complex challenges. Many JPIs recognise the need to mobilise institutional funding programmes.

Quantifying Coordination or Alignment Across ERA: Only three JPIs (JNPD, FACCE and WATER) had estimated the data related to the total investment in research programmes, addressing their Societal Challenge.

GPC Self-Assessment

In 2014, the GPC, following a Council Resolution¹⁰ (2013), decided to undertake a self-assessment exercise of its activities using a questionnaire covering all the tasks given to the GPC by the Council. The key messages arising from the analysis of the self-assessment exercise are the following:

- Although the GPC seems to function well and the main parts of its mandate had been addressed (either completed successfully or in progress), there should be more active involvement from delegates
- There is a need for high-profile Council level debates on the JPP with a more active advisory role of the GPC
- The cooperation between the GPC, ERAC and the other ERA-related groups should be enhanced and redesigned according to more formal and structured lines
- The GPC would wish to see its mandate updated and participate in the preparation of the relevant aspects of the ERA roadmap

⁹ The WG's used as a basis the results of the "JPI to Co-Work" project.

¹⁰ Council Resolution (30 May 2013) on the advisory work for the ERA (Doc. 10331/13) and the ERA-related groups.

Implementation Groups

Building on the well-functioning system of the four WGs, which were highly appreciated, the GPC established (February 2015) three **Implementation Groups** (IGs):

- The IG1 on 'Fostering Relationships among the JPIs and the GPC' provided the essential elements for the production of a document entitled "Keeping the GPC up to the job – Tasks and Profile of the GPC Delegates", which has been adopted by the GPC
- The IG2 on 'Improving Alignment and Interoperability' performed an alignment mapping exercise that highlighted the importance of a high level national commitment, an overarching inclusive national strategy, and using the national budget as an instrument for promoting alignment
- The work of the IG3 'Monitoring and Evaluation' is concentrated on the establishment of minimum conditions for JPIs to be used both for possible new JPIs, as well as for the assessment of the existing ones

Renewed mandate for the GPC

Taking into account the relevant Council decisions, and lessons learned, the GPC expressed the opinion¹¹ that there is a "need for a rapid adoption of a renewed mandate for the GPC" in order to "take the Joint Programming Process to the next stage and ensure that it contributes to the further implementation of the ERA". Should this be decided, the GPC would see itself as a strategic forum discussing not only the JPP, but also other relevant aspects of the ERA, in particular the area of transnational cooperation.

According to the Renewed Mandate, which was recently adopted by the GPC (February 2016), its activities will focus on (i) delivering strategic and timely advice on the ERA Priority area 2A, (ii) being responsible for the promotion of alignment and the improvement of interoperability among European, national and regional research and innovation programmes/activities, (iii) monitoring and assessing whether the initiatives resulting from the JPP maintain coherence with their mission and perform adequately, (iv) promoting access to funding instruments for the initiatives aimed at enhancing integration and EU added value, (v) updating, whenever needed, the Framework Conditions including the development of governance guidelines for the initiatives, and (vi) identifying potential new themes and evaluating them, on the basis of the criteria outlined in the Council Conclusions of 2 December 2008.

2.5 The role of the Commission

The role of the Commission was to help facilitate the Joint Programming Process. This has included:

- Providing CSA funding (Coordination and Support Action) to each of the JPIs for the development of their Strategic Research Agenda (SRA/SRIA)
- Providing executive support to the Working Groups of the GPC
- Providing CSA funding for the 'JPIs To CoWork' project on framework conditions for JPIs
- Creating opportunities within the Horizon 2020 work programme to selectively support the implementation of specific parts of SRAs, including the ERA-NET instrument
- Helping and guiding JPIs to position themselves within the existing societal challenge landscape in Europe and the international research community
- Providing CSA funding to the ERA-LEARN 2020 project as an information, learning and support platform for P2Ps

¹¹ Biannual Report 2014 of the GPC

3. KEY FACTS

3.1 Overview of the JPIs

The extent of participation by EU Member States, Associated Countries and Third Countries in each of the 10 JPIs is summarised in the table below¹² followed by some elaboration on each. This includes full members, observers and additional countries that participate only in joint calls (Joint Call Partners).

	JPIs									
	JPND	FACCE	JPI HDHL	JPI CH	JPI-MYBL	JPIAMR	Water JPI	JPI Oceans	JPI Climate	JPI UE
Country participants	30	34	25	26	18	22	30	22	18	21
Full members (M)	29	21	18	19	17	19	20	21	13	12
Observers (O)	1	0	7	7	1	2	4	1	3	7
Joint Call Partners (P)	0	13	0	0	0	1	6	0	3	2
EU Member States (in total)	23	20	20	22	12	16	20	18	16	19
Austria	M	M	M	M	M		M		M	M
Belgium	M	M	M	M	M	M	O	M	M	M
Bulgaria	M	P		O						
Croatia	M							M		
Cyprus		M	O	M			M			M
Czech Republic	M	M	O	M		M				
Denmark	M	M	M	M	M	M	M	M	M	M
Estonia		M	M	O			M	M	O	
Finland	M	M	M		M	M	M	M	M	M
France	M	M	M	M	M	M	M	M	M	M
Germany	M	M	M	O	M	M	M	M	M	M
Greece	M			O		M	O	M	P	
Hungary	M						O			
Ireland	M	M	M	M			M	M	M	
Italy	M	M	M	M	M	M	M	M	M	M
Latvia			O	O		P	O			O
Lithuania		P		M				M		
Luxembourg	M									
Malta	O		O					O		
Netherlands	M	M	M	M	M	M	M	M	M	M
Poland	M	M	M	M	M	M	M	M		O
Portugal	M	P		M			M	M	P	O
Romania	M	M	M	M		M	M	M	P	O
Slovakia	M			M						
Slovenia	M		O		M				O	O
Spain	M	M	M	M	M	M	M	M	M	O
Sweden	M	M	O	M	M	M	M	M	M	M
United Kingdom	M	M	M	M	M	M	M	M	M	M
Associated Countries (in total)	4	3	2	3	2	3	4	3	2	2
Albania	M									
Bosnia-Herzegovinia								M		
Iceland										
Israel	M	M		O	M	M	M			
Moldovia				M			M			
Norway	M	M	M	M	M	M	M	M	M	M
Serbia										
Turkey	M	M	M		O	M	M	M	O	O
Third Countries (in total)	2	11	3	1	2	3	6	0	0	0
Argentina						O				
Brasil		P								
Canada	M	P	M		M	M	P			
China										
Ethiopia				O						
Egypt		P					P			
Japan		P				O				
India		P								
New Zealand		P	O							
Qatar										
South Africa		P					P			
Switzerland	M	M	M		M	M				
Taiwan		P					P			
Tunisia		P					P			
USA		P					P			

Some participating Member and Associated States are more active than others in terms of leadership, providing management resources and investing in joint actions/calls. This is discussed further in **Sections 3.2 and 4.2**.

Key facts for each of the JPIs are provided below. The Expert Group's assessment of their relative performance is discussed in **Section 5** and **Appendix C**.

JPND (Neurodegenerative Diseases)

¹² The Expert Group endeavoured to check that the above table was factually correct at the end of December 2015 but there may be some minor errors due to ongoing changes in the membership profile across the JPIs

This JPI was the first to be launched in 2009. Its SRA was adopted in 2011 and the 1st implementation plan in 2012. It has the largest number of member countries (30). The Commission is an Observer and has supported with two CSAs (2010 and 2015) and an ERA-NET Cofund in 2014. The current Chair and Secretariat is provided by France (INSERM). Italy provides the Vice Chair.

FACCE (Agriculture, Food Security and Climate Change)

The JPI on 'agriculture, food security and climate change' (FACCE) was launched in 2010. Its SRA was adopted in 2012 and the first implementation plan in 2013. The updated SRA was published in January 2016 as well as the Implementation Plan 2016-2018. It has 21 full members and a significant number of additional third countries are participating through Joint Calls. The Commission is an Observer in the Governing Board. FACCE has been supported with two CSAs and also ERA-NET contracts (FP7 ERA-NET Plus, two H2020 ERA-NET Cofunds). France provided the initial Chair, which is now held by Denmark. There are two Vice Chairs (from the Netherlands and Germany). The Secretariat is led by France (INRA).

JPI HDHL (Healthy Diet for Healthy Life)

The JPI on 'a healthy diet for a healthy life' (HDHL) was launched in 2010. It has 18 member countries (including Canada) and seven observers. New Zealand is expected to become a full member. A second edition of the SRA has been produced and the current implementation plan (2014-2015) will be superseded by another for the 2016-2018 period. Ireland (Food Safety Authority) provides the current Chair, with the Vice Chair and secretariat from the Netherlands. The Commission is an Observer and has supported with an initial CSA. A second CSA and an ERA-NET Cofund will both commence early 2016.

JPI CH (Cultural Heritage)

The JPI on 'cultural heritage and global change' was launched in 2010. It adopted its SRA in 2013 and implementation plan in 2014. It has 19 member countries (mainly from EU Member States) and seven observers. Italy (MIBACT) provides the current Chair and the Secretariat. The Commission is an Observer and has supported with an initial CSA and an FP7 ERA-NET Plus. A second CSA commenced in January 2016.

JPI-MYBL (More Years Better Lives)

The JPI for 'more years better lives' was launched in 2011 and adopted its SRA in 2014. The implementation plan is under development and there is a short term work programme for 2015-2016. The Netherlands (ZonMw) provides the Chair and there are three steering committee members (Canada, France and Sweden). Netherlands also provides the Secretariat. There are now 17 full members (Israel and Slovenia recently joined) and one observer. The Commission (DG CONNECT) is an Observer and supported two CSAs for the periods from 2012-2018.

JPIAMR (Antimicrobial Resistance)

The JPI on 'anti-microbial resistance' was launched in 2011 and adopted its SRA at the end of 2013. The 1st implementation plan was adopted in 2014 with the 2nd version planned for adoption before the end of 2015. It has 19 member countries and some observers. Sweden provides the current Chair and the Secretariat. The Vice Chair is from the UK. The Commission is a non-voting member and has supported through a CSA and an ERA-NET Cofund. A second CSA is proposed in the 2016 work programme.

Water JPI (Water Challenges for a Changing World)

The JPI on 'water challenges for a changing world' was launched in 2011 and adopted its first SRIA in 2013 with the implementation plan adopted in 2014 (2nd version of SRA was scheduled for end 2015). France (ANR) provides the current Chair and Secretariat. There are three Vice Chairs (from Ireland, Italy and Spain). It has 20 member countries (mostly EU MS plus several Associated Countries) and four observers. Another six third countries are participating in Joint Calls. The Commission is a non-voting member and has supported one CSA and two ERA-NET Cofund actions (2014 and 2015). A second CSA on international cooperation is proposed in the 2016 work programme.

JPI Oceans (Healthy and Productive Oceans)

The JPI on 'healthy and productive seas and oceans' was launched in 2011. Its SRIA was adopted in 2014 and the implementation plan in 2015. The UK (Defra) provides the current Chair. The Vice Chair is from Spain (MINECO). The Brussels-based Secretariat is hosted by Norway (with

secondments from other countries). There are 21 members (from EU MS and associated countries) and one observer. The Commission is a non-voting member and supported one CSA (2012-2015). A second CSA was approved in 2015 (to implement the SRIA) and an ERA-NET Cofund action on marine technologies is proposed in the 2016 work programme.

JPI Climate (Connecting Climate Knowledge for Europe)

The JPI on 'connecting climate knowledge for Europe' was launched in May 2011 when the previously developed SRA was adopted. An implementation plan was subsequently developed in 2013. JPI Climate has 14 full members (EU MS plus Norway) and two associated members. The Chair is currently held by France and the Vice Chair is from Denmark. Finland, Germany and Norway previously held the Chair and Vice Chair positions. The Commission is a non-voting member and supported the set-up of JPI Climate activities by means of a CSA. An ERA-NET Cofund action started in January 2016.

JPI UE (Urban Europe)

JPI Urban Europe was launched in 2011 and adopted its first SRIA towards the end of 2015. Austria provides the current Chair. Netherlands provides the Secretariat. There are three Vice Chairs (from Netherlands, Sweden and Italy). It has 12 member countries, six observer countries and some dissemination partner countries. The Commission is an observer and has supported with a CSA and an ERA-NET Cofund in 2014. A second ERA-NET Cofund (Smart Urban Futures) was approved in 2015. A second CSA and a third ERA-NET Cofund action are proposed in the 2016/17 work programme.

3.2 Investment in Joint Calls

Each of the JPIs provided data on calls launched (and planned) to allow analysis of these in terms of committed budget and actual spend by country. This section provides a summary of the data available at end of December 2015.

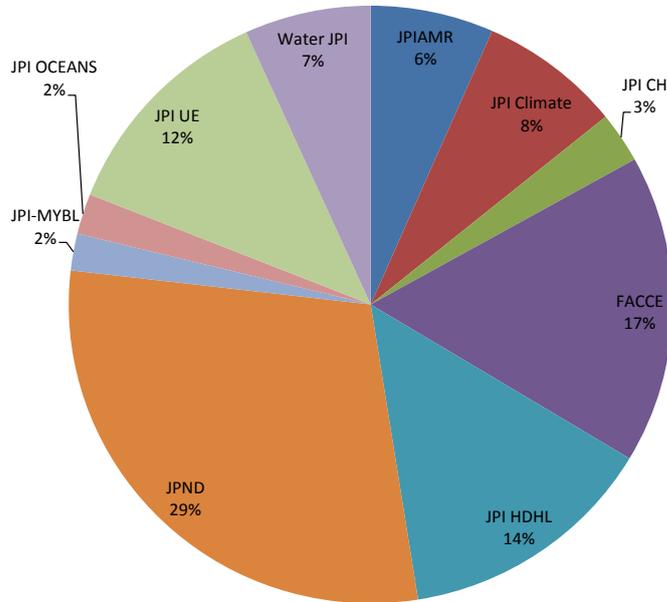
The JPIs have together implemented 32 joint calls (with a call closure milestone before the end of December 2015). Only two JPIs had not completed the 2015 call evaluation by this date and so two sets of actual call investment figures are missing from the analysis.

The distribution of annual calls, since 2011, shows that the most of the JPIs did not really start implementing joint calls until 2014/15. All JPIs, except Cultural Heritage, implemented calls in 2015.

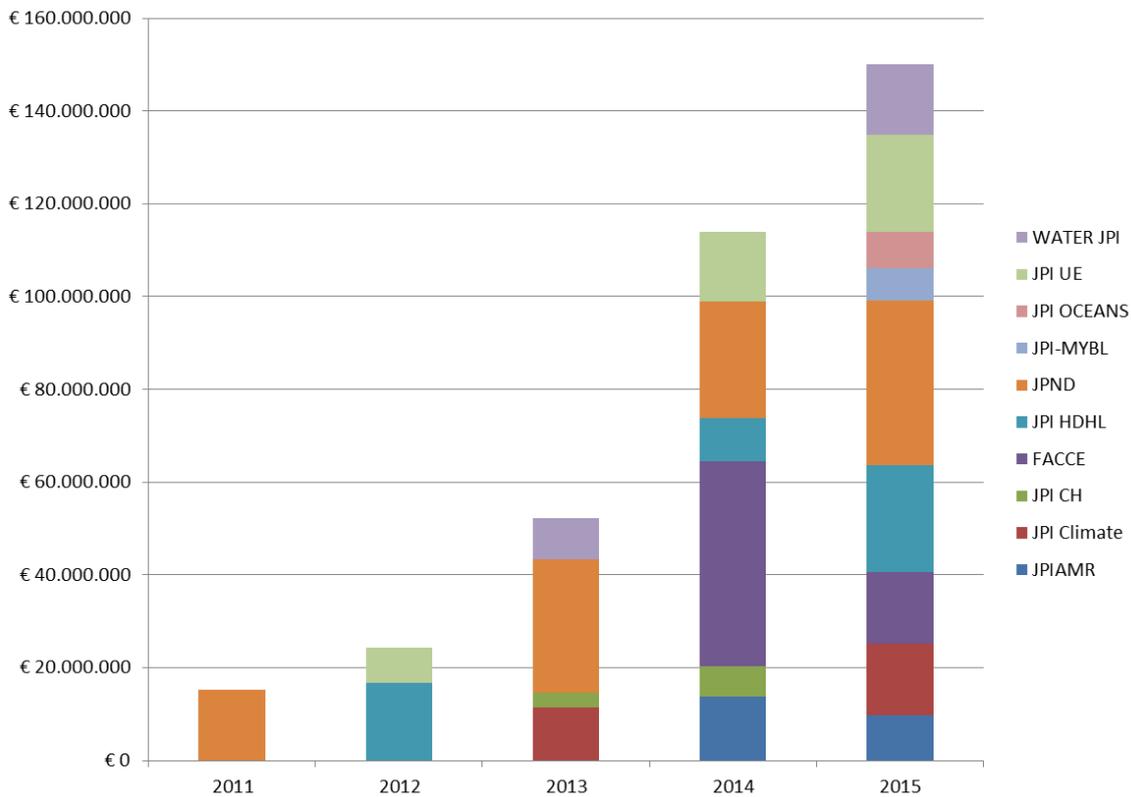
The cumulative financial commitment (post evaluation) to the end of 2015 was more than EUR 355 million. If the pre-call budgets for the scheduled calls that will close in 2016 are added then the figure rises to around EUR 500 million. The move towards JPIs using the ERA-NET Cofund instrument to implement joint calls seems to have provided an impetus for more joint calls due to the added incentive of EU co-funding.

When looking at the overall financial commitments to the JPI calls, we can see (in the pie chart below) that JPND has invested most so far with FACCE not far behind. JPND was, of course, the first one to be launched and so has had more time to mobilise joint calls. FACCE was one of only two JPIs to take advantage of the FP7 ERA-NET Plus instrument.

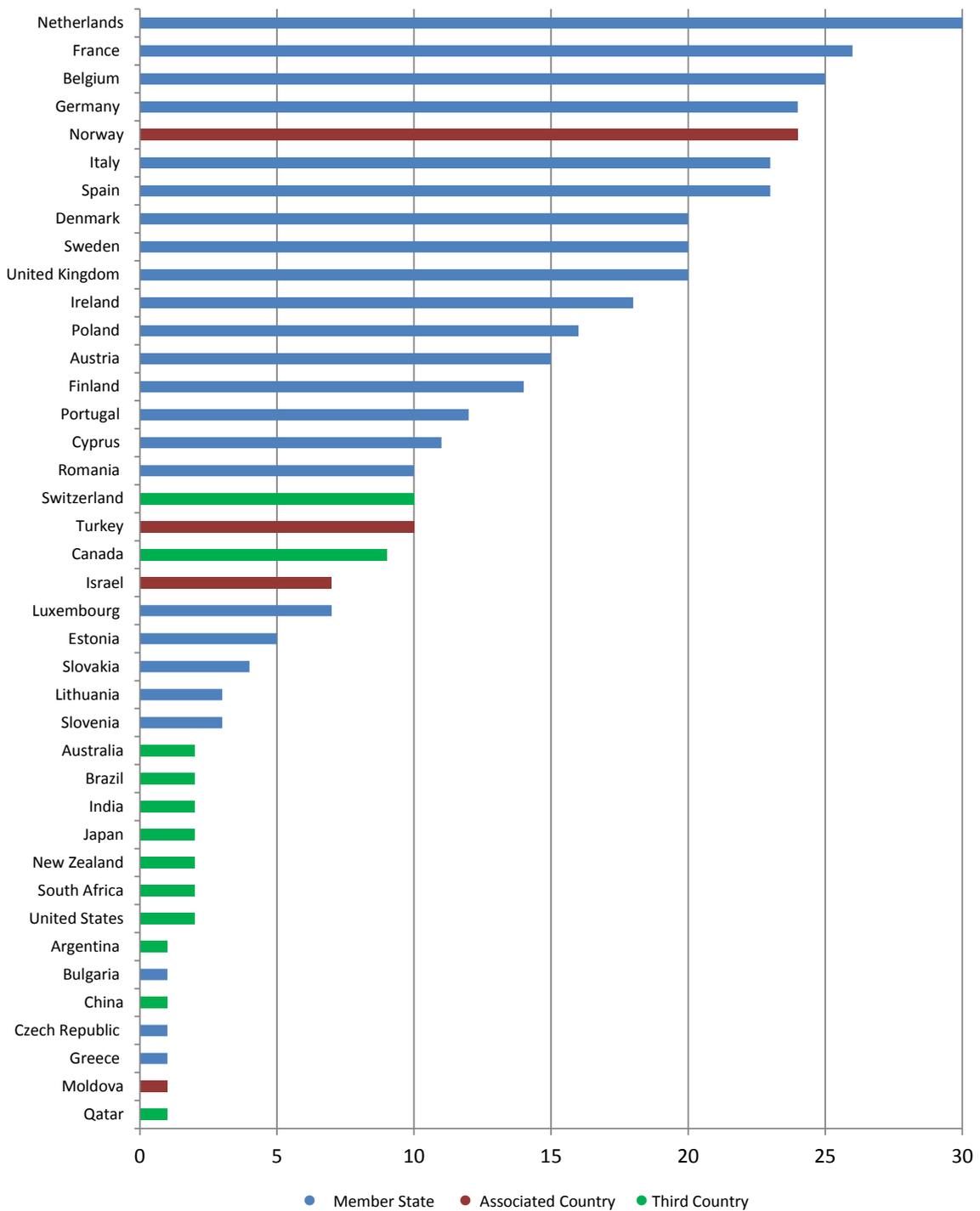
	2011	2012	2013	2014	2015	Total
JPIAMR				1	1	2
JPI Climate			1		1	2
JPI CH			1	1		2
FACCE				4	1	5
JPI HDHL		1		2	4	7
JPND	1		2	3	1	7
JPI-MYBL					1	1
JPI OCEAN					1	1
JPI UE		1		1	1	3
WATER JPI			1		1	2
Total	1	2	5	12	12	32



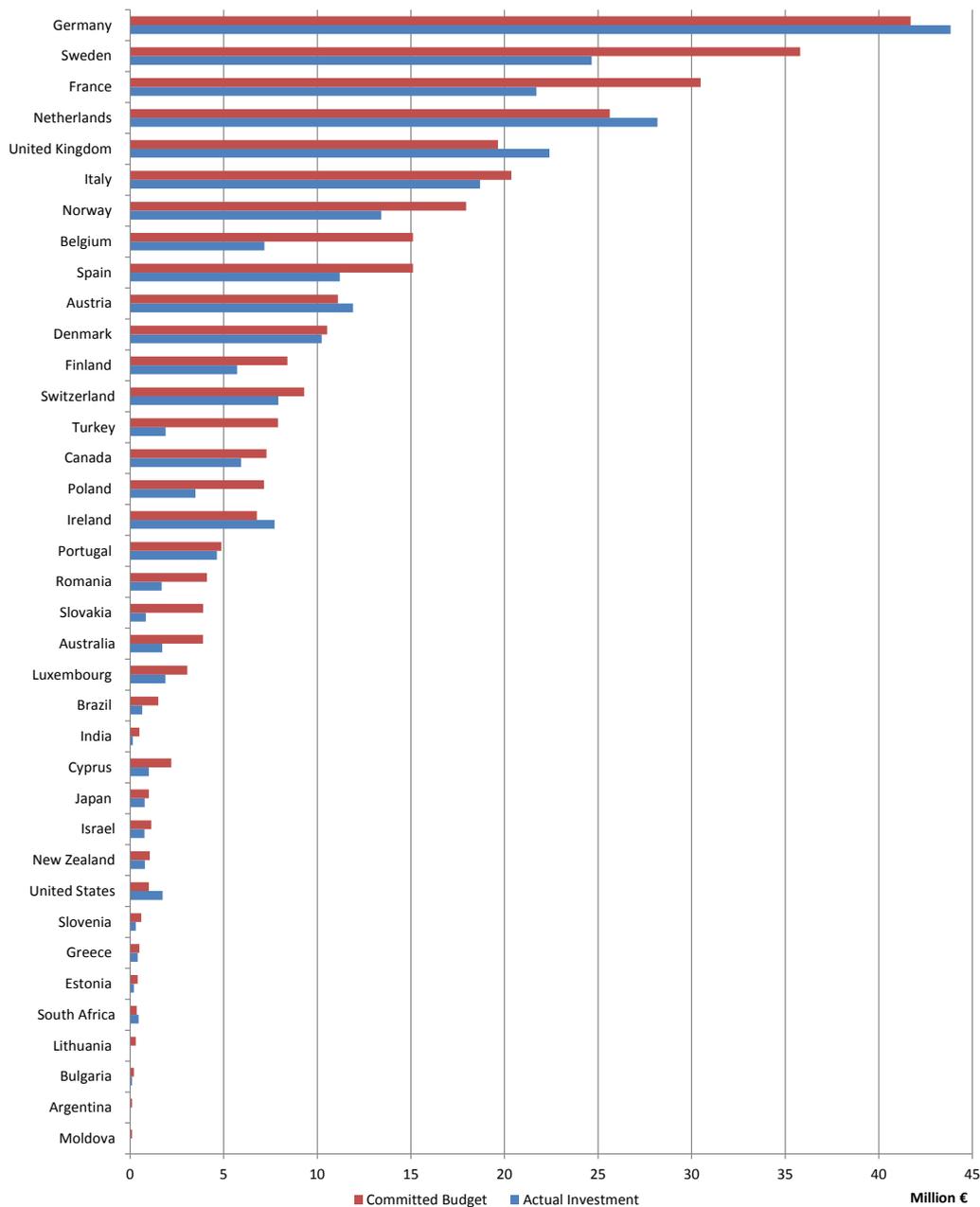
The actual investments can also be broken down by year to show how each JPI has contributed to the overall spend to the end of 2015. Based on forward forecasts it seems likely that the aggregated annual investment in 2016 will be greater than for 2015. One of the interesting features of the forthcoming calls is the emergence of joint calls that involve more than one JPI. The predecessor for this was the collaborative joint call between FACCE and BioDivERSA.



The Netherlands has been involved in all but two of the calls closed to date. The spread of country participation is shown below with associated and third countries distinguished to indicate their participation in JPI joint calls. The relatively high commitment of Norway, which participates in all 10 JPIs and has a highly supportive national structure, is particularly clear.

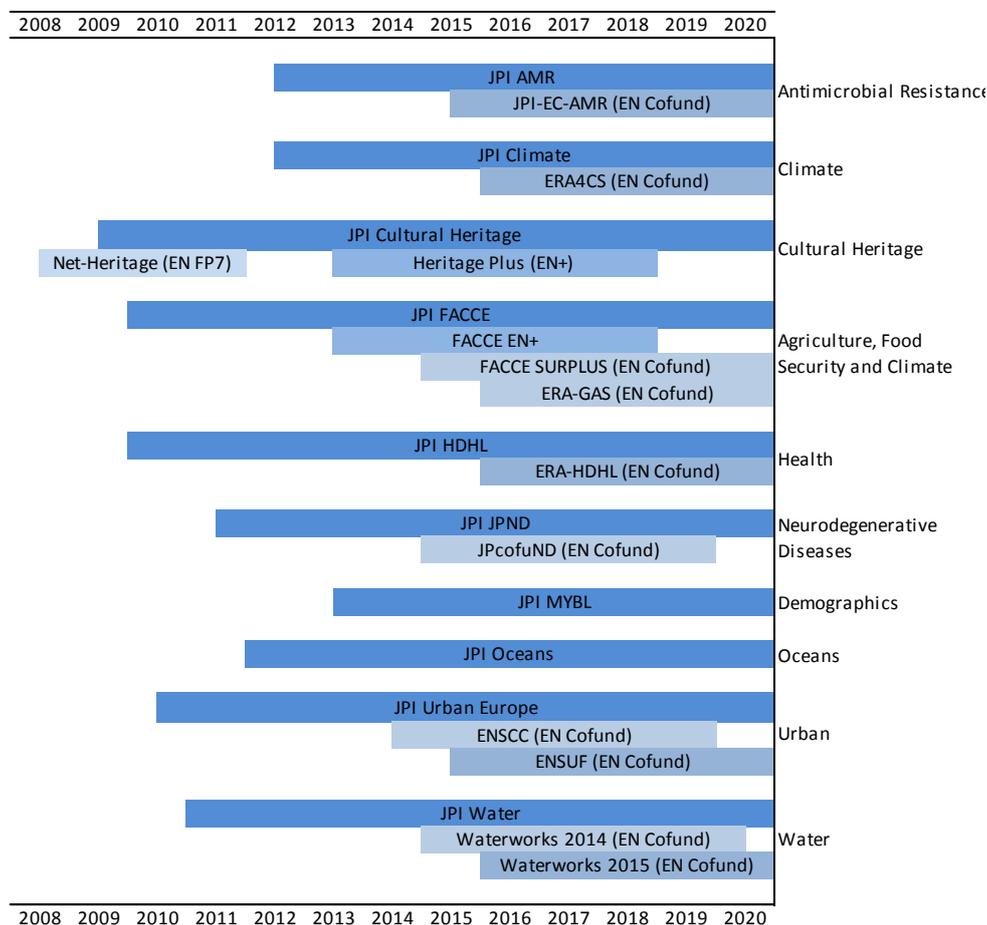


Another interesting statistic from the joint calls is the difference between pre-call budget commitments and the actual investment following the evaluation of submitted proposals. This is shown below by country for those calls that closed by the end of 2015 and includes all but two of the 32 calls that had been implemented to the point of project funding decisions. In general, the normal unfavourable gap between pre-commitments and actual spend is apparent for most countries. This is a direct consequence of the preferred virtual common pot funding model, as the extensive experience of ERA-NETs has demonstrated. What is particularly noticeable is that some countries (e.g. Germany, Netherlands, UK, Austria, and Ireland) have apparently invested more than their pre-committed budgets, which is very encouraging in terms of commitment.



The ongoing situation will be monitored by the ERA-LEARN 2020 project, which produces an annual report on all of the P2P networks including ERA-NETs, Article 185s and JPIs. The 1st of these annual reports is available on the ERA-LEARN 2020 website.

The JPIs have all received financial support for their executive activities through Coordination and Support Action (CSA) grants from either FP7 and/or Horizon 2020 as mentioned in Section 3.1. They are also now taking advantage of the Horizon ERA-NET Cofund instrument. The extent to which they have already used the FP7/H2020 ERA-NET instruments with EU co-funding is shown below.



Additional ERA-NET Cofund topics for JPIs are included in the forthcoming Horizon 2020 work programmes for 2016-2017.

3.3 Other 'P2P' networks aimed at addressing societal challenges

Whilst they do not have the status of JPIs, there are a number of other P2P (public-to-public) networks that are mature (in terms of longevity and use of multiple instruments) and also aimed at addressing societal challenges. Four of these were proposed by the Commission Services and agreed by the Expert Group to be included in this review for comparison purposes. The logic was that these could provide reference models to compare the JPIs with good practice P2P networks and might offer some lessons for the future.

The main facts for each are summarised with a more detailed qualitative analysis in **Appendix D**.

Biodiversa

Mature P2P network that started as an ERA-NET coordination action in 2005. It has 18 member countries (mostly EU Member States plus Norway, Switzerland and Turkey). Current Chair and Secretariat is from France with Vice Chairs from Belgium and Sweden. Latvia is an observer. The Commission has supported with ERA-NET CSAs in FP6 and FP7 plus a Horizon 2020 Cofund action for 2015-2020.

E-Rare

Mature P2P network that started in 2006 as an FP6 ERA-NET. Coordinated by France (ANR), it has 17 country members (including Canada). Germany (DLR) provides the Chair and Netherlands (ZonMw) the Vice Chair. The Commission has supported through FP6 (2006-2010) and FP7 (2010-2014) ERA-NETs and an ERA-NET Cofund in Horizon 2020 (2015-2020).

Metrology Article 185

This P2P network is in its fourth phase. It started with an FP6 ERA-NET (iMERA), then FP7 ERA-NET Plus (iMERA Plus) before developing into an FP7 Article 185 (EMRP). The current phase is a H2020 Article 185 known as EMPIR, which was launched in 2014. It has 27 member countries and one

observer (Greece). Finland has taken over the Chair from Germany. The secretariat is based in the UK. The Article 185 is implemented under a legal entity (registered in Germany) known as EURAMET e.V. The Commission has supported each development Phase (CSA, EN Plus, FP7/Art.185, H2020/Art.185)

SET Plan

The Strategic Energy Technology Plan (SET Plan) was launched in 2008 and is a Commission-led initiative that aims to integrate the resources of the EU, Member States and industrial/research actors towards the development of key low-carbon technologies. The Commission provides the Chair (co-chaired by DG RTD, DG ENER and the JRC) and the secretariat.

4. STAKEHOLDER PERSPECTIVES

4.1 JPI Management

The 10 JPI Chairs were interviewed on the basis of the same qualitative framework. In addition, interviews were also carried out with management representatives from the selected four other P2P networks (BiodivERsA, E-Rare, Article 185 Metrology, SET Plan), which are also aimed at helping to address societal challenges. These interviews provide a qualitative view on the way JPIs are implemented, their impact, their difficulties and their vision of the future.

The 10 JPIs launched since 2009 have reached different level of progress. Their answers often depend on their level of maturity. They have all developed a Strategic Research Agenda (SRA) and are now moving forward, in various ways, with their implementation plans.

The descriptive analysis below highlights the main concerns that the JPIs have expressed in the interviews, comments on how they view their impacts and identifies the success factors that they mention for their action as well as the main risks they are facing. Some also made suggestions for the future.

Main concerns that all the JPIs share

All 10 JPIs are concerned with societal challenges. This means complex and large questions, involving many actors. They all emphasise that such a process takes time. After several years of implementation, they are at a point where most of them have determined their strengths and capabilities and identified their needs for structuring and eliminating unnecessary overlaps. They have built their governance structure, established their SRA (or SRIA including innovation) and have launched or planned calls as well as other joint actions. Whilst the situation appears to be improving there are still some concerns about trust building between the members, and the governance, to enable robust and consensus decision making processes.

The main concerns expressed by the JPI Chairs include:

- **The commitment of the member countries.** Most of the JPIs are very concerned about this issue, raising the importance of having an effective and stable support structure. Eight JPIs highlight a risk of heterogeneity or discontinuity of support from national members, due to political or financial issues, and five of them mention that the level of the representatives can lead to delays in decision making
- **The role and position of the European Commission.** The JPIs feel a global political support from the Commission, but five of them express disappointment about the lack of alignment with the relevant H2020 programmes, or a lack of coordination with other instruments inside H2020 (infrastructure, Marie Curie...), or in other priorities (structural funds).

“The Commission should politically strongly support the JPIs and give them the visibility of real partners in order to reinforce their impact on national research programs” (MYBL)

- **The strong need to involve end-users.** This is natural when facing a societal challenge. The JPIs tend to express this common need in different ways, considering the nature of their challenge and the type of stakeholders that they have. How to involve industry is an important question for eight of them, but most still wonder what would be the best way. There is a concern for some that is related to their desire to have a strong participation from industry whilst being cautious about potential commercial conflicts of interest. Some JPIs have involved end users in specific governance structures, such as an advisory board. Others involved them as actors that made a contribution to building the SRA (or SRIA). Another (non-exclusive) option is to involve them in actions when the participating countries have the possibility to finance them
- **Sustainability of their action.** This includes both the commitment of national members and the tools and funding provided by the Commission. The most mature JPIs have even considered the option of establishing a legal entity to stabilise their organization and possibly qualify for sustained EU support via an Article 185 initiative.

“The ability or willingness for the MS to pay a fee is not 100 %; one of the main problems that we have to face is having the resources to maintain the JPI running.” (AMR)

Finding research-driven solutions to major societal challenges is the main function of the JPIs. In the way the research actions are implemented, most of them do not consider that there is a real trade-off between excellence and facing societal challenges; excellence is often a pre-requisite, a criterion to assess projects.

“The only way to find solutions is to fund excellent research” (HDHL).

A main issue is to build trust and trigger interest between various actors, and link “excellence in science” and “excellence in sectorial implementation and decision-making” in a continuum. (Climate)

The way the JPIs see their own impact

Considering the impact of the JPIs, apart from the production of their SRA/SRIA, the following were mentioned:

- **Alignment of research and policy.** This can be considered at several levels :
 - JPI as a promoter of ideas. The **SRA/SRIAs** are a real outcome of the JPIs, demonstrating their ability to express a common vision and strategy. This is the basis of all subsequent actions, at both European and national levels. Establishing the SRA and then updating it has generally been the main output of the first years for the JPIs
 - **Structuring of research in member countries.** Some countries are leaders in a given JPI, based on strong national programmes. Others are influenced by the JPI actions and achievements i.e. the structuring of research in the given field has evolved from bottom up to **structured dedicated programmes** (initiation of national programmes), **aligned with the SRA, or via alignment of existing programmes. This is the main trend for members of JPIs,** but two JPI Chairs complained that still some countries consider JPI actions as their international cooperation policy, different from their national policy. It seems, however, to be a marginal point of view. Eight of the 10 JPIs consider that the SRA has influenced the national programmes
 - **Actions other than research.** Some JPIs are also active in fields other than research, e.g. standardization, communication, sharing common resources, sharing information on policies, etc. but only three mention these activities as being a result of the JPI action

“Alignment and common research goals to share do not necessarily imply joint calls!” (AMR)

“JPIs are mini-ERAs” (FACCE)

- **More and better research.** The JPIs **stimulate a large mobilisation of disciplines** within research organisations and universities. Participation helps to gain access to project results and increases the national focus on the topic. Five JPIs consider that their existence has raised political concern and has given a new momentum to research in the field covered by the JPI, giving a stronger capacity to address **transboundary questions** and

to solve problems. Two of the more recent JPIs consider this to be a result of the exchange of information and networking.

“JPIs can help to provide an underpinning science base to support policy development and implementation”. (Oceans)

- **World leadership.** The international dimension, and the attraction of non-European countries for cooperation to face a societal challenge, is an important issue for most of the JPIs. It makes Europe an attractive collaborative partner for leading research countries like the USA and Canada. Three JPIs also mention, as an important impact, the capacity they have to represent European players towards the international community in the field (e.g. climate-related actions with the Belmont forum)
- **Joint Capacity Building.** This includes sharing capacity, knowledge and expertise and joint resources for some of the most advanced JPIs. The most mature JPIs consider that pooling infrastructures and networking facilities, or opening national resources would be an important impact of the JPIs, though not really widely achieved yet

“The JPI can be considered as a “game changer”. Many achievements could not have happened 2 – 3 years before, without the JPI. We need a trust-building instrument from the Commission” (Urban Europe)

Success factors

The main success factor cited by all JPIs, as mentioned before, is the **involvement of stakeholders**. Industry is mentioned by all of them and end users for scientific or non-scientific actions by four. Mostly they are involved in establishing the SRA/SRIA or in specific Stakeholder Advisory Boards (SAB). At least two JPIs mention an evolution of their SAB to introduce industrial actors.

“We need to ensure that the JPI maintains its independence as a public-public partnership whilst at the same time working with industry to understand the innovation challenges they face and how research can inform solutions to those challenges.” (HDHL)

“We have to develop initiatives to break the wall with public and private stakeholders around common object of interest.” (Climate)

The objectives of the JPIs imply a **strong political support and commitment from member countries**. Eight of the 10 JPIs consider this to be a critical issue. Globally, the involvement of the member countries is considered by them as quite good, at least considering (qualitatively) the attendance at the governing boards. However, considering the long term issues that JPIs are facing, and the time it takes to implement actions, a critical issue is the **stability of that support and commitment from Member States**. The governance of the JPIs is quite sensitive to **political crisis** (e.g. Switzerland, Greece), which could lead to a long term absence of one actor. The need for the stability that JPIs are seeking is one of the reasons why two of them are considering the creation of a dedicated legal entity.

On a secondary level, four JPIs explained that they had not been able to take decisions during the board meetings due to the **inability of some representatives to take decisions on behalf of their countries**. Most of the JPIs now have procedures to avoid this situation, such as a steering committee providing advance notice of decisions to be taken so that when the topic comes to the board the members have already prepared their position.

In addition to the political will of participating countries, a **robust national structure** is often needed, particularly for bigger or more complex countries. Some of them have organized themselves to consider their own national complexity (mentioned by three JPIs). Some challenges

concern several ministries at the national level that can have difficulties in adjusting their positions. Often several institutions (research organisations, funding agencies, etc.) are involved. Mirror groups have been established in some countries to engage, at the national level, with all the relevant actors.

In terms of the support that the JPIs need, the **role of the Commission** is regarded as an important one. The Commission has, of course, played a key role in launching the Joint Programming Process and by supporting the High-Level Group on Joint Programming in developing Guidelines for Framework Conditions to be used by JPIs and also its Working Groups. At the implementation stage, the Commission role should, of course, be different. The JPIs are generally complimentary about the support from the Commission but seven of the 10 JPIs express a desire for stronger or different support. They make additional comments about insufficient interaction and coordination with H2020 programmes; several of them (e.g. JPND, Climate, and HDHL) complain that the priorities of H2020 do not take into account the SRAs, which can seem paradoxical when you consider that SRAs are the main tools to align research policies. In several cases this seems to be person-dependent and has progressed with time. Further, the interaction and coordination with other instruments is weak too.

“A great effort for the establishment of the JPIs was made and now during the implementation phase their full advantage is not taken enough by the EU.”
(CH)

“There is a need for a long-term agreement with the EC, not on a yearly basis. This would ease the longer term engagement of JPI members and allow to switch to less administrative burdens (annual meetings and reports for each instrument) to more concrete JPI actions” (Water)

On a more pragmatic note, the support of the Commission, via funding CSAs to partially support the executive resource that is needed to implement a JPI, is much appreciated. JPIs would like the instruments of the European Commission to be more stable in time. Some have the feeling of a permanent re-invention of EU instruments (e.g. first ERA-NETs, then JPIs, then ERA-NET Cofund and, more recently, FPA and EJP). The most important issue for them is the flexibility of these instruments and to be able to adapt them to the specificities of the challenges they are facing (mentioned by two JPIs). Support from the Commission is also mentioned by two JPIs to be important beyond research actions (e.g. how can the work of the JPIs support the design and implementation of EU Directives).

“The JPIs are in a good position to influence and propose standards. The Commission could encourage this and better utilise the JPI Instrument to support the design and implementation of Directives.” (Oceans)

Four JPIs mention the **coordination with other European and international initiatives** in the field as a success factor. The complementarity of the instruments is, in their opinion, balanced by the risk of building another level of fragmentation.

“Cross fertilisation with other JPIs is very important and should be increased”
(MYBL)

“There is a strong fragmentation between the various European initiatives dealing with Climate, all more or less with positions defined by MS, but coming from different national actors participating in various boards. A structural

coordination should be promoted at both national and European levels to ensure an efficient share of the workload.” (Climate)

Considering their **governance and organisation**, the JPIs have all needed time to get fully ready and settle on their organisational structures and procedures to take decisions. An efficient structure is based on a good **secretariat**, and the support of the Commission through an initial CSA is acknowledged. Such a structure, neutral considering the various partners, gives rhythm to the actions of the JPI, and formalises the relation between the coordinator and the members. With time, and the implementation of activities, the level of trust is rising between them.

Another important issue for building trust in a consortium is the **balance in the governance**. The first JPI made the choice of having an equitable one country = one vote policy, which has avoided some conflicts for them and other JPIs. It prevented the agenda being driven by only a few partners.

Risks and threats

The main risk in the long term for the JPIs is **the lack of long term commitment of the Member and Associated States** (mentioned by 7 JPIs). Several of them, as mentioned before, faced political crises (e.g. Switzerland, Greece). Dealing with this kind of crisis can weaken the governance of JPIs.

Another issue regarding commitment of the participating countries is the level of representation that they have in the JPI governing board. Over time, considering staff turnover in ministries and the different phases of the life of a JPI, there is a real risk of delegation leading to a lower level of national representation in these structures. The ‘older’ JPIs underline the fact that having a relative stability in the representatives of the participating countries strengthens the ability to take decisions quite rapidly.

“To have funding and strategical decisions taken, we had to build and maintain trust within countries and to pay a lot of attention to the national internal circuits and actors”. (JPND)

Another issue related to decision-taking issues in the JPIs is the ability of national representatives to have a consolidated position so that they can act on behalf of their country. Very often, the decision making process relies on input from several ministries and/or other national stakeholders. Building a consolidated position can, therefore, be a rather slow process. If this is too long, or not efficient, the representatives are unable to express clear positions when a decision needs to be taken at the JPI level. The same issue occurs in reverse when there is a need to apply a decision taken within the JPI level at the national level.

“Some countries have mirror groups at the national level to prepare their positions; they should all do this to make the decision process more rapid” (HDHL)

“Each country was required to improve the dialogue among their national ministries i.e. Ministries of Research, Innovation and Culture.” (CH)

Not being able to share infrastructure is a risk mentioned by six of the 10 JPIs. They all need infrastructures, databases, networks and platforms and consider it as a necessity to attract research talent. Two JPIs mention the Commission as being able to help at that level and one JPI has strong concerns about the real willingness of Member States to move in this direction.

Another risk that JPIs have to face, but not all of them mention it, is **excessive administration** (explicitly mentioned by four JPIs). The typical processes to implement joint actions and take important decisions can be quite bureaucratic. In contrast, they claim that once a decision is taken

it is very stable. Two JPIs comment on this point indicating that the transaction costs of trust building is very high.

Among the threats that JPIs have to face, a particularly important one is the **reduction of funding at both the Commission and national levels**. It is mentioned by several JPIs but this issue does not come first. Public resources, including R&D funding, are under pressure in most countries. The economic context leads to more extreme levels of prioritisation and resource allocation with the result that JPI actions compete with other actions at the national level. The political pressure at the national level can lead to choices made in favour of national actions rather than stronger involvement in JPIs.

The recommendations that the JPIs express

The consultations with the JPI Chairs also allowed them to communicate some recommendations and/or suggestions for the future at different policy levels:

JPI Level:

- Shorter decision processes inside the JPIs (several have solved this problem)
- More coordination with other initiatives :
 - Between JPIs on connected issues and sharing good practices
 - With other European initiatives on similar issues
 - Connections to international initiatives in similar fields
- Better interaction with end users (influential societal actors, industry, etc.)
- Education: training is important to raise new generations of researchers oriented towards European collaboration and interdisciplinary research
- SRA/SRIA: 5-10 years vision/strategy; develop shorter terms implementation plans and monitor them

National Level

- More coordination at the national level = more impact. Member countries have a strong responsibility in the future success, or not, of JPIs
- Consider the involvement of regions for some issues

Commission Level

- JPIs feel that their SRA/SRIAs and Horizon 2020 should complement each other more and that Horizon 2020 programming should be more coordinated with them. This should go beyond thematic actions and include infrastructures and some Marie Skłodowska-Curie Actions (thematic networks). There should also be more consideration of the JPIs for the Structural Funds
- Promote indicators :
 - considering alignment of national programmes, not only cash funding but also including in kind involvement in ERA-NET using institutionally funded research resources
 - a grid and markers to qualify the excellence of JPI to be able to compare them and monitor the processes
- Stable, or customized, instruments that allow better support to implementation
- Common platform for exchange of information including the Calls of the different JPIs and other ERA-NETs
- Permanent support, rather than a series of CSAs: 'glue money' for bringing some partners together for meetings and joint activities (important for small countries and the newer EU Member States)

Subsequently, and taking the opportunity of the December 2015 high level conference, entitled 'Lund Revisited: Tackling Societal Challenges' the Chairs of the 10 JPIs issued a joint Statement on what they believe is needed. The complete text of the Statement is included below.

**Statement of the 10 Chairs of Joint Programming Initiatives
for the LUND Conference 2015 in Lund, December 4, 2015**

Since the first LUND Declaration in 2009 publicly-funded research activities in Europe have increasingly been focused on the grand challenges such as health, food, water and energy supply, climate change and societal transformation. The Joint programming initiatives (JPI) which have been created to help tackling these grand challenges of our time have proved to be valuable instruments by fostering the effectiveness of national research programmes and jointly linking up the whole research and innovation chain while leveraging available resources to create a critical mass.

Beyond the considerable progress¹ accomplished during their first phase of the JPIs there are still barriers to break down in order to improve the conditions for transnational research collaboration, to move towards more aligned research systems. Within this process JPIs will continue to strengthen the momentum supported by Member States (MS), Associated countries, the European Commission (EC) but also research community, private sector and the civil society in order to enhance Europe's ability to generate solutions for complex societal and multidisciplinary issues.

The 10 JPI Chairs² propose to consider the following items with relevant actors of MS and EC to spread the "joint programming process" in coming years and improve significantly its leverage and long-term effects.

- **Overall/Increase commitment and cooperation of each 28 MS** and associated countries to Joint Programming in order to be in line with the ambition to jointly face complex societal challenges;
- **Overall/Simplify and shorten interactions between EC and JPIs** to forge complementary and mid-term planning visions, including new multilateral funding instruments or adaptation of existing instruments to develop sustainable long-term partnerships and agreements within and beyond H2020;
- **Overall/Reduce operational bureaucracy** between the various networks, and have key actors that have sufficient level of representativeness.
- **Alignment/Promote proactively within each 28 MS**, the awareness, visibility, attractiveness and legitimacy of JPIs throughout the different layers of a diverse research system (Ministries, Heads of research funding or performing organisations, incl. Universities, Heads of key research Departments or Institutes, Research Communities, etc.) in order to reinforce commitment;
- **Alignment/Align key national actions of each 28 MS** where most useful, incl. research infrastructures, mobility, capacity building, databases, organisation incentives, i.e. beyond an approach which would only focus on transnational calls and research funding organisations alone;
- **Alignment/Develop European synergies for knowledge based solutions and policies**, where relevant, with EC Directorates-General³ beyond Research, Science & Innovation and with others European initiatives⁴, as well as with European Council and Parliament.
- **Global/Favour international opening of JPIs**, because challenges are Global, including cooperation with G7, emerging countries and regional initiatives (e.g. Africa, Latin America, Mediterranean area, Asian subregions);
- **Global/Ensure a better international coordination** between JPIs, MS bilateral cooperation, EC Directorates-General and ERAC (GPC and SFIC) for strong international leadership, incl. large scale programmes and infrastructures, and global attractiveness of Europe.
- **Frontier research/Extend ERC support to collaborative and multidisciplinary teams**, as ad-hoc synergy grants, to tackle complex issues with a strong potential for a new generation of innovations for a new generation of innovations in 2020's related to societal challenges.
- **Impact/Generate evidence, solutions and implementation for Europe**, so that stakeholders can share Europe's response with the world and contribute to the UN 2030 Agenda for Sustainable Development;
- **Impact/Exchange and disseminate continuously the best practices** of the JPIs and of the each 28 MS, with a strong emphasis on their added value in terms of evidence-based solutions and actions, as well as on involvement of users and policy makers needs in research planning.

¹ incl. planning, strategy, funding, programme, alliance, network, evaluation, reporting, training, infrastructure, dissemination

² Ph. Amouyel, P. Byrne, N. Goetke, M. Héral, C. Montgomery, A.P. Recchia, P.M. Rossini, I. Schaedler, M. Ulfendahl, P. Monfray

³ e.g. REGIO, AGRI, CLIMA, CNCT, EAC, ENER, GROWTH, ENV, DEVCO, MARE, SANTE

⁴ e.g. ETPs, EIPs, EIT, ESFRI

4.2 National Stakeholders

National policy stakeholders were consulted through an online survey and selective interviews. Survey responses were received from 33 countries and the analysis is included in **Appendix B**. The descriptive analysis below draws on both the quantitative evidence and also qualitative feedback from interviews.

One of the observations that can be made from the available evidence is that the EU Member States and Associated Countries that are participating in JPIs can broadly be grouped into three main categories as follows:

- **Group A (Leaders).** This group is participating in most of the JPIs and active in most of the joint calls with relatively high budgets, at least compared to the other two groups. They may also make a relatively high in-kind contribution to the leadership of JPIs (and/or the GPC) through providing management resource and/or participating in specific activities. The countries that can be included in Group A are: Austria, Belgium, Denmark, France, Germany, Ireland, Italy, Netherlands, Norway, Spain, Sweden and the UK
- **Group B (Selective Players).** This group is generally more selective in its participation but is clearly active when they do so. Their investment is relatively high compared with their size and national public expenditure on R&D but still less than what was expected when JPIs were created. Again, they may also be active in JPI/GPC management and/or leading joint activities. The countries that can be included in Group B are: Cyprus, Finland, Israel, Poland, Portugal, Romania and Turkey
- **Group C (Marginal Players).** This group is either only involved in one or two JPIs at most (Croatia, Hungary and Malta are not full members of any JPIs). Their participation in calls is very low and with small budgets. They do not normally participate actively in management or other joint activities. The countries that can be included in Group C are: Bulgaria, Croatia, Czech Republic, Estonia, Faroe Islands, Greece, Hungary, Iceland, Latvia, Lithuania, Luxembourg, Malta, Moldova, Serbia, Slovakia and Slovenia.

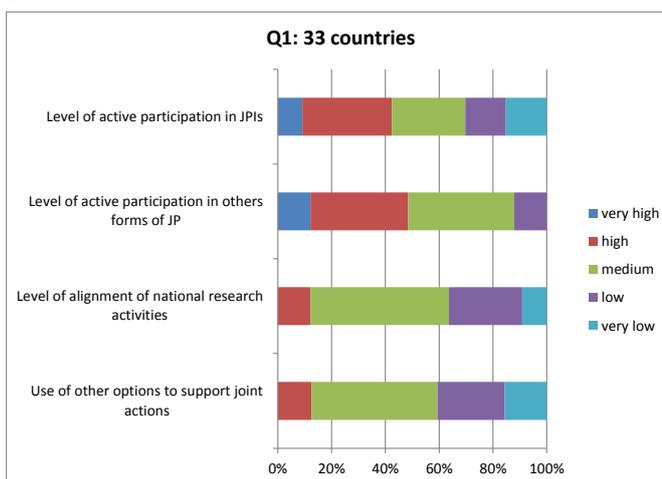
The comparative graphs of feedback from the online survey in Appendix B includes the three country groups above as well as the more traditional segmentation into EU15, NMS (newer Member States) and non-EU countries. This offered some interesting insights and these are included in the descriptive analysis below.

Commitment to Joint Programming

The survey indicates that less than 50% of the 33 respondents consider that their country is actively participating in relevant JPIs at a high level but there are clear differences between the three country groups (A, B and C).

In most countries the decision on participation seems to be taken by a Ministry; only two exceptions were found in interviews, Turkey and the UK, where decisions on participation are taken by the research councils, which also underline the political importance of JPIs.

Commitment at the moment seems to be mainly understood as funding and "changes done at the national level" including e.g. developing a strategy/roadmap or creating structures for coordination. Germany is one of the countries with a high commitment.



“Germany’s commitment towards JPIs is very high. We have developed an ERA roadmap that, among others, monitors at the national level our participation and impact into JPIs” (Interview, Georg Schütte, German State Secretary for Research)

High commitment is also evident in Sweden where a common policy for all JPIs is being planned.

- **Funding:** EU15 countries are dominating the group that has spent a significant amount of money on JPI Joint Calls so far. At the other end most of the newer Member States have spent less than €5m in total. Some of the smaller countries like Austria, Belgium and Norway have demonstrated relatively high commitment to Joint Calls.

For the countries in Group C (Marginal Players) the problem seems to be connected to availability of funding (comments given in survey). France, being in Group A (Leaders) expresses very strong commitment to the JPIs, but is also expressing difficulties in prioritisation of JPIs in a period with limited resources. Looking at the chart showing planned funding, one can see substantial increases (numbers given by JPI secretariats) from Belgium and Norway. Increases in funding are also seen from Denmark, France, Poland, Portugal, Romania, Slovakia, Spain, Sweden and Turkey. Other countries are stable or decreasing.

The need for long term support to the overhead cost of JPIs is mentioned by several countries, especially from newer member states and smaller countries. Spain expresses high commitment to JPIs, and joint calls, but has difficulty in providing cash for the central overhead costs

“This operations money is more needed than the research funding money that can be more easily allocated to the goal” (Interview, Marina Villegas (Director General for Research) and Joaquin Serrano (Subdirector General of International Projects), Spain)

- **Coordination at the national level:** Developing a coordination body or a structure for handling JPIs at the national level can be considered an important sign of commitment. Countries like France, Sweden and Norway already have or are establishing coordination structures. The Netherlands has a national coordination structure in place, but apparently it has limited institutional power

Alignment

The word ‘alignment’ can easily be misinterpreted. The intention from the expert group was to see if countries have adjusted their national priorities in research or created programmes, based on actions taken up by the JPIs (e.g. developing the SRA/SRIA, calls performed, etc.). The answers from the survey question (level of alignment of national research activities?) seem quite negative, and the interviews underlined that it is too early to make such a conclusion. The need for alignment was, however, mentioned by several countries in our interviews, but definition of the term is not well understood, and no one claims to be doing much national alignment based on the activities of the JPIs. However, we can see that there are intentions of doing so in the future and several interviewees underline the need for the integration of JPIs into the national R&D system.

“What is needed is the initial approach for the JPIs; that they are integrated in the national systems” (Interview, Rupert Pichler, head of unit, Ministry for Transport, Innovation and Technology, Austria).

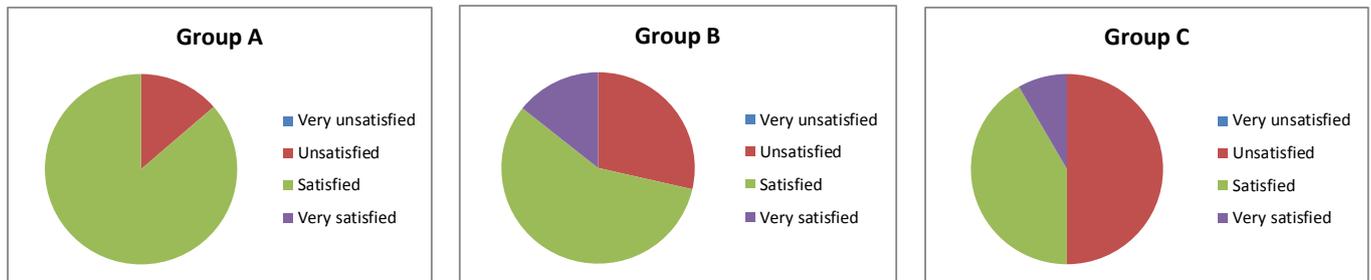
In our survey Portugal comments that "it is important for JPIs to take their place in the national research and innovation strategies as the driving potential for national programmes based on the interests of each Member State...". Norway already had a coordinated structure for national R&D activities but has strengthened it to include the JPIs.

“JPIs and national research programmes are fully integrated – JPIs are not an add-on” (Interview, Kari Balke-Øiseth, Director General , Ministry of Research, Norway).

A few countries also emphasise alignment between JPIs and Horizon 2020 as a need.

Satisfaction level with the JPIS

The national survey asked respondents to describe their country's satisfaction level with the JPIS. Their answers indicate that the majority of countries are 'satisfied' with the JPIS but around 30% indicated that they are unsatisfied. The satisfaction level of the Group C countries (Marginal Players) varies from 'unsatisfied' (50%) to 'very satisfied'. This could be an indication that the JPIS are too orientated towards research excellence and maybe need to engage in more capacity building and/or innovation actions. Interestingly, several of the Group B countries (Selective Players) are apparently 'very satisfied'. The qualitative feedback indicates that the level of satisfaction is dependent on which of the 10 JPIS is being considered.



Comparing the JPIS with P2P instruments under Horizon 2020 (Article 185 initiatives, ERA-NETs...)

The results from the questionnaires indicate that the majority feel that the JPIS are more flexible but also more labour intensive. Demanding governance structures is also mentioned by some countries.

- **Multiplicity of instruments:** The comparison (in our survey) between the JPIS and the other main options for joint programming (using instruments such as Article 185s and ERA-NETs) led to some confusion. The JPIS were, as we know, not only meant to be "another instrument" for transnational cooperation in Europe. However, the understanding of what the JPIS were meant to be varies a lot between countries. But as the survey asked national policy stakeholders to compare JPIS with 'other instruments', we clearly managed to provoke a few into expressing strong messages that such comparisons are inappropriate.

"JPIS are Member-State driven initiatives and as such not directly comparable with Art 185 and ERA-NETs as far as their management and their need to respond to EU regulations and rules are concerned" (Comment in survey, Germany)

Some countries clearly consider the JPIS to be strategic initiatives. One of the other comments given in the survey from Germany was: "the alignment of national resources enables a substantive and structural impact which goes way beyond the mere implementation of transnational calls. Their particular added value is to be found in the joint development of strategic research agendas that serve as reference frameworks at the national as well as European Level". Finland is, in the survey, expressing the view that "we really are urged to simplify the landscape and to combine the best practices to more strategic, critical mass initiatives that both celebrate the excellence and speed up innovation in Europe"

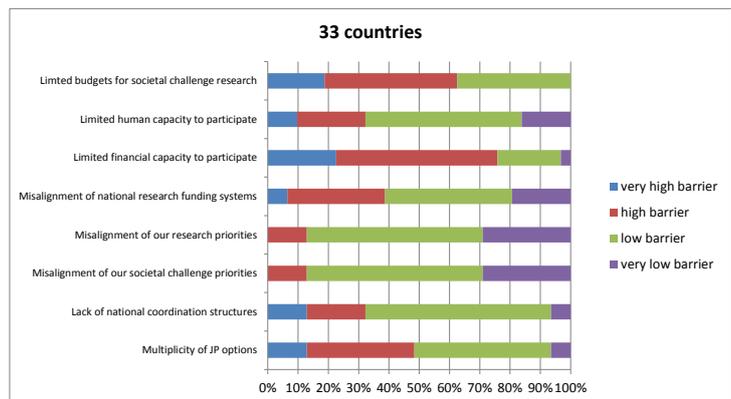
- **JPIS – what were they 'meant to be' compared to other instruments:** As it was written by one country (Cyprus) in their response to the survey questionnaire; "the Joint Programming structure and strategic process allow Member States the flexibility to agree, in a partnership approach, on common visions and Strategic Research Agendas (SRA) to address major societal challenges. Member States commit to Joint Programming Initiatives (JPIS) where they implement together joint Strategic Research Agendas". Finland writes (survey comment): "JPIS should be characterised by focusing on the process of recognising common strategic priorities for RDI funding in different European countries, it is not an

instrument. Developing funding mechanisms have been gaining too much focus and therefore also the political will has suffered. Again, the distinction between other initiatives needs to be clear". Further on, in a survey comment, Finland also states: "A stronger and clearer vision on European added-value and impact is needed. Also, the potentially decreasing research and innovation budget will pose more challenges - but on the other hand it might also create a momentum for any new arrangements where national funding can be leveraged by enhanced European co-operation". Reading the above statements one can spot the original targets and visions for the JPI initiatives

- **More political will for JPIs:** The answers coming from our survey seem to indicate more political will for JPIs, but the comments in the survey and the interviews go in a different direction pointing at e.g. a low level of understanding in Ministries. It is, as the answers in our quantitative analysis indicate, interesting to note the higher level of 'political will' in new member states and non-member states compared to EU-15
- **The JPIs enable synergies to be developed with other funds:** We see a generally low level of participation from new Member States. There also seem to be difficulties, judging from comments given, in using structural funds and other sources to participate in JPIs.

Main barriers that limit participation in joint programming

- **Budget limitations and availability of competitive funding:** Financial barriers dominate the general results from our survey, although a majority of the Group A countries answer 'low barrier' to this question
- **The role of funding agencies:** The consultations with national stakeholders have been mainly at the level of the Ministries. The role of funding agencies has, therefore, not been the main focus of the comments in our survey.



"...Next year, a new agency responsible for the promotion of RTDI will be in place. As a result, we hope that there will be a cultural change and approach of politicians and policy makers and more understanding of the importance of international cooperation, ERA and Joint Programming" (Interview, Karina Angelieva (GPC member), Bulgaria)

Norwegian ministries fund research via RCN (national funding agency) so this makes it easier to coordinate. Many countries only fund research through open calls for proposals with a focus on quality. Funding agencies that have challenge-based programmes enable an easier path to participation in JPIs with a similar focus. Sweden has solved the issue of bottom-up funding by setting aside strategic money.

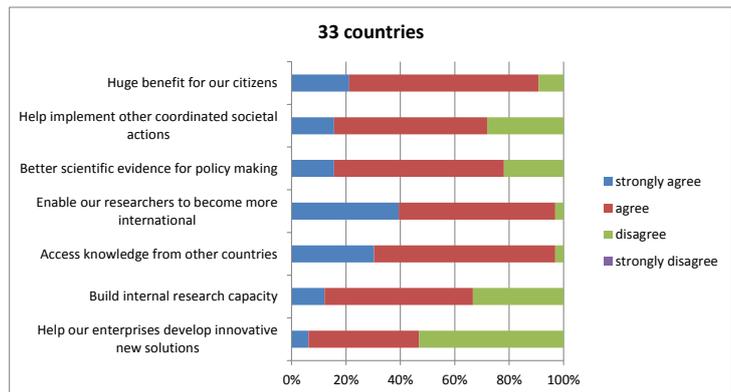
"The typical bottom-up approach of Swedish research councils may seem as a challenge for national participation in JPIs, but the dilemma is solved by allocating money for strategic cofunding of EU collaborations" (Interview, Karin Schmekel, head of unit, Ministry for Education and Research, Sweden)

- **Operational procedures in the JPIs:** Some countries mention different national funding systems as an obstacle in the operational work of JPIs. In our interview with representatives from Spain, they expressed an opinion that; "a serious advance could be produced if the well-known standard H2020 rules for cooperative projects were adopted". On the contrary in a comment in our survey France says "the rules for financial participation must be better adapted to the particularities of each member state".

Benefits of joint programming

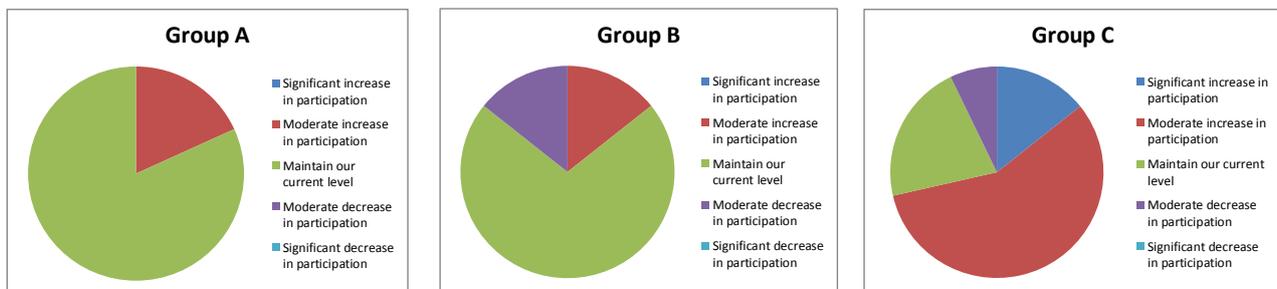
It is still early to expect significant changes resulting from the development of JPIs but, in general, the pattern of responses on benefits was similar across the different country groups.

- On the positive side:** The answers from the survey rates access to knowledge and international research capacity building to be the most important benefits. Relatively lower benefits seem to be expected from innovation (especially for EU MS) and suggests that the orientation of JPIs has been on scientific research so far
- On the negative side:** Most JPI's so far do not support industrial research activities and the involvement of industry thus remains low as many countries are commenting in our survey. Finland comments that "the benefits of joint programming as of today are limited to enhanced forward-looking activities and scientific evidence for policy-decision making at policy level, as well as to enhanced scientific knowledge transfer and networking at research institution level (e.g. facilitating H2020 co-operation). From the innovation point of view and in order to genuinely create solutions to societal challenges - in other words having the problem owners and innovation actors on board - JPIs are not delivering. If we look at H2020, other forms of co-operation in the second and third pillars of H2020 are better instruments addressing this question". The lack of innovation is mentioned by several countries and is also elaborated further in the 'Future participation in JPIs' discussion below.



Future participation in JPIs

From the survey it seems that most of the countries intend to either maintain their current level of participation or moderately increase it. It is interesting to note that most of the 'Leaders' (Group A) expect to only maintain their current level of participation whereas most of the 'Marginal Players' (Group C) expect to increase their participation.



- Involvement of the European Commission:** There are several countries that have made comments concerning the future involvement of the European Commission. The comments go in both directions and are not consistent regarding the two main concerns; project funding and support for running the JPI (secretariats). Norway sees a positive side to European Commission involvement, but is saying in our interview that; "however, if the national commitment is not sufficient then there is no reason to continue". Newer Member States, like Romania and Bulgaria see the role of the European Commission as important to enable a higher degree of participation. Several countries see the role of the European Commission in supporting the overhead costs (see above Spanish comment under 'funding')
- Political attention:** In Sweden one can already say: "There is political awareness in Sweden about the importance of JPIs" (interview, Karin Schmekel, head of unit, Ministry for Education and Research, Sweden). Sweden seems to be one of only a few countries where this is the case.

"Visibility of JPIs is not high enough to reallocate money from national programmes to the JPIs." (Interview: Rupert Pichler, head of unit, Ministry for Transport, Innovation and Technology, Austria).

"There is a pure lack of knowledge of what joint programming is. There are neither the experts nor the political capacity to enhance the RTDI strategy of the country and the active participation in the European Research Area. There is a need to understand how, who and why to participate in JPIs". (Interview, Karina Angelieva (GPC member, Bulgaria)

In our interview, Bulgaria says that it would also like to see more political attention given to JPI participation and calls for European politicians to raise the initial discussion. European political focus on JPIs is also strongly supported by Turkey:

"The JPIs should work on getting more political attention and maybe the GPC could take the role of initiating such political attention in European bodies?" (Interview, Serhat Melik, Tubitak, Turkey).

- **Innovation and involvement of industry:** Some countries say more emphasis should be put on involving enterprises, as a next step in the JPI process.

"If JPIs were to focus more on innovation and engage more relevant companies and public sector (problem owners), they would become increasingly relevant. However, if they remain primarily focused on research collaboration, their role and impact on solving grand challenges is likely to remain limited." (Comment given in survey by Finland)

- **GPC:** There are positive comments on the functioning and future of GPC, but the comments go in the direction of a stronger GPC.

"A formal High Level Committee on joint programming with decision making power is a need" (Comment given in survey by Spain).

"The GPC could go beyond an advising/guiding forum for the JPIs – if it was more proactive in providing top down advice and guidance at the national level then it could influence alignment and structuring that would really help the individual JPIs" (Interview, Director General Kari Balke-Øiseth, Ministry of Research, Norway).

- **Other comments:** Many countries found it difficult to answer the survey on 'future funding' (and say so in their comments). Germany, France, Norway and the Netherland are emphasising future increased focus on JPI participation in their comments. Germany states (in an interview with the state secretary for research Georg Schütte) that:

"In fact, JPIs output should not only be measured in terms of joint call volume and participation. It should go beyond. New networking activities, increased usage of Research Infrastructures etc. are triggered by activities developed around JPIs, and a mechanism to trace and document these additional benefits should be looked at".

Many countries talk about alignment as important in the future, but are realistic to the fact that alignment is not there yet. No country is asking for more JPIs at the moment, but there are several suggestions on how to set up structures and processes for the future that could select future JPIs.

5. PERFORMANCE INDICATORS FOR JOINT PROGRAMMING

5.1 Assessment of the JPIs

The general message from those consulted about the impact of the JPIs on their societal challenges is that it is too early to judge. This is acknowledged by the Expert Group and so it seems more appropriate at this stage to consider some intermediate indicators that they are making progress in the right direction. Eight such indicators have been identified that seem logical to provide a framework for a qualitative assessment of JPI Excellence. These can be clustered under two main categories:

- Progress towards impact on the societal challenge
- Mobilisation of co-investment and alignment actions

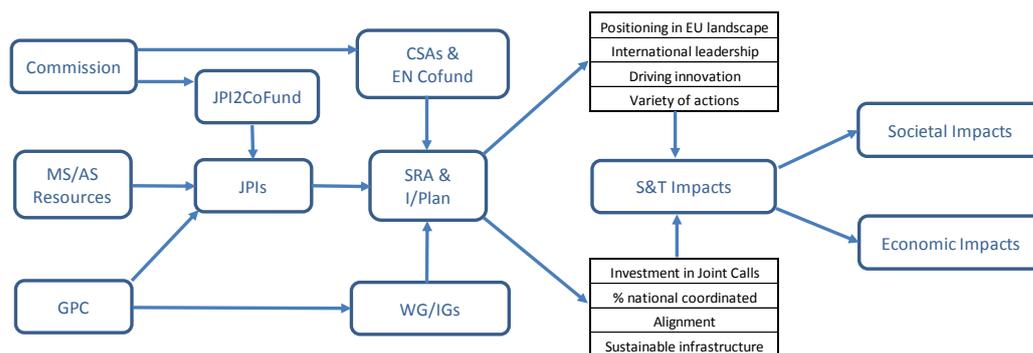
Progress towards impact on the societal challenge can be assessed by considering indicators such as:

1. Positioning within the European societal challenge landscape
2. International research leadership
3. Driving demand for innovative new solutions
4. Variety of joint actions and instruments that are either used by, or developed by, the JPI

Specific indicators that can be used to assess **mobilisation of co-investment and alignment actions** would include:

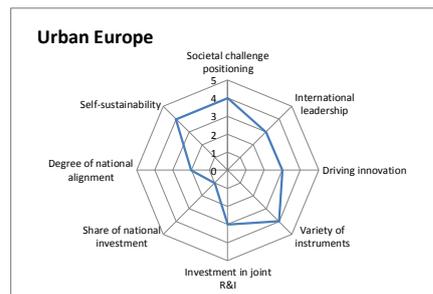
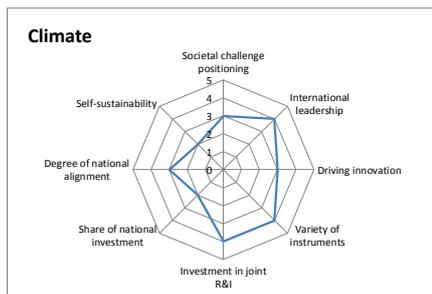
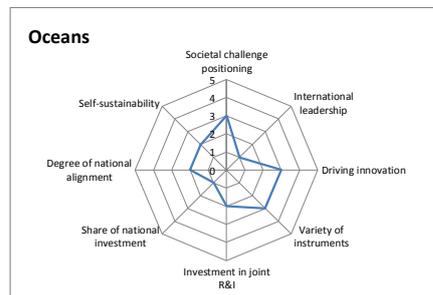
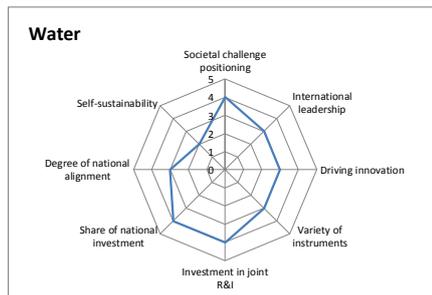
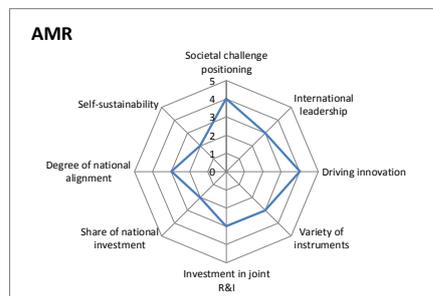
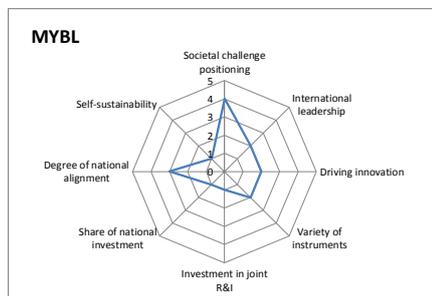
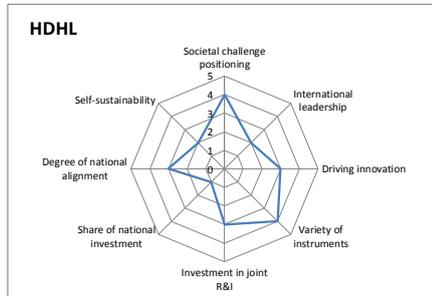
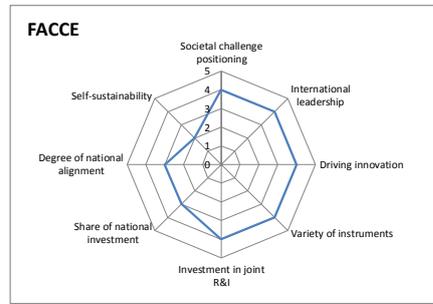
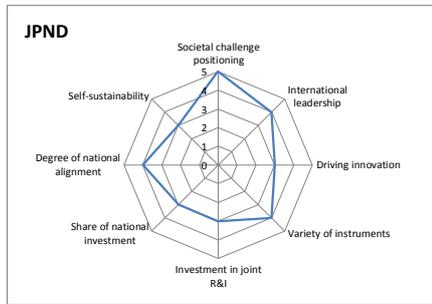
5. Investment in joint research and innovation projects
6. Share of total national investment in the subject that is coordinated through the JPI¹³
7. Degree of national alignment
8. Sustainability of the JPI infrastructure

The framework for these indicators and the assessment criteria is provided in **Appendix C**. This was derived from qualitative discussions at Expert Group meetings following stakeholder interviews. The rationale for this approach is based on a logic framework model for the impact of the Joint Programming Process, which shows how the inputs (from the national stakeholders, the GPC and the Commission) and activities (of both the JPIs and the GPC) can be expected to lead to the output indicators presented above, to scientific & technological impacts and eventually to both societal and economic impacts.



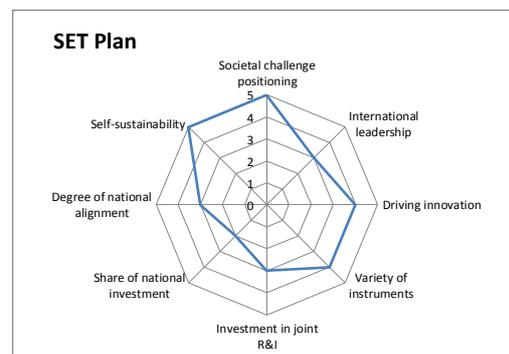
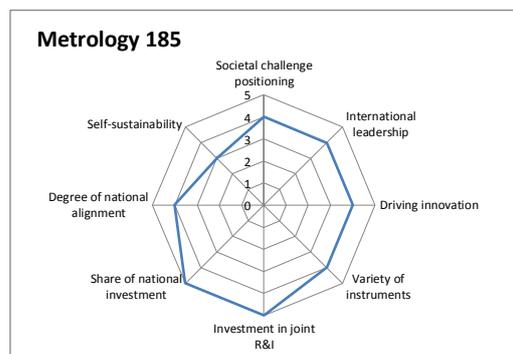
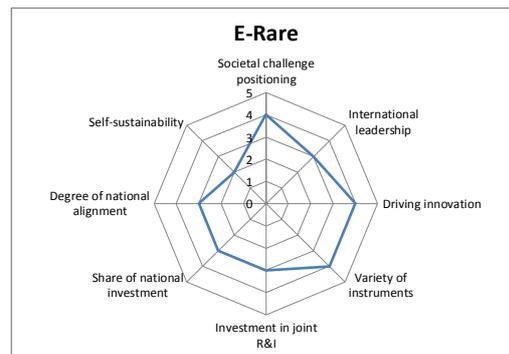
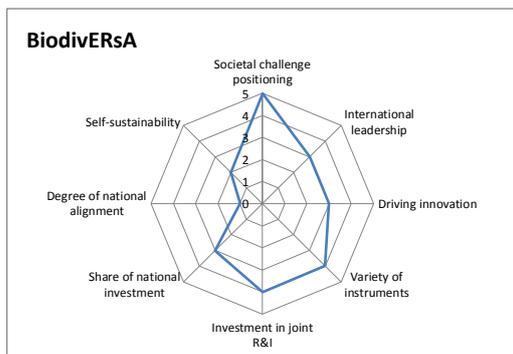
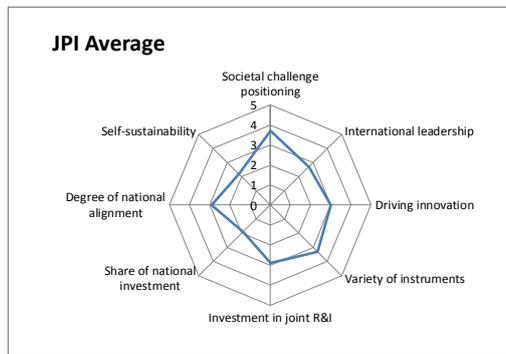
Each of the 10 JPIs, and the other four P2P networks, has been qualitatively assessed using this simple framework for JPI Excellence. The detailed synthesis is included in **Appendix C and D**. These show quite a difference in scoring profiles against the eight indicators and perhaps start to explain the rather common anecdotal opinion expressed by stakeholders that “the JPIs do not all perform at the same level”. The full set of profiles for the 10 JPIs are presented below.

¹³ It should be noted that the use of this indicator did not meet with universal acceptance from the stakeholders that were consulted and even led to some debate within the Expert Group.



This raises the obvious question about why some apparently perform better than others. There is no simple answer as there are many influencing factors including the situational landscape that each is operating within, the network heritage, the structure of the specific research domain, maturity of the challenge and, of course, the governance and management of the JPI. A detailed evaluation of each JPI would be needed to both explain why, and the particular strategies that might be appropriate for each.

Interestingly, the profiles for the other four P2P networks that were included in the evaluation show that the assessment framework can also be applied to those and that at least some of the more mature ERA-NETs and Article 185s are performing better than the JPI average on many of the indicators.



The SET Plan is a rather special case, as it is led by the Commission rather than the Member States, but the contrasting pattern would seem to indicate that there is a case for a more proactive Commission role to complement national leadership.

As mentioned above, there has been some debate, both within the Expert Group and with stakeholders in the Commission, about the relevance of Indicator No 6 (**share of total national investment that is coordinated through the JPI**). Some believe that it should be considered as one element of Indicator No 7 (degree of national alignment) as it could be unfair to those JPIs that operate in very broad domains. A case can be made for both options. In the end the Expert Group decided to preserve it as a separate indicator from alignment so that stakeholders could give the matter due consideration.

5.2 Examples of Good Practice by JPIs or other P2P networks

The eight indicators that have been used for the assessment of the JPIs highlight examples of good practice that could perhaps be more widely replicated.

Positioning within the European societal challenge landscape. This is clearly an important prerequisite for a JPI that has a mandate to help address a societal challenge. Ideally, there will be active engagement with other research & innovation networks and policy stakeholders at both the national and EU level. JPND, Urban Europe, BiodivERSa and E-Rare appear to be already well positioned and, of course, the SET Plan is a good example.

International research leadership. This is an important indicator of the JPIs ability to mobilise research resources beyond Europe behind a common research agenda. The health-related JPIs offer good examples.

Driving demand for innovative new solutions. Innovative new solutions and transformation in public policy and services are required to address many of the grand societal challenges. The JPIs should be developing new models for public/private partnership and exploiting the new Horizon 2020 public procurement instruments but there is no indication of this so far. Some of the JPIs are starting to engage with H2020 public/private partnerships like the Innovative Medicine Initiative. Several have produced SRIAs (Water, Oceans, and Urban Europe) to ensure that innovation is also a priority.

Variety of joint actions and instruments. An important feature of JPIs is that they should not just be engaged in joint calls for transnational research (ERA-NET model) but should demonstrate leadership in developing new and improved ways of overcoming the barriers to joint programming and maximising their collective impact on the societal challenge. Of course, this starts with the way that they engage with stakeholders to produce their SRA/SRIA but should also be a strong feature in their implementation plans. Most of the JPIs score well on this indicator. There is also some evidence of replication of good ideas (e.g. the FACCE Knowledge Hub). An interesting example is the Metrology Article 185, which has introduced specific, new instruments for both capacity building and standardisation.

Investment in joint research and innovation projects. Although it should not be the sole priority of JPIs, co-investment in joint research and/or innovation projects is an important indicator of a JPIs ability to mobilise financial resources behind the priorities within a common SRA. The analysis of investment in Joint Calls (Section 3.2) suggests that in most cases the level of investment so far has been no greater than for the best ERA-NETs but this is likely to increase in the future. FACCE and JPI Cultural Heritage were the only ones to take advantage of the FP7 ERA-NET Plus instrument. Most of the 10 JPIs have already been able to implement ERA-NET Cofund actions within the 2014-2015 work programmes of Horizon 2020, or will do so through the 2016-2017 programmes.

Share of total national investment in the subject that is coordinated. Most of the JPIs have performed some form of mapping exercise but some are still struggling to identify scope for such coordination. By far the best examples of this is the Metrology Art.185, which now coordinates over 50% of the aggregated national budgets and it is clear that all of the national programmes are dominated by the EMPIR agenda. However, for the more diverse and cross-cutting JPIs, it is difficult to foresee how they could really achieve a high level of budget coordination and, therefore, the indicator on 'degree of national alignment' (below) may be a more important, and equitable, comparative indicator.

Degree of national alignment. This is clearly a critical, and highly sensitive, indicator for the JPIs. The assessment basically covers the extent to which the national programming systems are being aligned to the SRA/SRIA. The degree of difficulty seems to vary depending on the topic. For example, neurodegenerative diseases (ND) were on the research (and political) agenda of most countries and so it was perhaps easier to achieve alignment than for a more niche subject like Antimicrobial Resistance (AMR), where a country-by-country mapping process was necessary. In the broader areas, such as Oceans and Urban Europe, the national landscape is more diverse and more ministries have an interest.

Sustainability of the JPI infrastructure. This indicator considers to what extent the JPI is sustainable without the need for funding from the Commission. Most of the JPIs score quite low on this indicator, with the possible exception of Urban Europe, which developed its SRIA without a CSA. Some have been able to secure a moderate level of core funding from members to support the Secretariat but it is clearly easier for most countries to participate in joint calls than to contribute to a common pot to implement the more ambitious parts of the SRA/SRIA.

5.3 Examples of Good Practice at the National Level

Examples of good practice of structuring and/or alignment in different countries that have been highlighted during consultations, and from the parallel work of ERA-LEARN 2020, include the following:

Strategic Alignment: Norway's 'Strategy for Research and Innovation Cooperation with the EU' establishes the country's goals and ambitions for participation in Horizon 2020 and the ERA. Within

this, the Ministry of Education and Research is tasked with efforts to develop a common model for the different Ministries' management and funding of JPIs. To solve the task the Ministry established coordination committees for each JPI where all interested ministries (including non-funding Ministries) are invited. Funding for JPIs is channeled through the Research Council of Norway (RCN) from all relevant Ministries. RCN has a coordinator and a reference group, with national stakeholders, for each JPI. One representative from the main funding Ministry and one representative from RCN are both on the governing board of each JPI.

National Coordination: France has established national mirror groups to enable alignment with the JPIs.

Operational Alignment: Italy has adopted a strategic approach to JPIs in the health sector. Research topics that can be funded in the context of a JPI will no longer be funded through national funding mechanisms.

Political Commitment: The '*Smart Specialisation Strategy for Cyprus (S3Cy)*' and its priority pillar named "*Enhancement of Extroversion*" emphasises the active participation of Cyprus in the integration of the ERA objectives and in the alignment with Horizon 2020 and the Joint Programming Initiatives, for addressing contemporary societal challenges.

Providing Executive Resource for JPIs: The implementation activities of JPI Urban Europe are being enhanced through the provision of scientific staff (from Austria, the Netherlands and Sweden) to support the management group. The use of seconded staff from Member Countries is also apparent in JPI Oceans as well as a substantial financial contribution to the central secretariat by Norway.

5.4 Other approaches to assess the performance of JPIs

The Expert Group assessment of the JPIs has been based on a qualitative assessment of their individual performance with respect to the eight indicators detailed in section 5.1. These indicators considered to what extent each JPI is making progress towards impact on its societal challenge and the degree to which it has been able to mobilise co-investment and alignment actions amongst its members.

Another approach to the assessment of JPIs has been proposed by the **GPC Implementation Group on 'Monitoring and Evaluation' (IG3)**. It has focussed on the establishment of minimum conditions for JPIs to be used both for any new JPIs as well as for the assessment of the existing ones. The overall principles set by the IG3 are:

- A new JPI can no longer be accepted only on the basis of some vaguely expressed idea – minimum conditions and criteria should be integrated as a quality control instrument for the decision process
- A JPI should be seen as an overall label of quality, importance and scale and, hence, should not be awarded or maintained easily
- Maturity induces a shift in the focus from input and building critical mass to outcomes and impact and to the accrued adaptability to the changes

The proposed criteria are (i) grouped into four main axes (topic, participants, governance, results/impact), (ii) address multiple dimensions such as potential robustness and critical mass, and (iii) contain cross cutting facets (vision, alignment, benefits, resources).

The **ERA-LEARN 2020 project** has also proposed a framework for reporting of JPI impacts¹⁴. This considers intermediate impacts such as enduring connectivity, new capacity building, attitudinal/cultural change and increased awareness amongst policy makers as well as the longer term impacts on national structures and the societal challenge. The full report is available at www.era-learn.eu ('monitoring and assessment' section).

¹⁴ Policy Brief on Impact Assessment of Networks, ERA-LEARN 2020 project, 2015 (available at www.era-learn.eu)

6. CONCLUSIONS

6.1 Progress in addressing Grand Societal Challenges

It is too early to judge the impact of the JPIs with respect to the grand societal challenges. The best that can be done at this stage is to assess whether the necessary elements have been put in place and whether they appear to be going in the right direction. One way of doing this is to use qualitative indicators to assess their performance to date. Another is whether they have acted effectively on the recommendations of the Acheson report during the past three years.

Are the necessary elements being put in place?

It is difficult to generalise on how the JPIs are positioning themselves and the structures that they are putting in place to make a tangible impact on their societal challenges. This is reflected in feedback from both the national policy level and the Commission. In both cases, their opinion is dependent on which particular JPI is being considered.

All of them have now produced a Strategic Research Agenda (or SRIA in some cases), and the associated implementation plan, but the lead times have varied. In some of the more diverse, cross-cutting fields, such as Oceans and Urban Europe, the process of consulting stakeholders took quite a long time. What is clear from the JPIs is that the development process was very valuable and the resulting SRA/SRIAs are enabling them to be quite proactive in both the European societal challenge and international research arenas. Of more concern is that there appears to be an inability to secure the long term commitments from the national level to properly resource the implementation plans and the JPIs are becoming quite dependent on Horizon 2020 funding.

Some of the initial governance structures were perhaps too inward looking or had a scientific orientation at the beginning but it appears that they have all now established some kind of stakeholder engagement forum. However, most are still working out how they can really collaborate effectively with societal stakeholders and innovative businesses.

Indicators of progress towards impact on the societal challenges

The Expert Group used eight indicators to assess the overall performance of each of the 10 JPIs and compared them with three other societal challenge P2P networks and the SET Plan. The first four indicators are concerned with their 'progress towards impact on societal challenges'.

Indicator No 1: Positioning within the European societal challenge landscape: in general the JPIs are making good progress on positioning themselves within the existing landscape especially considering their immaturity. In some cases the Commission has been very helpful in brokering introductions with other Commission Services, with other European initiatives and internationally. This is clearly appreciated

Indicator No 2: International research leadership: all of the JPIs have aspirations for international leadership but the degree to which they have already achieved this is quite variable. The SRA/SRIAs seem to be an important positioning tool and the most tangible evidence of this is participation of 3rd countries in JPI Joint Calls

Indicator No 3: Driving demand for innovative new solutions: the JPIs appear to have been quite focussed on research orientated activities so far, including mapping and creating networks of researchers. There is much less evidence of innovation-orientated activities or use of new Horizon 2020 instruments such as the Innovation Actions and the ones that are related to public procurement. A few JPIs (e.g. Oceans, Urban Europe and Water) have produced SRIAs, which is a good sign of intent

Indicator No 4: Variety of joint actions and instruments: there is quite a lot of evidence of joint activities by the JPIs including mapping, knowledge hubs, shared infrastructures, etc. Some of this was clearly associated with the development of the SRA/SRIAs and/or enabled by a CSA

These indicators have generally been accepted as relevant to this aspect of the JPIs, given that the general view is that it is too early to expect any significant impact on the societal challenge domains.

Progress on the Acheson recommendations

The 2012 Acheson report made four specific recommendations for the JPIs:

- **Enhance trust between the participants:** when the necessary level of trust has been achieved, JPIs should further explore the use of Article 185 and other ERA instruments: Interviews with representatives of the JPIs indicate that there has been good progress made in building trust. This perhaps explains why some (such as FACCE, which was able to build from the strategic agenda of the SCAR initiative) are more advanced in their implementation activities. Good use is being made of the Horizon 2020 ERA-NET Cofund instrument
- **Maintain the principle of open participation for MS and use trans-disciplinary inputs, including from industry and other societal actors, where appropriate:** All of the JPIs seem to be open to participation of EU Member States and some have observers or dissemination partners. Two of the JPIs (FACCE and Water) have also attracted a high level of third countries to participate in their joint calls. There is no doubt that most of the research is transdisciplinary, as it should be for challenge-based actions, but the active involvement of industry and societal actors appears to be still an aspiration rather than a reality for most
- **Promote their achievements, particularly to the national and EU level policy makers in order to demonstrate impact and be more effective at communicating the SRAs back to all national levels:** The SRAs seem to be an effective tool to communicate how the research community can help address societal challenges and raise the profile of challenge-based research in countries that had previously not considered this approach. It also helps to position Europe as a leader amongst the international research community. In addition, it helps the JPIs to engage with the relevant Commission DGs for their challenge. More case study evidence is clearly needed
- **Promote shared use of existing key infrastructures and make "smart" use of H2020 instruments:** Many of the JPIs appear to be enabling shared use of databases and, of course, joint research projects are always an effective way of utilising national infrastructures. The most tangible example is joint access to research vessels, which is a particular feature of JPI Oceans. The use of H2020 instruments so far has been limited to ERA-NETs and CSAs that have been included in the work programmes for the specific purpose of supporting the JPIs. The JPIs could perhaps be making use of the other instruments to demonstrate new solutions (e.g. Innovation Actions) and to engage with public authorities (e.g. PPI/PCP instrument, thematic CSAs)

6.2 National commitment and alignment

National commitment and alignment can be considered at two main levels of the policy hierarchy. The first is their commitment and alignment to the joint programming process in general. The second is what they do for individual JPIs.

Top down policies and structures

It is well known and understood that the national research & innovation funding systems across Europe vary quite significantly. This, and the general inability to contribute to 'common pot' actions, has always been a key issue for ERA initiatives. It seems that the impact of the Joint Programming Process has so far been relatively low in most countries and appears likely to remain so without more coordinated actions from the national policy level. This is also clear from survey evidence. For example:

- Only three of the 33 countries that participated in the national policy stakeholder survey indicated that they had a 'very high' commitment to Joint Programming
- None of the EU Member States expect to 'significantly' increase their overall level of participation in the JPIs (although the level of intent appears to vary depending on which JPI is being considered)

The financial crisis during the period since the JPIs were launched certainly seems to be a contributing factor, particularly in the newer Member States, but there also seems to be limited budgets for 'societal challenge research'. The survey feedback indicates that all (100%) of the

newer Member States and just over 50% of EU15 countries consider 'limited financial capacity to participate' as a high or very high barrier.

Another important factor concerns the co-funding of the coordination costs for a JPI. Even if the amounts are relatively low it seems to be very difficult for some countries to make a contribution to the essential central infrastructure such as the secretariat. Most of the JPIs initially addressed this problem by requesting CSA funding. However, this is clearly not sustainable. The JPIs have found ways to operate using a mix of contributions including cash from members, secondments and also ERA-NET Cofund Actions but this is not an efficient situation.

Survey feedback on 'misalignment of national research funding systems' also suggests that this is a barrier. It indicates that too many of the participating countries are unwilling or unable to implement the national policies and structures that would be necessary to maximise the impact of the Joint Programming Process.

Of course, there are also some interesting examples and insights that have been gained from those countries that are demonstrating a stronger commitment. These are highlighted in the report. In some cases, they are particular to the situation in that country but two examples are worthy of special mention in terms of their potential for replicability:

- France has established national 'Mirror Groups' to align with the joint programming activities. Several of the JPIs mentioned that they are trying to encourage other participating countries to establish similar structures
- Norway already had a strong commitment to societal challenge research and so has been a very active player in the JPIs. However, it has also established 'Coordination Committees' for each of the JPIs involving all Ministries with an interest in the subject and these operate within a central coordination structure led by the Ministry of Research and the Research Council

Participation in the JPIs

The evaluation indicates that the participating countries from Member and Associated States can be grouped into three categories: leaders, selective players and marginal players. The 12 countries that were classified as 'leaders' are mostly EU15 countries (the exception is Norway).

Bottom up influence of the JPIs

The Expert Group used an additional four indicators (No 5 – 8) to assess the extent to which each JPI has been able to 'mobilise co-investment and alignment actions'.

Indicator No 5: Investment in joint research and innovation projects: All of the JPIs have launched joint calls for research projects but the level of investment has been relatively moderate so far. The intensity and scale of these are likely to increase as the JPIs are taking full advantage of the H2020 ERA-NET Cofund instrument

Indicator No 6: Share of total national investment in the subject that is coordinated through the JPI: Mapping of the national research activities within the domain has been an important early joint activity for the JPIs but the level that is being coordinated seems very low. It may simply be too early to expect much progress on this indicator or, in some cases, the subject may be too broad

Indicator No 7: Degree of national alignment: Some progress has been made on national alignment based on the SRA/SRIAs of the JPIs but the overall picture is quite mixed. All of the JPIs give examples of some countries adopting the SRA/SRIA in their national programmes but more top-down commitment and spread of good practice is clearly needed

Indicator No 8: Sustainability of the JPI infrastructure: The JPIs are finding it difficult to secure the financial resources from their national members to fund the secretariat and the executive capacity to make rapid progress with their implementation plans. This is a real problem that all of them are trying hard to address. The default is partly being addressed by the Commission through CSA support but this is not really a sustainable solution

Three of these indicators have generally been accepted as relevant to the assessment of JPIs in terms of their ability to mobilise co-investment and alignment. The exception is the one that is concerned with the 'share of national investment that is coordinated through the JPI'. The Expert Group acknowledges that there has been mixed acceptance of the relevance of this potential indicator but has chosen to leave it on the table for consideration by all parties.

6.3 Success factors and bottlenecks

Success factors

The evaluation has considered to what extent each of the JPIs is making progress towards becoming effective and efficient models for addressing common societal challenges using eight qualitative indicators. It has also highlighted interesting strategies and structures that have been implemented in some countries to support the Joint Programming Process. These, and the analysis of key issues, suggest that the following factors are particularly important to the relative success of a JPI:

- **SRA/SRIAs:** It is clear that the joint activity to prepare a Strategic Research Agenda for each JPI has been a very positive experience, with much mutual learning benefit, and has been a very good way of building trust and joint ownership. The SRAs are also an excellent communication tool to influence other stakeholder at the national and EU policy level (including raising political awareness) as well as to engage with the international peer research funding bodies. Several of the JPIs have overtly considered the 'innovation' dimension by producing an SRIA and it is likely that the others will do the same in due course
- **Supportive national structures:** There are some good examples of certain countries establishing national structures to align their stakeholders with the JPIs but these are the exceptions. The 'mirror groups' in France is mentioned by most of the JPIs as a model that could be replicated by other countries
- **Strategic use of EU instruments:** Whilst there is an expectation that the JPIs will develop their own instruments for collaboration, and there are some good examples (such as knowledge hubs), they should also take full advantage of EU funding instruments to maximise their leverage and impact. So far this has been limited to dedicated CSAs and the ERA-NET instruments so there is a need for them to consider others that would allow them to better engage in innovation and capacity building activities
- **Visionary leadership:** The JPIs can play a pioneering role in the necessary transformation of traditional research structures in many countries towards cross-cutting and interdisciplinary research that is driven by the need for new solutions to the societal challenges. Developing new ways of involving societal and industrial stakeholders in challenge-based research and innovation activities is also important as is the opportunity to provide better scientific input to policy, standards and regulations. There are early signs that the JPIs are positioning themselves well within the societal challenge research landscape both in Europe and internationally but innovation-related actions seems to have been a lower priority so far
- **Executive team:** A well-resourced executive team, with people who really understand the domain of the JPI, is considered to be an essential factor in the ability of the JPI to implement its strategic agenda. Whilst contributing cash to a common pot to pay for the executive resource seems difficult there are some good examples of secondments
- **Collaboration between JPIs:** Some of the JPIs are exploiting the synergies between them and engaging in joint actions where they have overlapping priorities or common stakeholders. This includes joint calls and working together to explore options for collaboration with both societal challenge stakeholders and international initiatives
- **Use of experts:** In addition to the role of experts within specific JPIs it has also been demonstrated (through engagement with the ERA-LEARN 2020 project) that relevant experts can also add considerable value to the work of the JPIs. This suggest that the new EU 'Policy Support Facility' to help EU Member States review and reform their national research and innovation systems could be an important option to address the main issues highlighted in this report
- **Supportive Commission Directorate:** It is clear that the Commission (DG Research and Innovation) has played an important role so far in supporting the GPC and providing financial support to establish the JPIs through CSAs. Whilst there are some concerns about the JPIs becoming both dependent and distracted by Horizon 2020 funding this has continued with some JPIs receiving a 2nd round of CSA funding and inclusion of opportunities for ERA-NET Cofund actions in the work programmes. Some of the JPIs have also been assisted with introductions to other Commission Services, to other societal challenge frameworks (e.g. EIPs) and to international research frameworks (e.g. Belmont Forum) but others feel that the Commission does not support equally.

Of course, it is beyond the scope of this evaluation to fully assess the individual JPis (as the evaluation is about the joint programming process rather than the individual JPis) and so these are simply general observations.

Bottlenecks

The evaluation has also highlighted a number of key issues that are inhibiting the development of the JPis in particular and the Joint Programming Process in general. Some of these are specific to particular stakeholder groups (including national stakeholders, the GPC, JPI management and the Commission) but there appears to be six main issues that will need to be addressed if the Joint Programming Process is to achieve its potential. Both the main issues and the more stakeholder-specific ones are presented and discussed in Section 7 (Key Issues).

7. KEY ISSUES

The establishment of 10 JPIs, as the main mechanism to implement the Joint Programming Process, has brought national ministries (including societal ministries) into active play within the ERA landscape of P2P initiatives and instruments. It has also created the frameworks for joint actions including the definition of a common SRA/SRIA and subsequent implementation across the whole joint programming cycle. The general picture, however, is one of mixed progress. Some are already quite mature and appear to be well-positioned to play an influential role in their societal challenge arena. Others seem to be going in the right direction but there are some that appear less successful. A more detailed evaluation of each JPI would be needed to reveal the reasons why and fully understand the key success factors.

A wide range of specific issues have been highlighted during consultations and workshops with the different stakeholders. These are generally associated with a specific stakeholders group (as discussed in Section 7.2 below) but there are also some that are cross-cutting. The six issues below, which can be classified as 'Main Issues', are more generic and affect all or most stakeholder groups. Each of these is elaborated and followed by some discussion on how they might be addressed and by whom. This, therefore, provides the logic for the subsequent short and longer term recommendations in Sections 8 and 9.

7.1 Main issues

Ambition. The JPIs have been built around what were regarded as the main societal challenges that were common to all countries. Assuming that they were properly selected, a fundamental and bold response could be expected including the cooperation of many societal actors as well as the research actors. It seems that the political structures that manage research at the national level are, on many occasions, not successful in involving these other stakeholders and this becomes an obstacle for the European cooperation arena. In many cases the political structures themselves are not able to prioritise the JPI initiatives.

The recent UN Climate Change Conference is a good example of how countries can get together and make commitments towards addressing a common societal challenge based on scientific input (from the IPCC). Most of the topics addressed by the JPIs are no less relevant and it is clear that some have caught the attention of senior politicians (e.g. G7 Science Ministers have shown interest in JPND and JPI Oceans). However, the strategic role of research in addressing societal challenges needs to be considered at a higher political level.

Commitment. The challenges that have been selected are generally accepted to be common at the European level, at least, although some elements of the challenge may be specific to countries in particular geographic zone (e.g. Oceans). The case for making a high commitment to joint programming appears obvious but the reality is that there seems to be a lack of sufficient national support – for example, in terms of volume and share of the national budget. The survey and consultation evidence does not suggest that the level of co-investment and other forms of commitment will increase significantly in the coming years.

There is a need to raise political awareness of the JPIs both at the national and the international level. There is also a need to establish national structures for the JPIs to be part of the national funding system. This seems like an appropriate moment to establish a monitoring system with indicators that provide data on national and transnational investment in societal challenge research activities. Such an 'observatory' could also provide direction to the GPC, the Commission and national policy makers in not only shaping the future portfolio of JPIs and ERA-NETs but also the priorities for Horizon 2020 and beyond.

National alignment. The concept of 'strategic alignment' originated from the Dublin Conference on joint programming in 2013. The expectation was that countries would adjust their national activities to the SRA/SRIA and implementation plans of the JPI and even to align with the activities in other countries. Perhaps it is a little premature to judge whether the JPIs can be an enabler of such alignment, as some of the SRA/SRIAs were only developed after 2013. So far, however, there are just a few examples of national alignment that can be traced back to the JPI activities and presence. As a minimum, the SRA/SRIAs should allow each country to decide what it should do at the different levels (national, transnational and EU).

The recent Lund Declaration 2015 emphasises the urgency of increased efforts in alignment. One of the four priority areas of the Declaration is that "Europe needs clear political commitment to step up efforts to align strategies, instruments, resources and actors at the national and European level in order to address the grand societal challenges". It might be argued that a JPI has to reach a certain level of activity for a country to consider it significant enough to influence national

strategies, not just the promises made in the SRIA. One might also expect that the level of representation, both from ministries and funding agencies, would influence the importance of a JPI at the national level. Furthermore, the national actors involved (possibly coming from different ministries) need to be highly coordinated to build together solid positions. All of these should be considered as issues to be addressed in the forthcoming National ERA Roadmaps.

National structures for coordination, funding and management of JPIs. There are many differences in how countries organise overall management of their portfolio of JPIs at the national level. Some have coordination committees, national reference groups and national JPI coordinators. Other countries participate with representatives from the relevant ministries, sometimes with no decision making power or funding possibilities, and no organised contact with national stakeholders. In such cases it makes it much more difficult for the individual JPIs to influence the national programming system for their challenge area.

Some countries have already embraced the concept of challenge-based research in their national strategy and/or already have cross-ministerial structures. However, the research & innovation systems in many other countries are still based on the traditional scientific disciplines. They either need to be adapted in a way that enables a more effective response to societal challenges and/or enhanced to enable the necessary inter-disciplinary working that is needed for societal challenge research & innovation activities. This needs to be done in a way that is customised and takes full account of the size of the country and their scientific communities. Some countries may require external guidance for this and so it seems logical that the new Policy Support Facility (which is aimed at helping Member States to review and reform national research & innovation systems) could be utilised to help address this issue. The Vice Chair of the GPC announced (at the Joint Programme Conference in January 2016) the ambition for a 'Mutual Learning Exercise (MLE)', which is one of the instruments of the new Policy Support Facility.

Role of the Commission. A key factor for the implementation of the Joint Programming Process was that Member States (and Associated Countries) would take the lead in identifying topics and selecting, or developing, the most appropriate instruments for the respective topics. The role of the Commission was to be one of facilitator, or in the beginning even to stay one step away. It seems, however, that the Member States cannot effectively implement joint programming without the Commission and also that the JPIs could play an important role in the strategic programming processes of the Framework Programme. This suggests that the future of joint programming should be considered within the planning process for the next Framework Programme, which could solve a number of issues and increase political commitment.

The Commission (DG Research & Innovation) has already demonstrated that it can play an influential role in helping the JPIs to position themselves within the European societal challenge landscape and engage with key players in the global research community. A new mandate could enable the Commission to be more influential through the European institutions, help the JPIs to design new instruments and improve the mutual consistency with Horizon 2020 – in particular structuring and capacity building instruments - and other P2P networks that are also aimed at societal challenges. An interesting suggestion about building the best interface between JPI challenges and H2020 is to develop a common strategy based on a kind of smart specialisation at the JPI domain level (share of work based on subsidiarity).

Operational bureaucracy. The JPIs were intended to be a new approach to joint programming that would operate at a much higher political level than ERA-NETs. The weight of expectation is such that they have been under intense scrutiny since the beginning and this may be inhibiting their ability to be entrepreneurial. In some cases scarce resource has also been devoted to preparing and managing proposals for FP7 and Horizon 2020 funding instruments to maintain the management infrastructure.

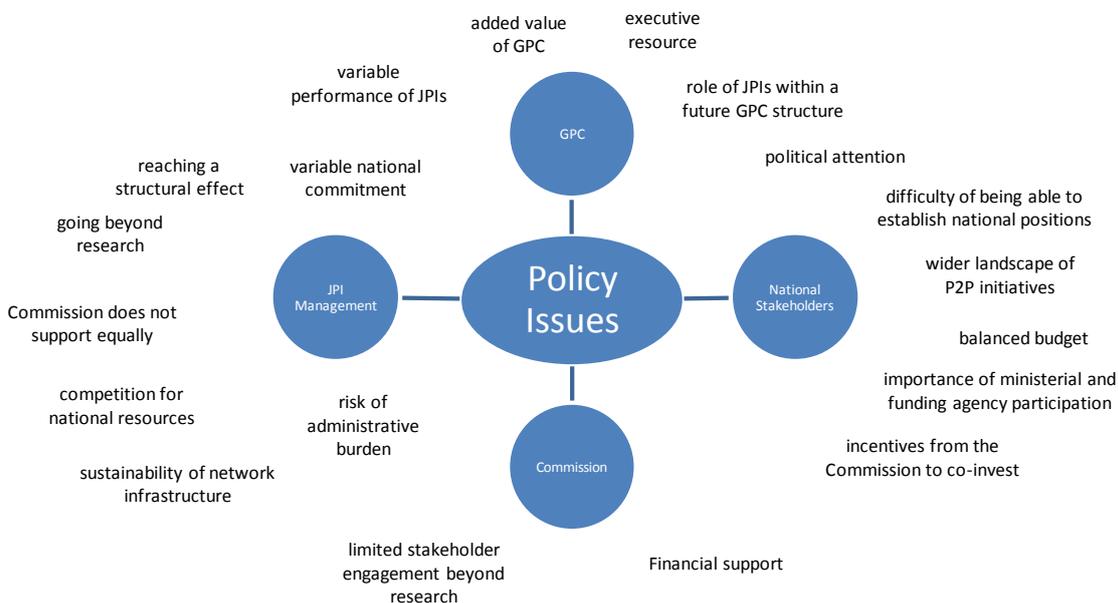
The governance of a JPI is clearly influenced by a large number of countries with different priorities/structures and there are apparent barriers to the co-funding of a permanent executive resource. It is, therefore, difficult to establish a sustainable and efficient operational structure to effectively implement the SRA/SRIA and achieve an influential position in the societal challenge landscape. This suggests that strong and influential JPI leadership is required to overcome the operational barriers and secure the necessary political commitment and resources to achieve their full potential. Collective leadership actions may also be appropriate to communicate effectively to the GPC and the Commission on how they can help overcome the common barriers and explore scope for shared infrastructure.

7.2 Stakeholder-specific issues

The four main stakeholders are the national ministries/agencies (national stakeholders), the GPC, the JPIs and the Commission. The evidence gathered indicates quite a variety of specific issues for

each of these stakeholder groups. In general such issues can only be addressed either by, or in collaboration with, other stakeholders.

The specific issues that have been highlighted by each of the stakeholder groups are summarised in the mapping diagram below with some discussion on how they could be addressed and by whom.



NATIONAL STAKEHOLDERS

Political attention. Lack of political attention, both at the European and national levels, is considered to be an important reason why it is difficult to create the new structures and process for alignment with the JPIs.

The recent 'Lund Revisited' Conference was an attempt to put the subject of working together at the ERA level on societal challenges back on the political agenda. This needs to continue at the level of both ERAC and the Competitiveness Council to decide on the way forward for joint programming and the role of the Commission. A good opportunity is the current development of national ERA roadmaps (Spring 2016) for each of the six ERA priorities. Priority 2A is concerned with 'Jointly addressing Grand Challenges' including 'improving alignment within and across the Joint Programming Process and the resulting initiatives (JPIs) and speeding up their implementation'. The involvement of influential policy stakeholders and the spreading of success stories (e.g. attracting private sector investment, influencing policy, etc.) might be helpful in this regard.

The difficulty of being able to establish national positions. Some of the ministries concerned by a given challenge do not have as much European culture as others and hardly communicate with their national counterparts in other countries. Establishing national positions would help all the ministries that are concerned with a given challenge to interact regularly and determine common positions. This is not such a natural process and the decision making process of the JPIs can suffer from this difficulty. It also is a critical issue for JPIs to be able to go beyond research issues.

Some countries such as France and Norway have created national structures that enable them to participate effectively in Joint Programming and it is clear that the JPIs would like to see all member countries doing something similar that is consistent with their national situation. This is particularly important for countries that do not have a way of organising societal challenge research within their national system. Involving other ministries apart from research obviously complicates the decision making process but is essential to look at a challenge in a holistic way and not only from the research angle. Involving the very best researchers in each country, beyond the SRA process, and engaging with the next generation of scientists also helps to establish national positions.

Wider landscape of P2P initiatives. JPIs have expectations of being something more than "just another instrument". Still there is a way to go, at least for some of the JPIs, to achieve this status.

There is also, in some countries, still some confusion about the differentiation between JPIs and other P2P collaboration frameworks to address societal challenges.

This evaluation has demonstrated that there are at least two 'societal challenge' ERA-NETs that are performing better than the JPI average on important indicators such as societal challenge positioning, variety of instruments and self-sustainability. Also, there are lessons that could be learned from Article 185 initiatives and other models like the SET-Plan. This suggests that the scope of the GPC should be broadened, beyond just the JPIs, to encompass all of the ERA actions that are aimed at societal challenges. This could be further enhanced by the establishment of an observatory on social challenge research in EU Member and Associated States as suggested in Section 7.1 above.

Balanced budget. Countries with no funding - or very low funding - for calls obviously create problems for joint funding of multilateral projects. At the other end countries that are prepared to make significant funding commitments will also have difficulties due to other countries not being able to co-fund certain projects and thus there are often significant differences between pre-call budgets and the actual investments in projects.

The experience of ERA-NETs indicates that this will always be a problem in joint calls with the virtual common pot funding model. Unless the JPIs can move towards real common pot models or design effective calls that include in kind contributions (e.g. JPI Climate is experimenting with such a call using the H2020 Cofund instrument) then this will persist. However, it is clear that the less research-intensive countries do not have the financial capacity to participate effectively and so there is a need for complementary instruments that allow them to participate with lower budgets and create synergies with their smart specialisation strategies. The H2020 Article 185 on Metrology and Eurostars may offer useful examples of how this can be done. It would also be a great help to be able to use the Structural Funds for building capacity, mobility, infrastructure, etc. Maybe this issue could be looked at for the next period of the Structural Funds. Group A and B countries also need to increase their budgets and could be helped by also having a more flexible budget.

The importance of ministerial and funding agency participation. Co-funding of joint actions is key to JPI success and operational knowledge of how to implement transnational R&D is important for the running of JPIs. It seems to be important to have both the relevant ministries and associated funding agencies involved in a JPI.

One of the differences between the JPIs and the ERA-NETs is the direct participation of the ministries, which should mean that there is a higher level of political commitment and ability to implement alignment frameworks. However, the execution of joint calls seems to be a practical way for JPIs to operate whilst exploring how they can design new, and more strategic, instruments. The funding agencies can, therefore, play an important role at least in the short term as they have the relevant knowledge and methodologies. Norway is a good example of a country that has formalised the decision making process in a way that enables some delegated budget authority whilst retaining ministerial leadership to speak on behalf of the country. Other countries could develop similar participation models that are consistent with their hierarchal funding systems.

Incentives from the Commission to co-invest. It seems that some countries have an expectation of Commission leadership, and co-investment, and this appears to be an important factor in securing the necessary level of political commitment. Some countries underline the support for the JPIs infrastructure as being more important and are more skeptical towards dependency on the Commission for funding of projects.

The Commission is already providing financial support to the JPIs by creating dedicated calls for CSAs and ERA-NET Cofund Actions but this does not seem to be either sufficient or sustainable. Any additional incentives from the Commission should surely be focussed on enabling national structuring activities, and maybe joint actions at the GPC level, rather than individual JPIs. As mentioned above, the new Policy Support Facility could be a good option to mobilise the necessary policy action in those countries that most need to adapt their national systems. Member States also need to agree on the role of the Commission. It can even be argued that the Commission could use the JPIs in a more strategic way.

GPC

Variable performance of JPIs. The analysis in Section 5 indicates that the JPIs are not all performing at the same level. This could be due to a variety of factors from specific framework conditions to leadership and operational management. There is a need for the GPC to consider whether all of them have the right characteristics to be differentiated as a 'JPI'. Another option is to open up the 'JPI' label to other P2P networks that are also focussed on societal challenges and score well against our assessment indicators (e.g. BiodivERsA, E-Rare). One of the GPC

Implementation Groups (IG3) has been exploring this issue in terms of minimum criteria for existing and potentially new JPIs.

The Implementation Group of the GPC on 'monitoring of JPIs (IG3)' has made some recommendations on criteria that could be used to judge whether the current JPIs should continue to be part of the portfolio and also criteria to select new JPIs. The Expert Group has also proposed a framework with eight indicators (earlier in the report) to assess whether a particular JPI is making progress towards playing an increasingly influential role in their societal challenge domain. Together, these could provide the basis for regular GPC reports to ERAC and/or the Competitiveness Council. The relative performance against the eight indicators would also allow the Commission to judge where Horizon 2020 support (e.g. through a CSA) could be used to help address areas of weakness or a JPI that is operating in a domain with a relatively high degree of difficulty. In any case the Commission should carefully consider whether JPIs should be treated as a special case, with appropriate instruments, in the next Framework Programme.

Added value of GPC. The original function of the GPC was to select the topics for the JPIs and the national consultations suggests that there is no short term appetite to increase, or decrease, their number. It seems that it is now a forum for monitoring progress of the JPIs and sharing good practice but a proposed new mandate is being discussed as well as a debate on how the portfolio of JPIs should evolve. Some of the JPIs feel that the GPC should be more proactive in supporting the development of supportive national structures. It seems that a substantial number of delegates are not directly involved in the Joint Programming Process and some are even from the country's Representative Office in Brussels.

The GPC needs to take the initiative to explore how the key issue of national commitment can be improved as this is the weakest link in the Joint Programming process. This either needs a higher level of representation on the GPC or a programme of activities (meetings with national officials, mutual learning missions, good practice workshops, etc.) that are collectively aimed at promoting how commitment and participation can be increased. One option is for GPC delegates to be coordinators of the national joint programming process. At the JPI level, the promotion and spread of good practice should be a priority for the GPC along with an ongoing process to enable evolution of the JPI portfolio based on experience and the changing societal challenge landscape. Specific measures to help the marginal countries could also be implemented perhaps through a sub-group and collaboration with the ERA-LEARN 2020 project.

Executive resource. The operation of the GPC, and scope to be more strategic, is very much dependent on volunteers to carry out the management functions and lead specific activities such as implementation groups. It does not have the equivalent of a CSA but it has been demonstrated, since the ERA-LEARN 2020 project started in January 2015, that a properly resourced team of experts can provide high quality analysis and conclusions to support the GPC.

Clearly, it would be unfair to expect the current members of the GPC management team and/or implementation groups to invest even more time on labour-intensive actions to support those countries with a lower level of commitment. Also, it does not seem logical to add another layer of administrative bureaucracy. What is needed is a smart way of using existing resources such as the ERA-LEARN 2020 project, the new Policy Support Facility and secondments from national ministries. Together these could be sufficient to make a difference. Of course, the need for executive resource would depend very much on the future role of the GPC.

The role of the JPIs within a future GPC structure. It is the JPIs that have the practical knowledge about the joint programming process and it seems that they could add more value to the GPC than is currently the case with their detached position.

The GPC is already a very large group and the JPI Chairs are invited. One option is for the JPIs to be given a stronger role within a sub-group of the GPC, especially for activities that are aimed at influencing national strategies and structures and in the longer term proposing how the next Framework Programme can better support and enable the Joint Programming Process. Another is to create sub-groups to share good practice in common development areas such as stakeholder engagement and the design of new instruments. There may also be scope for representation of the European innovation community (e.g. EIPs and KICs) within such sub-groups.

JPI MANAGEMENT

Variable national commitment. It is clear that the commitment of the JPI member countries varies quite significantly and this makes it difficult to implement joint actions.

The variety of country types and level of societal research intensity is such that there is a need for a menu of participation options within the framework of a commonly agreed agenda (SRA/SRIA). Those marginal player countries that are less satisfied with the joint actions initiated by the more

active players in a JPI need to show more leadership in the development of new instruments that are a better fit with their priorities and resources.

Reaching a structuring effect. Joint research calls can be a very effective way of building relationships and raising the profile at the national level. These are not normally sufficient on their own to support capacity building and influence the structuring of research activities. How to mobilise joint actions related to human resources and sharing of infrastructures is an important issue to achieve more impact and structuring effects. This is another area where EU instruments, including the Structural Funds as well as Horizon 2020, could be utilised to increase the leverage of the JPIs.

Each EU Member and Associated State that is a member of one or more JPI needs to consider to what extent its national research & innovation system is optimised to help address national societal challenge priorities and maximise the benefits of participation in JPIs.

Going beyond research (delivering new solutions). In order to have a tangible impact on the societal challenge it is important that the JPIs work with societal stakeholders and innovative business to ensure that research knowledge is translated into new solutions both in the short and longer term. However, it seems that the JPIs have been mainly research-orientated so far. Some are starting to move in the right direction but the scale of innovation-related actions, and collaboration with stakeholders outside the research community, needs to be extended and expanded to all JPIs.

A first step in this direction could be for JPIs to explore how they can exploit the new instruments of Horizon 2020 for innovation (Innovation Actions) and public procurement (PPI/PCP Actions) to work with innovative companies and public authorities. They could also consider if they could develop transnational derivatives of these as JPI instruments. In any case, the JPIs could play a pioneering role in mainstreaming new ways of stimulating demand side innovation through joint actions with key stakeholders such as city authorities, healthcare organisations, environmental bodies and regulators. JPIs should also be exploring options for new public/private partnerships perhaps, where relevant, with the KICs and other European innovation frameworks. JPIs should go further in involving stakeholders at the governing level, and define specific targets in terms of societal challenge deliverables other than research.

The Commission does not support equally. The societal challenge topic for most JPIs can be aligned to one of the thematic Directives of DG Research & Innovation. This creates a degree of 'ownership' and there are some good examples of helping JPI positioning within both the European and international landscape as well as with other Commission Services. In other cases, it seems that either the domain is not such a high priority for the Commission or the JPI is not considered to be demonstrating sufficient leadership to make a real difference.

The Commission does not have a mandate to play a key role in the development of the JPI portfolio and hence its response is dependent on both relationships and H2020 priorities/instruments. What is needed is for the JPIs, with the commitment of the Member/Associated States, to propose a long term strategy and action plan to work in partnership with the Commission on joint and/or complementary investment in research & innovation to address societal challenges.

Competition for national resources. Some JPIs refer to other initiatives that affect their ability to secure financial and policy commitment at the national level. For example, the proposed Article 185 initiatives for the Baltic Sea (Bonus) and the Mediterranean (PRIMA) could create competition for scarce national funding and be unfavourable for JPIs such as FACCE, Oceans and Water. This can also occur between JPIs (e.g. Climate/Oceans/Water/FACCE).

Each country needs to consider its societal challenge and smart specialisation priorities at the highest research & innovation policy level and how these can best be achieved through a mix of investment in national, ERA and EU-funded activities with the latter including both Structural Funds and the other EU Framework Programmes.

Sustainability of network infrastructure. To be truly sustainable, the JPIs need to establish an operating infrastructure that is self-financing without Commission funding. The reality is that many countries find it much easier to invest in joint calls for research projects than to make a relatively modest contribution to a central executive team that can lead the delivery of the implementation plans.

There are several options to address this issue without a series of individual CSA contracts. The first is to use the ERA-NET Cofund instrument in a strategic way that maximises national investment in the joint calls whilst enabling implementation of other joint activities in the SRA/SRIA. Another is to explore leaner options for network infrastructure and/or creating a common support framework for JPIs (possibly including other societal challenge P2P networks). What is clear, however, is that CSAs are not a sustainable option for the JPIs and, therefore, since the joint programming process is supposed to be MS-driven, it is up to the national stakeholders

(not the Commission) to find a practical solution to this issue. Of course, the Member States can invite the Commission to explore jointly how EU instruments can be used in a smart way to address such barriers to joint programming.

Risk of administrative burden. JPI interviews indicate a high level of frustration with the time required to agree common positions between members in the formative years. This seems to be less of a generic problem now but appears to be still an issue for some. It is partly due to the decision making level of national representatives but also, in some cases, a lack of prior consultation with key national stakeholders. This affects the efficiency of operational activities and increases the hidden costs of participation by member countries, and particularly for those who are (voluntarily) serving in management functions or leading the development of strategic activities

Anecdotal feedback from some JPIs indicates that they have overcome some of the decision making inertia and so there may be opportunities to share and replicate good practice. However, it seems that at least some member countries need to be represented by a more appropriate person, establish a national structure with the authority to support the national delegate, and create the necessary processes at the national level to build common positions when several actors are involved.

EUROPEAN COMMISSION

Financial support. The Commission has been playing a fundamental role in the financial sustainability of the JPIs so far but this creates a degree of dependency.

An analysis of the tools that are necessary to implement JPIs is needed in order to adapt or launch new instruments. The well proven CSA instrument offered a simple means of incubating the JPIs but they either need to reduce their dependence or a longer term support instrument is needed. There is room for lower operational costs through a homogenisation process towards standardisation of JPI back offices, which could be promoted by the Commission. The H2020 ERA-NET Cofund instrument has helped to consolidate the successful cooperation process but it could be rethought towards a much simpler 'multi-challenge, multi-call' instrument.

Limited stakeholder engagement beyond research. Challenge-based research and innovation needs the active involvement of societal stakeholders and industry to achieve impact. Some of the JPIs seem to have embraced this approach, and are focussing on how existing research knowledge can be better applied, whilst others seem to be more concerned about simply increasing the volume of scientific research on their specific topic. The involvement of the Commission tends to be very low, while its potential to succeed in mobilising stakeholders outside research is very large.

There are existing instruments within both Horizon 2020, and other EU Funding Framework programmes (e.g. LIFE+), to engage with societal stakeholders in demand-side actions related to public procurement, regulations and standards. Exploring new options would help to build relationships and highlight the need for new instruments. While national stakeholders must engage policy makers and civil society at the national level, in particular involving other ministries than research, DG Research & Innovation could help in the role of engaging with other DGs, European frameworks and institutions. Shared working groups in Europe with stakeholders beyond research will reinforce the engagement at the national level.

8. SHORT TERM RECOMMENDATIONS

The detailed elaboration of issues in Section 7 and the discussions on how these could be addressed provides the logic both for the recommendations below and for the identification of which stakeholder group is best placed to take the initiative. In general, a specific issue for one stakeholder group (e.g. JPI Management) would normally require another stakeholder (e.g. national ministries) to take some action to overcome the barrier. From this a number of short term recommendations can be made for each of the main stakeholder groups.

8.1 Member and Associated States (National Stakeholders)

1. Ensure that the current process of developing [national ERA Roadmaps](#) (Priority 2A: Jointly addressing Grand Challenges) takes full account of the need to address weaknesses in national alignment structures/processes and increases political commitment and levels of investment. This should include due consideration of the Lund Declaration 2015.
2. For those countries that do not already have one, establish a [national coordination system for Joint Programming](#) with the following features:
 - A national coordinator for the Joint Programming Process who should also be the national delegate to the GPC
 - A process, coordinated by the Research Ministry, to involve other relevant ministries in appropriate stages of the Joint Programming life cycle through the JPIs
 - A means of involving national/regional funding agencies in the process of engaging with JPIs
3. For those countries that are marginal or selective players in JPIs (Group B and C countries), explore the potential synergies with their [Smart Specialisation Strategy](#) to enable more strategic participation and/or complementary actions

8.2 GPC

4. Implement a process, with review milestones, to enable [Evolution of the JPI portfolio](#) based on the conclusions of the GPC Implementation Group No 3 (IG3). This could also be informed by taking some lessons from the approach used by ESFRI (European Strategy Forum on Research Infrastructures), which uses critical milestones to decide whether projects will achieve the ESFRI Landmark status after 10 years or drop-out of the ESFRI Roadmap
5. Utilise the planned [Mutual Learning Exercise](#) (MLE) conducted within the [Policy Support Facility](#) to explore new ideas and solutions for (i) increasing the commitment of the Member States and Associated Countries to the joint programming process, (ii) enhancing alignment of strategies and programmes, and (iii) improving interoperability between ERA and EU instruments
6. Improve the [GPC/JPI communication channels](#) and involve the JPI Chairs more in setting the agenda and the creation of sub-groups. They should also be able to play an active role in the proposed MLE based on their practical awareness of national success factors and obstacles
7. Establish a common [Monitoring & Evaluation Framework for JPIs](#) (building on the work and expertise of the ERA-LEARN 2020 project). Use this to consider evolutionary changes in the JPI portfolio including options for upgrading of other societal challenge P2P networks and addressing new & emerging societal challenges. This could also complement the proposed Commission 'observatory' on national investment in societal challenge research (Recommendation No 12 below)

8.3 JPIs

8. Develop and promote evidence through [Case Studies](#) that demonstrate the power of JPIs to influence policy and innovation amongst societal stakeholders, demonstrate international research leadership and achieve tangible socio-economic deliverables
9. Carry out a critical [Readiness Level](#) review of the Governance Structure and Executive Management Team to assess whether it is still fit for purpose and has the right leadership to guide the JPI towards its societal challenge mission. This should include the Stakeholder Board, which should steer and support the JPI to engage with key players in the European innovation community. Such Boards should also have a key role in enabling the

development of a more balanced portfolio of research and innovation actions (including new instruments) and exploring options for private sector co-funding

10. Establish a **Cross-JPI Strategy Team** to:

- Share emerging knowledge on new instruments/methodologies that have been developed by individual JPIs to exploit research knowledge and jointly explore how other Horizon 2020 instruments (e.g. Innovation Actions, PPI/PCP Actions) can be exploited to better engage with the wider societal challenge and/or industrial communities
- Develop a joint position on additional instruments (EU, national, transnational) that are needed to support both the Joint Programming Process and the new policy agenda on 'open innovation, open science and open to the world'
- Work together on the development of a methodological framework for JPIs that can be used to both formulate, and monitor the achievement of, impact-orientated objectives/deliverables - perhaps building on the work of the ERA-LEARN 2020 project
- Explore options for shared infrastructure, to reduce the cost of delivering implementation activities and knowledge exchange, and exploiting opportunities to be more effective where there are common challenges and stakeholders

8.4 European Commission

11. Continue to support the **ERA-LEARN 2020 project** for the remainder of Horizon 2020 and encourage the consortium to support the mutual learning activities of the JPIs
12. Explore the possibilities to set up an **Observatory** on societal challenge research activities in EU Member and Associated States using an existing platform such as the JRC Research and Innovation Observatory (RIO)
13. Exploit possibilities to better link the relevant **Thematic Programme Committee** configurations to the JPIs (and other P2P networks) in their remit, to enable the SRA/SRIA and implementation plans of the JPIs to be fully considered when designing the biennial work programme
14. Develop **Clear Conditions and Criteria** under which JPIs can be supported for the remainder of Horizon 2020

9. LONGER TERM RECOMMENDATIONS

Commitment is the state or quality of being dedicated to a cause or activity

The key message from this report is that the Joint Programming Process does not yet have sufficient 'Commitment' from national stakeholders to achieve its potential. Important considerations arising from this evaluation for national and EU policy stakeholders would include:

- The Joint Programming Process offers the opportunity to create scale and scope in Europe of societal challenge R&D but this will only become a reality if national, transnational and EU policies and priorities are developed in a more collaborative way
- The deliberations for the next Framework Programme offers the option to design and implement a multi-level approach to joint programming leading to a critical mass of coordinated societal challenge R&D across Europe and at the EU/international level

Whilst the short term recommendations in Section 8 should improve the situation, it seems unlikely that all of the current JPIS will be able to secure sufficient national commitment to become real joint programmes with scientific, managerial and financial integration across Europe on societal challenge R&D. Since there is not yet any procedure or milestone within the GPC, ERAC or the Competitiveness Council to change this situation then there is a long term risk to the JPI portfolio beyond the current Framework Programme.

It is, therefore, the considered opinion of the Expert Group that the planning process for the next Framework Programme, which will commence in 2017, is an important opportunity for the Member States and the Commission to consider their positions on joint programming. The final, and overarching, Recommendation of the Expert Group is, therefore, that:

Each of the JPIS (and any other prospective ones) should be invited to consider their longer term strategy in terms of socio-economic impact objectives/deliverables and what support instruments they would need from the next Framework Programme. Any such proposals should, of course, include firm commitments from national stakeholders (including how they will integrate the JPI within national programming) and, where appropriate, other societal challenge stakeholders such as industry.

This would put the onus on the national stakeholders to decide which of the societal challenge domains are most appropriate for them to make serious commitments to joint programming and which are more appropriate to selectively co-fund through other forms of public/public partnerships.

APPENDICES

- A. Acknowledgements
- B. Analysis of national policy stakeholder survey
- C. Assessment of the 10 JPIs
- D. Assessment of four other P2P networks

Appendix A: Acknowledgements

The Expert Group would like to thank the many stakeholders who provided valuable input to the Evaluation through participating in surveys, providing data and through discussions at various events. In particular we are grateful to the following individuals for agreeing to be interviewed and providing invaluable opinion and insights.

National Policy Stakeholders

- Austria: Rupert Pickert, Ministry for Transport, Innovation and Technology
- Bulgaria: Karina Angelieva, GPC Representative
- France: Roger Genet, Ministry of Higher Education and Research
- Germany: Georges Schütte, BMBF.
- Greece: Afroditi Patroni, General Secretary for Research and Technology
- Norway: Kari Balke Øiseth, Norwegian Ministry of Education and Research
- Romania: Rolanda Predescu, Ministry of Education and Scientific Research
- Spain: Marina Villegas and Joaquin Serrano. Ministry of Economy and Competitivity.
- Sweden: Karin Schmekel, Ministry of Education and Research
- Turkey: Serhat Melik, Tubitak, Turkey
- UK: Julia Lewis, Department for Business, Innovation and Skills

GPC/JPI Management

- GPC Chair: Fulvio Esposito, Italy
- GPC Vice Chair: Martin Schmid, Austria
- GPC Chair of IG2 : Karin Schmekal, Sweden
- GPC Rapporteur of IG3 : Peter Spyns, Belgium - Flemish Government
- JPND: Philippe Amouyel (Chair), France
- JPI FACCE: Niels Götke (Chair), Denmark
- JPI HDHL: Pamela Byrne (Chair), Ireland
- JPI Cultural Heritage : Christina Sabbioni (Chair), Italy
- JPI-MYBL: Paulo Rossini (Chair), Italy
- JPI AMR: Mats Ulfendahl (Chair), Sweden
- Water JPI: Maurice Héral (Chair), France
- JPI Oceans: Caron Montgomery (Chair), UK
- JPI Climate: Patrick Monfray (Chair),
- JPI Urban Europe: Ingolf Schädler (Chair), Austria

Other P2P networks

- BiodivERsA: Xavier Le Roux (Coordinator and CEO), France
- E-Rare : Daria Julkowska (Coordinator), France
- Metrology 185: Duncan Jarvis, (Programme Manager), UK

European Commission (DG Research and Innovation)

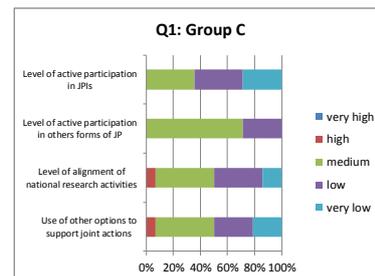
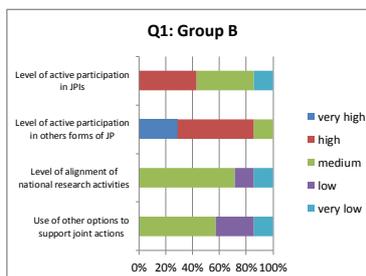
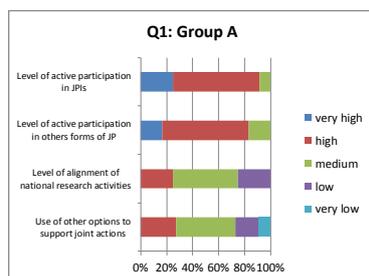
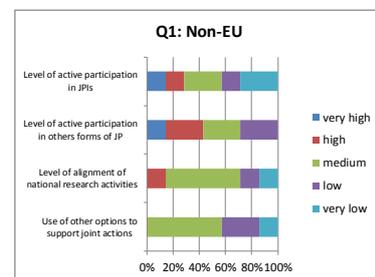
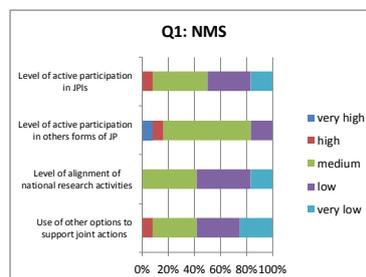
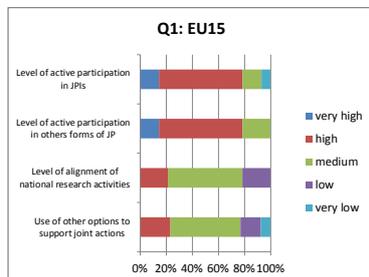
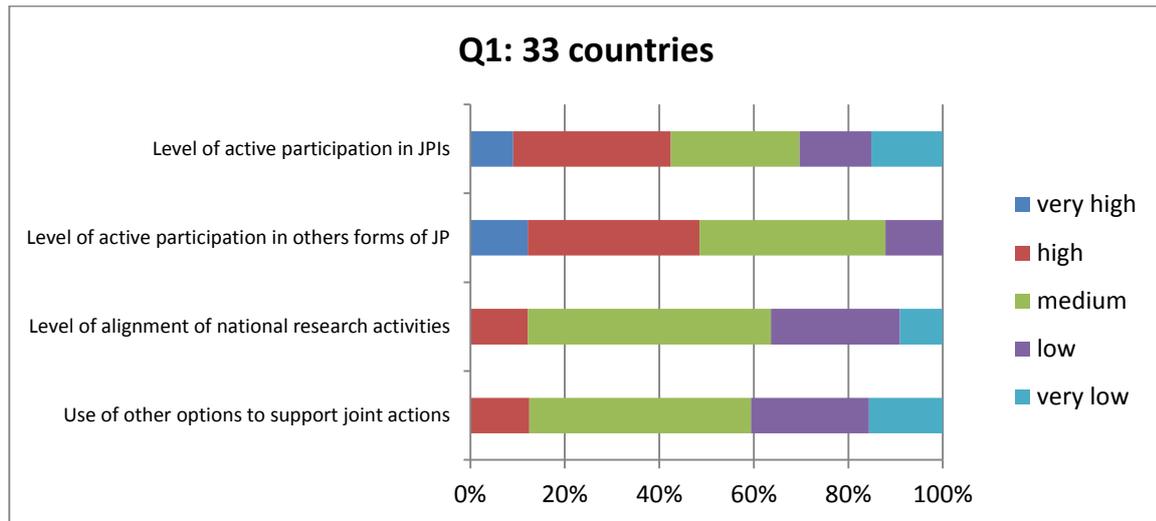
- John Bell: Director, Bioeconomy
- Ruxandra Draghia-Akli: Director, Health
- Peter Droll: Director, Innovation Union and ERA
- Gwennaél Joliff-Botrel: Head of Unit 'Strategy', Directorate G – Energy
- Kurt Vandenberghe: Director, Climate Action and Resource Efficiency

Last, but not least, the Expert Group would like to thank the Commission support team (Joerg Niehoff, Julia Prikoszovits, Alexander Grablowitz and Nadine Copin) for looking after us so well, hosting our meetings and providing documentary evidence for our work.

Appendix B: Analysis of national policy stakeholder survey

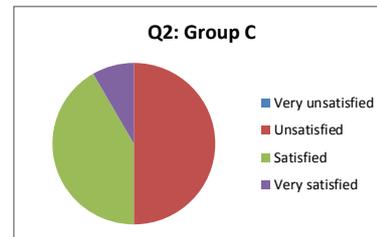
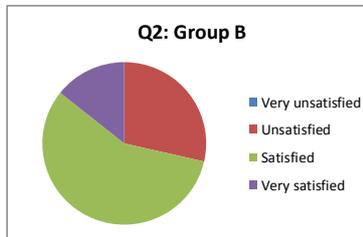
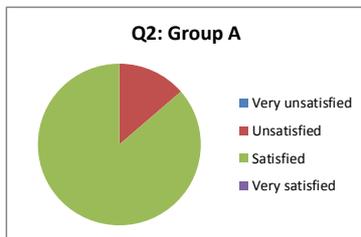
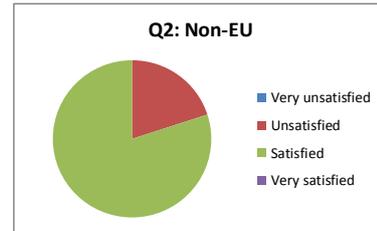
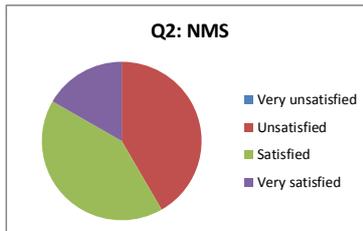
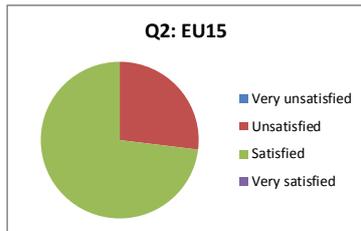
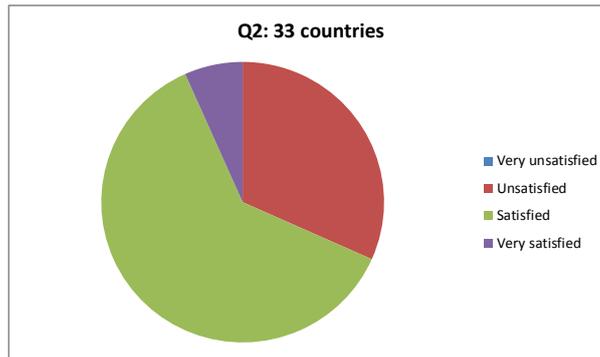
Q1: How would you describe your country's commitment to Joint Programming in Europe

1. Level of active participation in relevant JPis
2. Level of active participation in other forms of joint programming such as Article 185 initiatives and ERA-NET
3. Level of alignment of national research activities to enable full and active participation in joint programming
4. Use of other options to support joint or complementary action on societal challenges such as the opening of your infrastructures or the strategic use of Structural Funds or leveraging Public Procurement



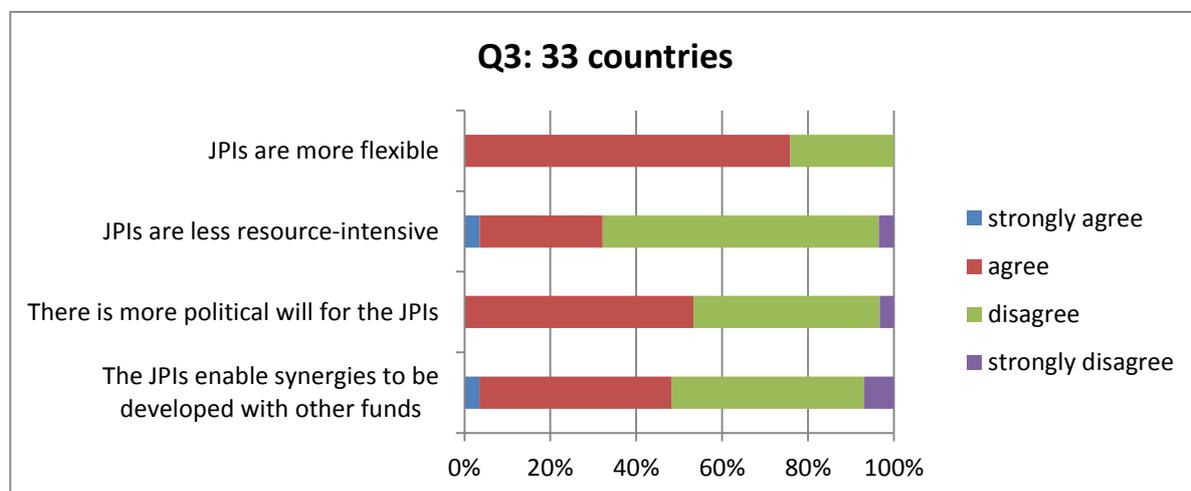
Q2: How would you describe your country's satisfaction level with the JPis (Joint Programming Initiatives)

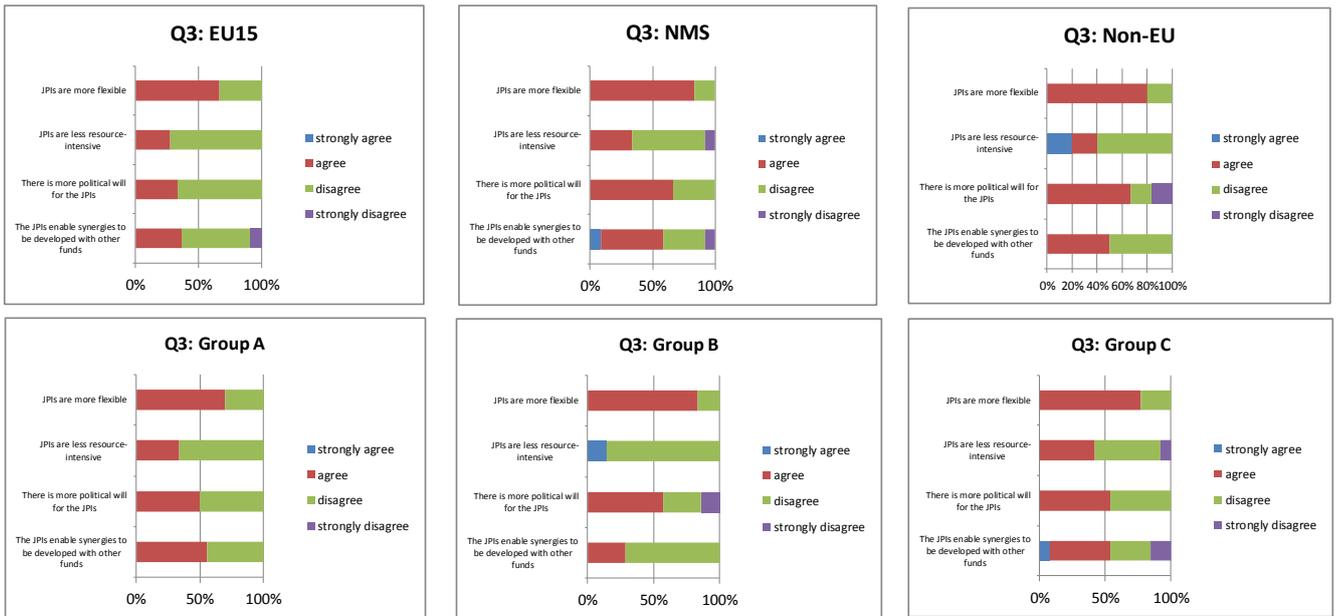
1. Very satisfied
2. Satisfied
3. Unsatisfied
4. Very unsatisfied



Q3: How would you compare the JPIs with the other main options for joint programming (Article 185 initiatives, ERA-NETs)

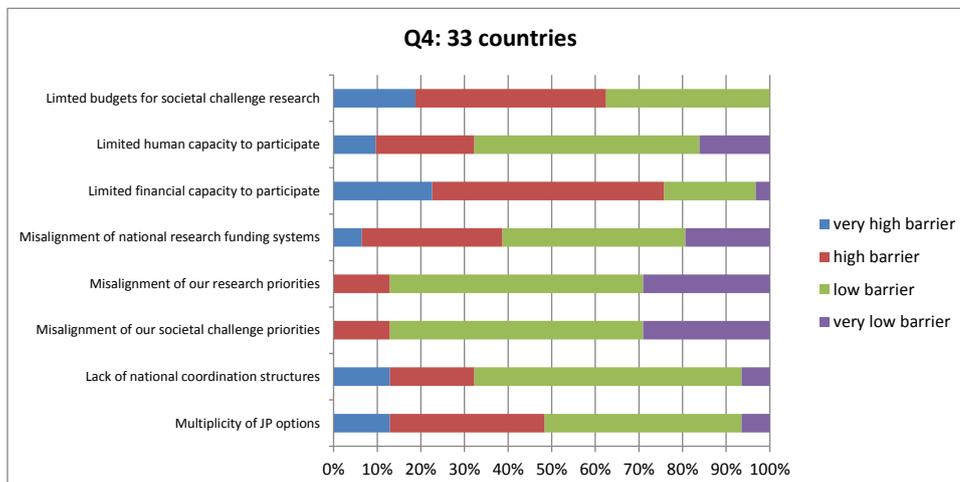
1. The JPIs are more flexible (strongly disagree, disagree, agree, strongly agree)
2. The JPIs are less resource-intensive (strongly disagree, disagree, agree, strongly agree)
3. There is more political will for the JPIs (strongly disagree, disagree, agree, strongly agree)
4. The JPIs enable synergies to be developed with other funds (e.g. ESIF, public procurement) and policy/regulatory actions (strongly disagree, disagree, agree, strongly agree)

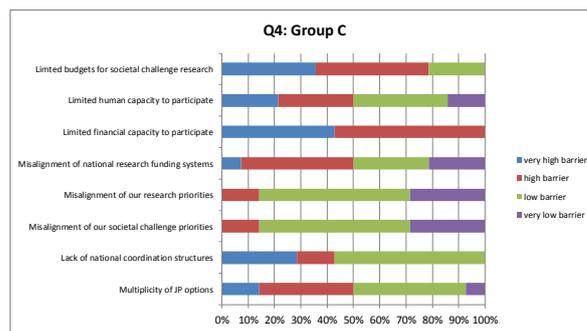
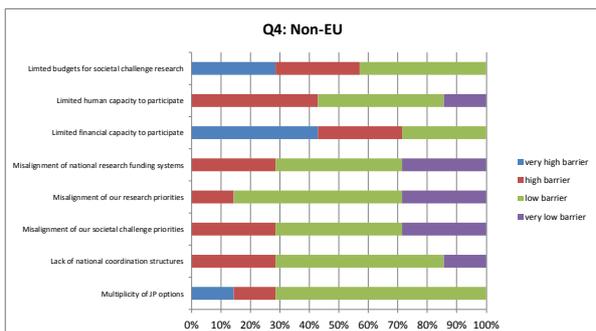
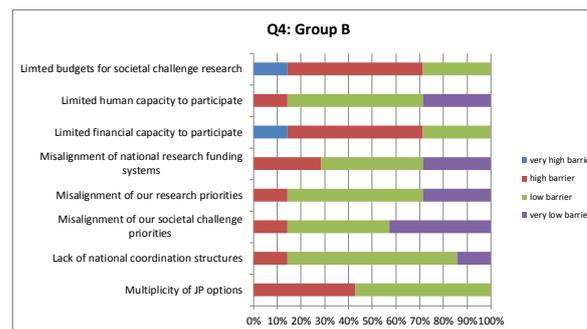
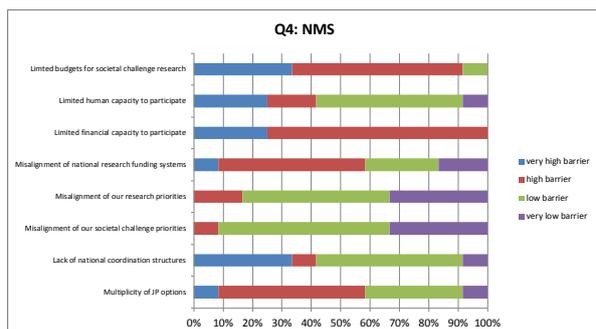
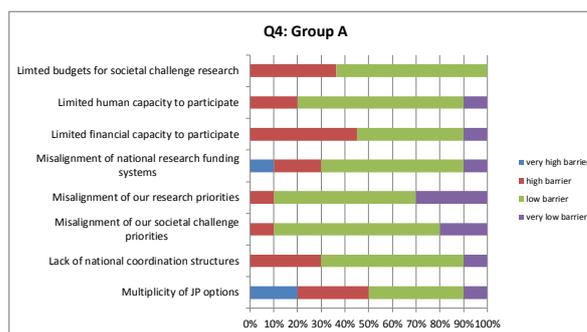
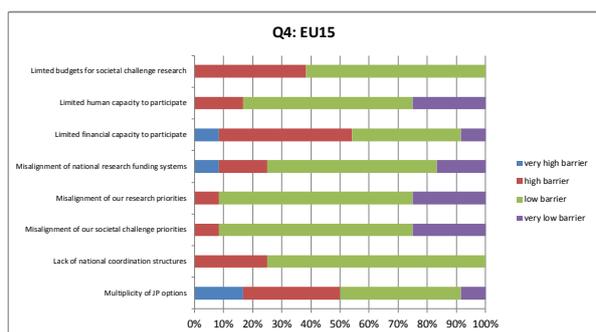




Q4: What are the main barriers that limit your participation in joint programming

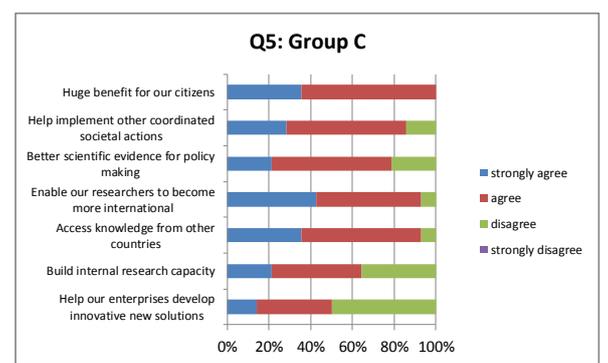
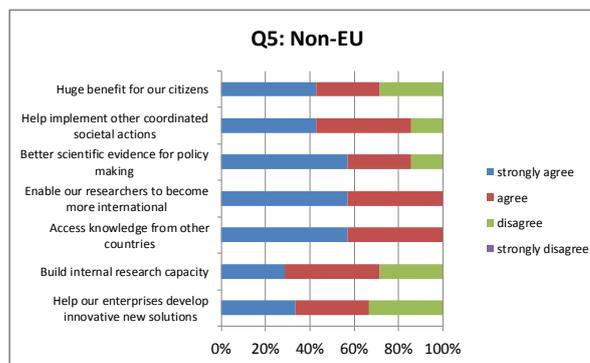
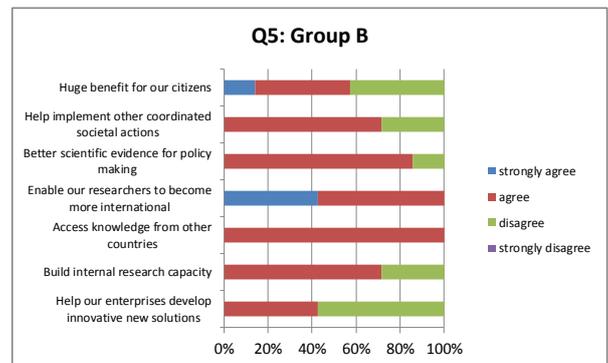
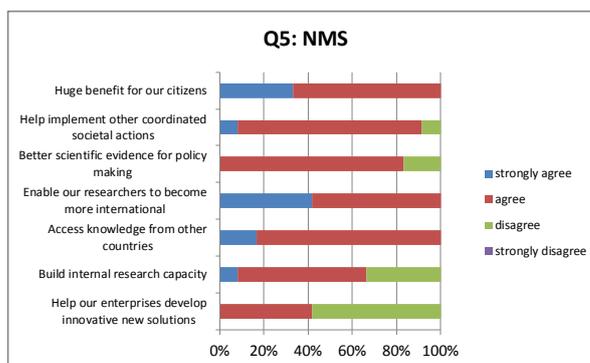
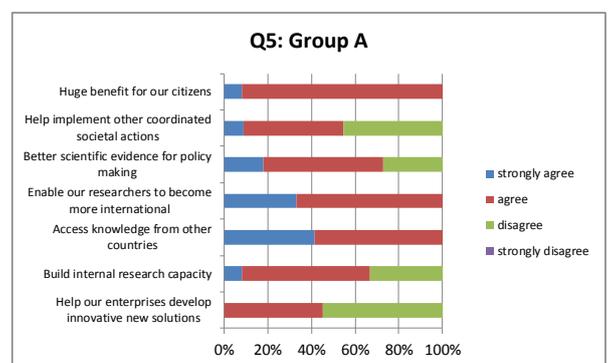
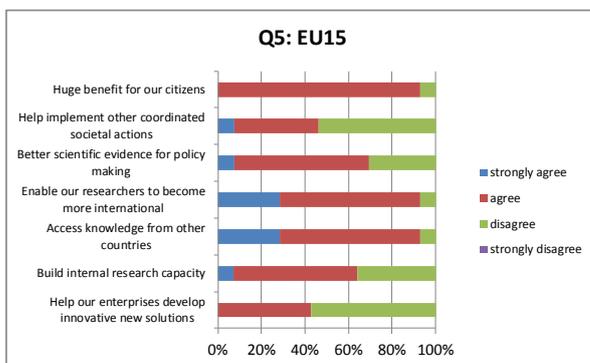
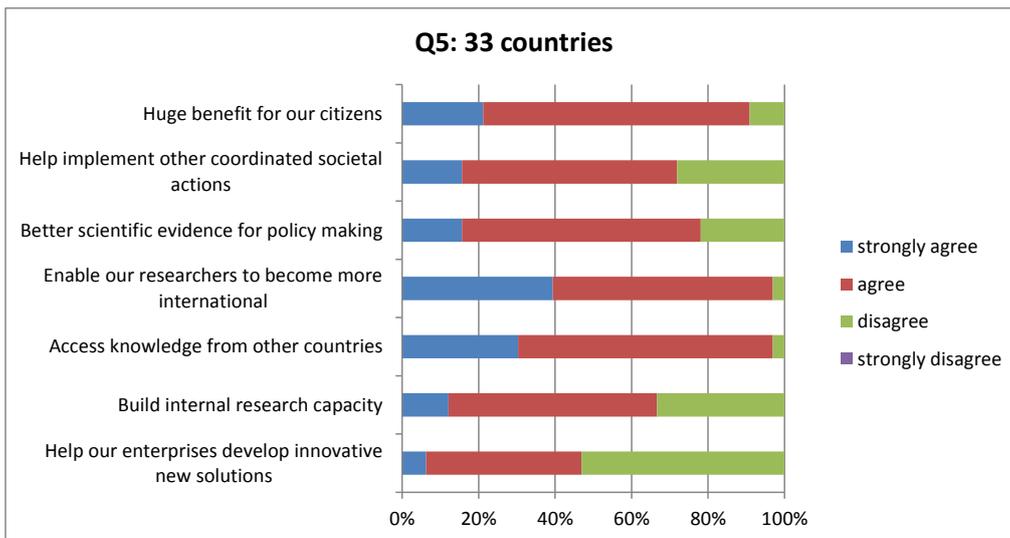
1. Limited budgets for societal challenge research (very high barrier, high barrier, low barrier, very low barrier)
2. Limited human capacity to participate in international research & innovation activities (very high barrier, high barrier, low barrier, very low barrier)
3. Limited financial capacity to participate in international research & innovation activities (very high barrier, high barrier, low barrier, very low barrier)
4. Misalignment of national research funding systems (very high barrier, high barrier, low barrier, very low barrier)
5. Misalignment with our research priorities (very high barrier, high barrier, low barrier, very low barrier)
6. Misalignment with our societal challenge priorities (very high barrier, high barrier, low barrier, very low barrier)
7. Lack of national coordination structures between relevant ministries (very high barrier, high barrier, low barrier, very low barrier)
8. Multiplicity of joint programming options (very high barrier, high barrier, low barrier, very low barrier)





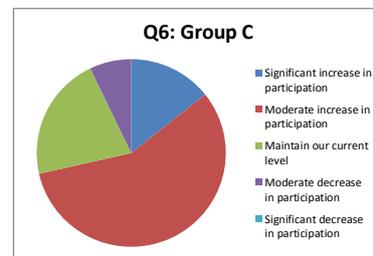
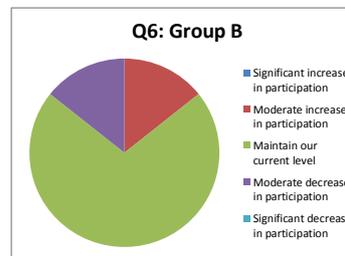
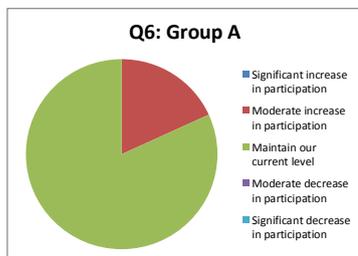
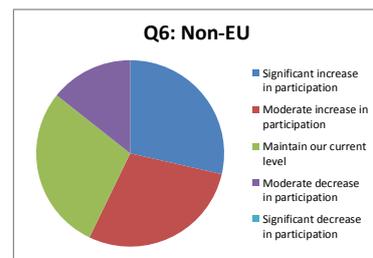
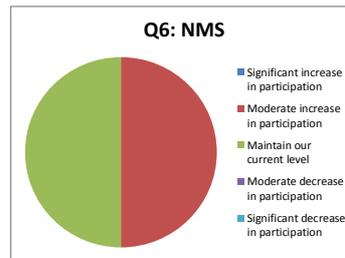
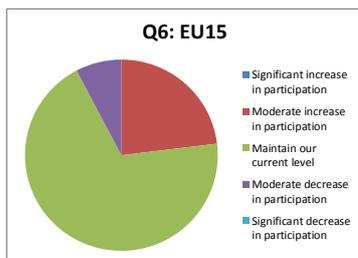
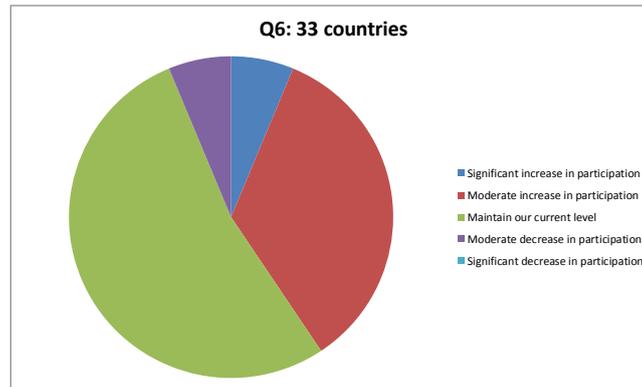
Q5: What are the perceived benefits of joint programming for your country

1. Coordinated European research investment to address societal challenges will have huge benefits for our citizens (strongly disagree, disagree, agree, strongly agree)
2. Participation in joint programming will help us to implement other coordinated societal policy actions at the national, regional or local level (strongly disagree, disagree, agree, strongly agree)
3. Participation in joint programming will give us better scientific evidence for policy decision making (strongly disagree, disagree, agree, strongly agree)
4. Participation in joint programming will enable our researchers to become more international (strongly disagree, disagree, agree, strongly agree)
5. Participation in joint programming will allow us to access knowledge and/or research capacity from other countries to address our specific societal challenges (strongly disagree, disagree, agree, strongly agree)
6. Participation in joint programming will allow us build our internal research capacity and attract more researchers to work in our country (strongly disagree, disagree, agree, strongly agree)
7. Participation in joint programming will help our enterprises to develop innovative new solutions for European and global markets (strongly disagree, disagree, agree, strongly agree)



Q6: What are your country's intentions for future participation in JPIs

1. Significantly increase our level of participation
2. Moderate increase in participation
3. Maintain our current level
4. Moderate decrease in participation
5. Significantly decrease our level of participation

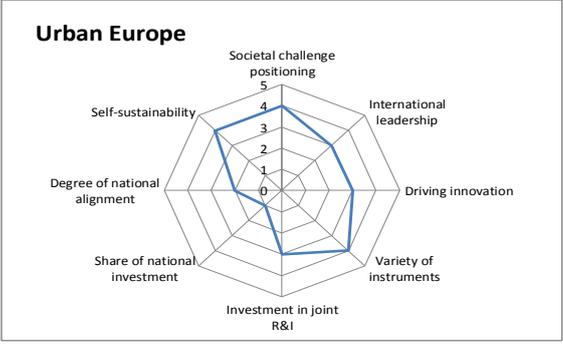
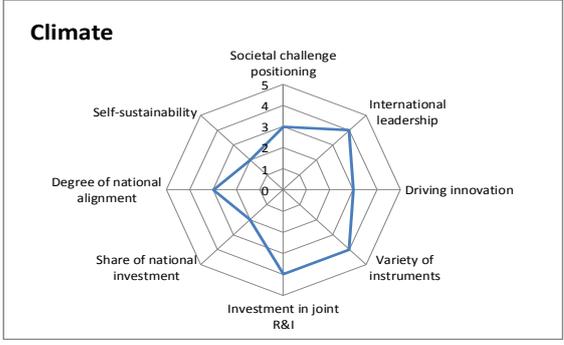
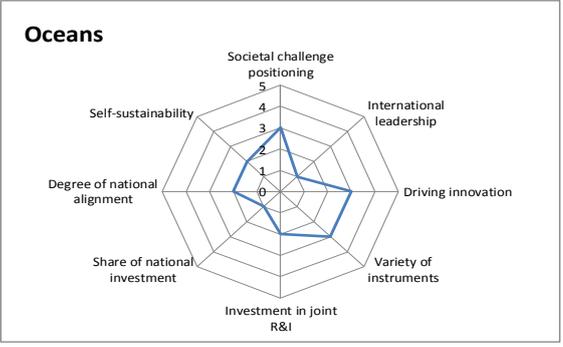
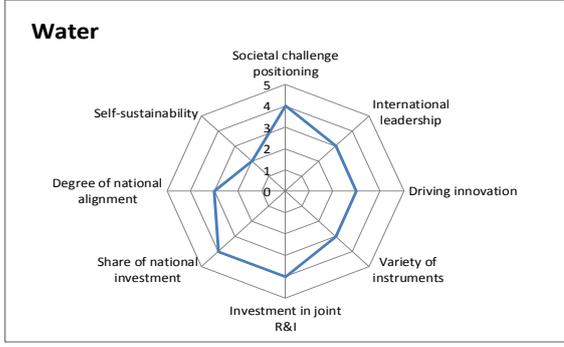
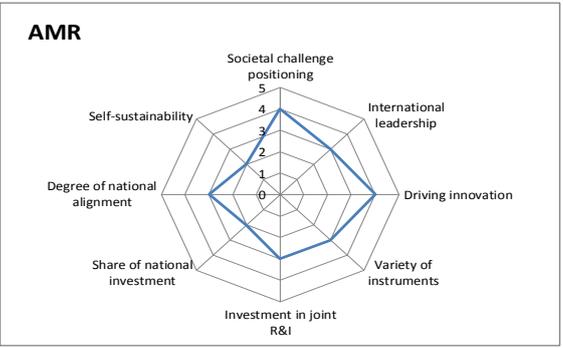
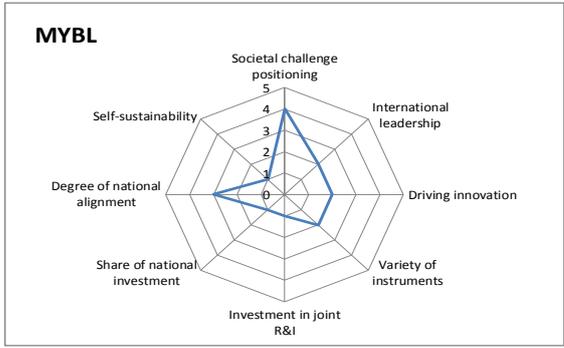
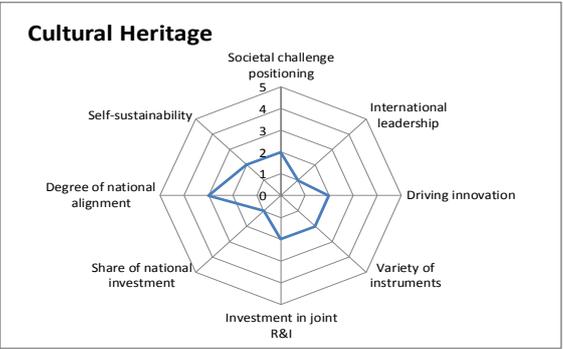
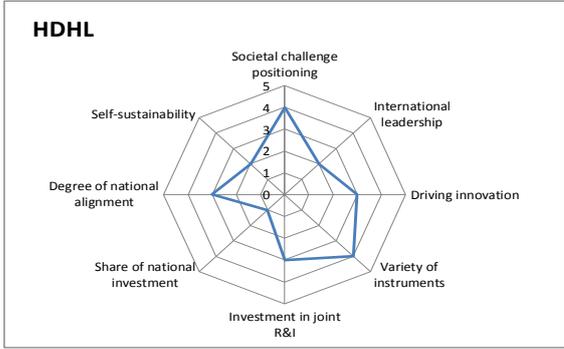
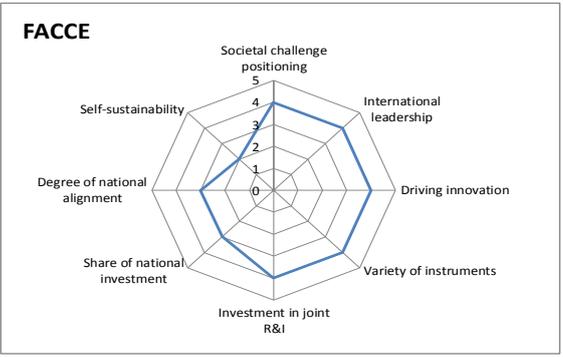
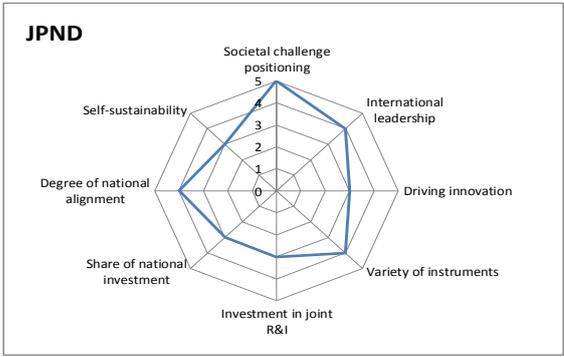


Appendix C: Assessment of the 10 JPIs

Evidence provided by the JPIs, and from consultations with other stakeholders, is summarised below. This is structured with respect to eight specific indicators of JPI Excellence, which enable a qualitative assessment of 'progress towards impact on the societal challenges' and 'mobilising of co-investment and alignment actions'.

Indicators of JPI Excellence	Assessment Factors				
	1	2	3	4	5
Progress towards IMPACT on the SOCIETAL CHALLENGE					
Positioning within European societal challenge landscape	<i>Societal challenge stakeholders consulted during development of the SRA/SRIA</i>	←—————→			<i>Active engagement and collaboration with other R&I networks and policy stakeholders at the national and EU level</i>
International research leadership	<i>No engagement with peers in 3rd countries outside Europe</i>	←—————→			<i>SRA/SRIA has been adopted at international level and large scale joint actions mobilised with leading global players</i>
Driving demand for innovative new solutions	<i>No actions to mobilise industrial innovation and participation of end users</i>	←—————→			<i>Strategic innovation agenda and development of new public/private partnerships</i>
Variety of joint actions and instruments	<i>Predominantly focussed on applied scientific research. Limited to use of ERA-NET Cofund instruments</i>	←—————→			<i>Portfolio of customised joint actions and calls covering the whole of the research programming cycle from foresight to exploitation</i>
Mobilisation of CO-INVESTMENT and ALIGNMENT Actions					
Investment in joint research and innovation projects	<i>No joint calls</i>	←—————→			<i>Increasingly large scale joint calls and inclusion of leading 3rd countries</i>
Share of total national investment in the subject that is coordinated through the JPI	<i>No joint actions or calls using institutionally funded resources (scientific staff, research infrastructure)</i>	←—————→			<i>Large share of total R&I investment in the Challenge is coordinated through the JPI</i>
Degree of national alignment	<i>No change in national research programming systems in the specific Challenge area</i>	←—————→			<i>SRA/SRIA adopted in majority of national research programming systems, alignment of institutionally funded resources, wide opening of national infrastructures</i>
Sustainability of the JPI infrastructure	<i>Reliant on Commission funding for central secretariat (CSA)</i>	←—————→			<i>Long term funding commitment JPI members</i>

The relative scores for each JPI are shown in the spider diagrams below followed by a table of evidence for the qualitative scores. Similar diagrams are included in Appendix D for the other four P2P networks that were included in the evaluation.



	JPI Assessment Indicators	JPND	Qualitative Score
Progress towards impact on societal challenge	Positioning within European societal challenge landscape	<i>Strong political support from France at the beginning and UK Prime Minister G7 initiative more recently. Has raised political concern for the JPND and Alzheimer challenge. Action group on 'patient and public involvement' expanded in 2014 to form a Stakeholder Advisory Board. Has collaborated with the AAL185 through joint sessions at the AAL annual conferences in 2013 and 2014.</i>	5
	International research leadership	<i>Seen as a good model (followed by WHO) and has become established as a recognized global actor. Canada and Switzerland are full members and Australia joined this year. All are involved in calls. US NIH and WHO are working with JPND to develop a global research roadmap. Strong interest in internationalisation. Opening discussion with Japan and other Asian countries. Policy links with G7 dementia and World Dementia Council.</i>	4
	Driving demand for innovative new solutions	<i>Chair of JPND is on the EIP for Ageing Board (at suggestion of the Commission). Links with the JTI/JU on Innovative Medicines (IMI) are actively developed. Action group - Engagement and partnership with industr. Some specific call (such as the one on biomarkers for neurodegenerative diseases) may interest industrial players.</i>	3
	Variety and type of joint actions and calls	<i>Includes mapping, joint calls, and action groups. Mapping exercise on national research and infrastructure in 20 European countries. Joint calls mainly for research projects. CoEN program for linking excellent research centers. One call for working groups for cohort studies in ND research. Action Groups on alignment, patient and public involvement, assisted living technology, social and health care research, cohorts, animal and cellular models and palliative care. Looking at Marie Curie instrument for capacity building and also ESFRI for infrastructure. Knowledge Hub under discussion.</i>	4

Mobilisation of co-investment and alignment actions	Investment in joint research and innovation projects	<i>Five thematic calls (2011-2013) without EU cofunding with over €60m cumulative investment and 3 CoEN calls for 20M€. Rapid call in 2014 for working groups (€0.5m). ERA-NET Cofund call launched in 2015 with total budget of €35.5m including €7m from the EU (concludes 2019). New rapid call in 2016 on Imaging alignment.</i>	3
	Share of total national investment in the subject that is coordinated through the JPI	<i>Overall European funding is around €400m per year. JPND estimate is that it coordinates some 10% of all public investment in the ERA. ERA-NET Cofund call attracted 175 proposals involving 892 teams. The EC top-up funding allowed to support 21 proposals.</i>	3
	Degree of national alignment	<i>Alignment is monitored with sixteen countries implementing or preparing national strategies on ND or dementia. Specific action groups to help other members towards that goal. Pay a lot of attention to the national internal networks and actors. JPND has influenced national programmes in France, UK, Germany - then Spain, Canada and the Nordic countries and extends now to others.</i>	4
	Sustainability of the JPI infrastructure	<i>Well functioning secretariat. Exploring the options for a legal entity: Needs for a permanent structure for international discussion and representation. On this topic, a second CSA JPsustaiND started in November 2015. Members accepted to pay a 20 k€ fee between 2 CSAs (global amount collected : 340 k€ in a real common-pot)</i>	3

	JPI Assessment Indicators	FACCE	Qualitative Score
Progress towards impact on societal challenge	Positioning within European societal challenge landscape	<i>Joint BiodivERSA/FACCE-JPI call (2014), without EU co-funding on promoting synergies and reducing trade-offs between food supply, biodiversity and ecosystem services'. Awareness of link between food security and climate change has increased. Follow closely the EIP on agriculture. Organized 'The grand debate on food and nutrition security' (EXPO2015). Collaboration with SCAR (SCAR has an observer in FACCE and several GB members are in SCAR).</i>	4
	International research leadership	<i>The Belmont Forum, USA, Canada and New Zealand participate in two activities. 2013 Call on 'food security and land use change' with the Belmont Forum and a call with GRA (global research alliance) on greenhouse gases. New Zealand is becoming an associated partner. There is dialogue with several organizations concerning membership and cooperation (CGIAR/CCAFS as an example). 10 third countries (Brazil, Canada, China, Ethiopia, Egypt, Japan, India, New Zealand, Qatar, South Africa, Taiwan, Tunisia, USA) participate in projects.</i>	4
	Driving demand for innovative new solutions	<i>Economic challenges is the No 1 priority. New SRA will try to increase the focus on impact and innovation. Stakeholder advisory board established. The ERA-NET SURPLUS call has focus on innovation. The Knowledge Hub is in itself an innovative solution and is also driving innovation.</i>	4
	Variety and type of joint actions and calls	<i>The MACSUR Knowledge Hub is a successful joint action, bringing together 365 individuals from 71 institutions from 18 countries. Mapping meetings, international workshops, JPI monitoring & evaluation framework (2013), exploratory workshops on cluster topics and knowledge hub as well as joint calls. Thematic Annual Programming Network on improving soil quality (TAP SOIL) is a new instrument aligning national programmes.</i>	4
Mobilisation of co-investment and alignment actions	Investment in joint research and innovation projects	<i>Four joint calls in 2012 (€15m), 2013 (€11m and €10m) and 2014 (€10.2m) without EU co-funding. Includes collaboration with other networks. Four EU co-funded – FP7 ERA-NET Plus (€18.8m total, 2013-2018) and ERA-NET Cofunds including FACCE SURPLUS (€13.8m, 2014-2019), ERA-GAS (€13.8m, 2015-2020) and WATERWORKS (€27.55m total, 2016-2020). The MACSUR Knowledge Hub combines €8m of 'fresh' research funding with €7m of institutional funding for undertaking joint modelling work.</i>	4
	Share of total national investment in the subject that is coordinated through the JPI	<i>The JPI apparently coordinates 10% of all public investment in the member countries in this area.</i>	3
	Degree of national alignment	<i>At least four countries (Ireland, Finland, France and the UK) are explicitly taking up FACCE priorities in their national programmes. Some other countries have started aligning their priorities to the activities in FACCE.</i>	3
	Sustainability of the JPI infrastructure	<i>Dependency on H2020 funding for Secretariat. Alignment is considered to be a continuous process. Members pay €5K entry fee and another 5K€ between 2 CSAs.</i>	2

	JPI Assessment Indicators	JPI HDHL	Qualitative Score
Progress towards impact on societal challenge	Positioning within European societal challenge landscape	<i>Broad and complex domain (interface between SC1 and SC2) . Links to five JPIs, one ERA-NET, one A185, two ETPs and one EIP. Also to upcoming Food KIC. Concrete actions with FACCE. Active stakeholder advisory board. Links with agriculture and health ministries, DG SANCO and DG AGRI – partial links to SCAR. Workshop with AAL185 to explore research area ICT/Nutrition. Paper on 'nutrition security' submitted to EC in response to public consultation launched in May 2015.</i>	4
	International research leadership	<i>Members include Canada and New Zealand. Israel is an observer. Has become interesting for 3rd countries. Dialogue opened with USA, Australia.</i>	2
	Driving demand for innovative new solutions	<i>Some countries fund only in the public sector – management board considers that the best place for industry actors is to participate in a stakeholder advisory board – involvement of industry is still under discussion. ETP on Food for Life is one way of addressing the innovation dimension – other way is to generate intellectual property. HDL produced some guidelines about IPR.</i>	3
	Variety and type of joint actions and calls	<i>Inventory of all relevant programmes (mapping of funding systems in each country). Finding it challenging to identify all Ministries addressing diet and health issues in the member countries. Third international conferences, four joint actions, mapping of existing foresight studies in the ERA. Different types of calls is now under discussion, so far there has been calls for knowledge hubs as well a thematic research.</i>	4
Mobilisation of co-investment and alignment actions	Investment in joint research and innovation projects	<i>Implementation plan (2014) features 10 joint calls/actions for which €38m (probably a higher number, €51m cash) has already been committed. Annual calls without EU co-funding since 2012 (1st call was a knowledge hub with one proposal and project of 11.2m / 2nd call 3.6m / 3rd call 20 proposals, 2 projects, 5,6 m actual investment). Good mix of cash and institutional funding. Planning ERA-NET Cofund on Biomarkers (€10-11m total) for 2016-2021. Has also suggested two ERA-NET Cofund topics for the H2020/2016-17 programme.</i>	3
	Share of total national investment in the subject that is coordinated through the JPI	<i>Not provided</i>	1
	Degree of national alignment	<i>Structuring effect of the JPI is real. Exchange initially, then joint actions. Ireland, Netherlands, Austria, Scandinavian countries, UK have used the SRA in building their national agenda. Sometimes SRA is considered as an international policy rather than something that should influence their national programming – diversity is interesting too. Some countries have mirror groups to prepare their positions – eg Ireland, Netherlands. Trying to encourage more to do this. Alignment of institutional funding is difficult.</i>	3
	Sustainability of the JPI infrastructure	<i>Grouping of people with a real interest in the issues is very positive – improved commitment and participation by representatives of members. Highly dependent on new CSA but the gap between the previous and the coming CSA has been financed by all countries together in a "participation agreement"</i>	2

	JPI Assessment Indicators	JPI CH	Qualitative Score
Progress towards impact on societal challenge	Positioning within European societal challenge landscape	<i>During the Italian Presidency the possibility to get cultural heritage on the agenda of the proposed EUROMED A185 was explored. Meetings with ECTP (European Construction Technology Platform – Focus area on Cultural Heritage). Also EUROPA NOSTRA. Main link is with H2020/SC5 (nature-based solutions) but JPICH is not included in the WP2016/17 because of the EC reference to the Expert Group Report. Coordinator claims that no previous cooperation of this size has ever existed, in terms of Countries, number of public organizations involved and response from researchers.</i>	2
	International research leadership	<i>Several 3rd countries and the United Nations participated in joint meetings. Advisory Meetings with international organisations like UNESCO, Council of Europe, ICOMOS, ICOM and ICCROM.</i>	1
	Driving demand for innovative new solutions	<i>Funded projects involve industries & SMEs and local authorities as end-users as well as research centres and universities. No industry involvement in the preparation of the SRA. Industry sector involved in the Advisory Board (construction (ECTP), but not tourism sector). Should be building on Expert Group report – big economic opportunity – could be looking at new business/finance models. The JPI CH produced the SRA, not the SRIA.</i>	2
	Variety and type of joint actions and calls	<i>Pilot call included both networks and traditional research projects. Heritage Portal – amongst other things it provides access to a forward looking activity at United Nations level addressing ‘the future of Cultural Heritage’. International workshop in 2013 in London to present the vision and SRA. Focus is on both fundamental and applied research - Capacity building is included in SRA but no progress yet. A strategy for Monitoring and Evaluation of JPI CH (including detailed methodology, definition of indicators) has been set up by a panel of 12 experts and was published in Nov. 2013. National Consultation Panels were involved for the preparation of SRA</i>	2

Mobilisation of co-investment and alignment actions	Investment in joint research and innovation projects	<i>Launched two joint calls: a pilot call in 2013 (€3.3m, 89 proposals, 10 projects) and an FP7 ERA-NET Plus Call in 2014 (€9.3m total, 352 pre-proposal, around 1500 teams, 81 full proposals, 16 projects) Total actual investment is €11.4m</i>	2
	Share of total national investment in the subject that is coordinated through the JPI	<i>The commitment is variable among participating countries. JPICH launched two transnational calls in this area of research with a total national funding of 10.6m Euro (projects funded + management). EU contribution so far is 2m Euro CSA (JHEP). Planned 3.1m Euro H+ e 1 CSA JHEP2 if passed total maxim contribution 6.1m Euro (of which 4.1 estimated). Total support (national and union funding) = 16.724m Euro. Total Percentage of Union support = 36%. Implemented Percentage by Union = 12 %. Planned Percentage by Union = 24 %</i>	1
	Degree of national alignment	<i>Five countries or institutions have strategies taking into account the JPIs SRA. Before JPICH most research was funded under scientific discipline calls but some (Italy, Czech Republic) are now including CH as a thematic area in their national programming. No previous cooperation of this scale and breadth existed. Norway and Cyprus include perspectives from the SRA in their new national program. Countries such as Italy, Poland and France had to improve dialogue between ministries. Less important in countries with Research Councils like the UK. New development is Task Force for alignment.</i>	3
	Sustainability of the JPI infrastructure	<i>Too little commitment for financing the management/secretariat. Now commencing 2nd CSA. Italy is financing the secretariat in the meantime (for one year). No permanent solution in place. Members support Portal with cash money (as a fee)</i>	2

	JPI Assessment Indicators	JPI-MYBL	Qualitative Score
Progress towards impact on societal challenge	Positioning within European societal challenge landscape	<i>JPI strategy and mapping activities have contributed to EC's actions and the strategy of the EIP on 'active and healthy ageing'. Links to three JPIs, one EIP, one A185, EIT Health, ERA-AGE II and MoPACT - Policy synergy with H2020/SC1 (demographic change), IMI and various EC DGs. Actions to follow up are still pending. Good common meeting with AAL185. Alignment of policy is No 1 priority but subject is not a priority for the Commission (filling gap).</i>	4
	International research leadership	<i>Canada is a full member – has strategy aligned to the JPI. International dimension is an important issue. Have interests with China and Japan.</i>	2
	Driving demand for innovative new solutions	<i>Need to imply some industrial resources – eg ICT. Need to be interdisciplinary – overcome traditional research communities for complex societal challenges. This is the frame for capacity building – Commission has lots of instruments to help. Not just about research or scientific publications.</i>	2
	Variety and type of joint actions and calls	<i>Launched two 'fast-track' joint actions and is envisioning three joint calls. Fast track data mapping project (2013) will map the range of data sources on ageing at the European and national levels and identify gaps in the available data infrastructure. Mapping of the area "understanding employment participation of older workers" report and conference in 2015</i>	2

Mobilisation of co-investment and alignment actions	Investment in joint research and innovation projects	<i>Envisioning several joint calls including an ERA-NET Cofund action. Single call 2015 (€7.7m) without EU funding</i>	1
	Share of total national investment in the subject that is coordinated through the JPI	<i>The thematic area is very wide and it is difficult to delineate.</i>	1
	Degree of national alignment	<i>Five member countries (including Canada) have strategies aligned to the JPI. Implementing a mapping to see how the national programmes and funding are aligned and structured – needs 10 years to drive this process (low level of national alignment so far). Little European feeling – still thinking on the national level – mixed representation from MS – needs single voice from cross-country funding bodies.</i>	3
	Sustainability of the JPI infrastructure	<i>There has been great difficulties in establishing a sufficiently strong secretariat. The CSA has helped in creating a secretariat.</i>	1

	JPI Assessment Indicators	JPI AMR	Qualitative Score
Progress towards impact on societal challenge	Positioning within European societal challenge landscape	Policy links to the EU Action Plan against the rising threat of antimicrobial resistance and the European Parliament resolution on AMR. Work in partnership with DG RTD also aligning calls. Good interaction with IMI (participating in the IMI Strategic Group about infectious diseases) – ambition to have coordinated calls with IMI. Alignment of policy and funding is a major priority. Could be more involved in H2020 process. Division of labour discussed with relevant ERA-NETs. Have approached DG SANTE to launch a Joint Action – need to focus also on non-research activities.	4
	International research leadership	Focus on internationalisation: Non-European members include Canada, Argentina and Japan (they participate also in calls). Under negotiation for membership is India, China, South Africa and Australia. Building foundations for strategic partnership and scientific collaborations with USA (joint forum with NIH planned in 2016). Close collaboration with the Transatlantic US-EU Task Force on AMR (TATFAR). Working closely with the G7 on the elaboration and implementation of the AMR Declaration. During the launching conference of the JPIAMR SRA, the UK Chief Scientist suggested that it be taken as a blueprint for a WHO level strategy under the 'One Health' approach. Working with WHO on the AMR Global Research Agenda (member of the Stakeholder Board).	3
	Driving demand for innovative new solutions	Joint 'industry involvement' working group with EC-EPPFIA-IMI. Interaction with IMI (participating in the IMI Strategic Group about infectious diseases). SRA considered as a tool for industry also. Two joint events with industry: 2014 on drug development and 2016 on clinical trials. Industry is part of the Stakeholder Advisory Board. Specific task force focussed on industry engagement and links with IMI. Industry is encourage to participate in the calls. Mapping of SMEs at national level (2015)	4
	Variety and type of joint actions and calls	Mapping of AMR research funding and national programmes/policies across Europe (one person dedicated to this task), joint workshops with other stakeholders, policy and expert scientific workshops, survey on AMR infrastructures, joint research calls, joint research networks call. Believe that other knowledge-based instruments such as Marie Curie action should be used.	3

Mobilisation of co-investment and alignment actions	Investment in joint research and innovation projects	Foresees two joint calls, including an ERA-NET Cofund, over €30m. Two thematic research calls closing in 2014 (€13.8m) and 2015 (€9.6m) without EU co-funding. Planning a joint research networks call (indicative €0.5m budget) in 2016. Planning a fellowship programme in 2017 and another thematic joint call in 2017. H2020 ERA-NET Cofund action (total call budget €23.1m) with main one closing in 2016. Non-European countries will join this call increasing the call budget to approx. €35m.	3
	Share of total national investment in the subject that is coordinated through the JPI	Not provided. The JPI members invested around €650m in competitive research funding from 2007-2013. Institutional funding through e.g. specific Infectious Disease research centres have not yet been mapped. At JPI level joint calls are of €64m (2014-2016). Significant in kind contributions through organising workshops, etc. as well as the coordination meetings of the JPI. Half of the member countries have a national programme – influenced Swedish programme, project is in the national plan in France. The JPIAMR SRA is instrumental in the current development of national plans.	2
	Degree of national alignment	Alignment of national programmes, which exist in most member countries, will be discussed under the WHO 'One Health' approach. Alignment plan adopted in June 2015 and initiation of series of national inter-ministerial and intra-agency meetings. Focus is more towards further alignment rather than implementing joint calls. Have overcome MS original perception of an ERA-NET like initiative with only joint calls. Some countries see this initiative as their 'national programme' and allocate all competitive funding to AMR (eg. Norway)	3
	Sustainability of the JPI infrastructure	1st CSA until February 2016. Fees in 2016. Second CSA until 2020. Pragmatic and focussed management board but financial crisis is a bottleneck. Long process for decision making – some MS representatives not able to take decisions. Ability to pay member fee is not 100% - paying to keep the JPI running is an important risk – have some fee income but not enough – many expect the Commission to pay but transition is necessary.	2

	JPI Assessment Indicators	Water JPI	Qualitative Score
Progress towards impact on societal challenge	Positioning within European societal challenge landscape	<p>Doing good work, very research culture driven. Activities have supported the implementation of EU water policy such as the Water Framework Directive and aim to support related directives (Groundwater, Priority Substances), other Environment Protection directives (e.g. Environment Liability) and other sectoral policies (e.g. Agriculture). It will also support the implementation of some of the UN Sustainable water-related Development Goals.</p> <p>The ERA-NET Cofund action will contribute to support other thematic policies. Important collaboration with FACCE and possible future collaboration with JPIs for Climate and Oceans. Lots of existing initiatives in the water domain – EIP Water, ETP (WSSTP), A185 PRIMA, A185 BONUS 2, INTENS Africa (how does JPI Water fit within the wider landscape?). A Working Group for H2020 has been established.</p>	4
	International research leadership	<p>South Africa participated in one of the joint calls (Water Works2014, as funding agency). Interest from the best teams in USA and Canada – also interest from Africa/Egypt/India. The Commission (Challenge 5) is opening a possibility for a new CSA on international cooperation (based on a dialogue with JPI water). Six 3rd Countries (Canada, Egypt, South Africa, Taiwan, Tunisia, USA) participate in 3rd call WaterWork2015 (common with FACCE), and will contribute to additional activities (on alignment, knowledge hub development, or identifying critical infrastructures).</p> <p>Future CSA on international cooperation development with interest from additional countries (Chile, Brazil or Vietnam).</p>	3
	Driving demand for innovative new solutions	<p>For the Water challenges, the water economic sector is composed by private companies but also public enterprises.</p> <p>The expected contribution to the CAP will be aimed at supporting the priority to increase take-up of measures aimed at protecting water resources (The next CoFund action will be a collaboration with FACCE (water and agriculture). The 2nd Call on water management and waste treatment was addressed mainly to public private partnership and themes related to innovation. It attracted interest from private companies and start-ups. Industry is involved as a stakeholder in the SRIA design.</p>	3
	Variety and type of joint actions and calls	<p>Mapped research in the ERA in terms of investment. Uniquely, has mapped the collaborations between European researchers in the area in terms of joint publications, thus allowing tracking the impact of the JPIs activities on the Societal Challenge in the future. Position Document on the EIP on Water and meeting with its Steering Group, document entitled 'Towards Partnership and Complementarities with Horizon 2020'. Starting to develop knowledge hub based on FACCE model.</p> <p>A second workshop on alignment was held in November 2015. It has been the occasion of future discussion with ERALEARN and the Face JPI</p>	3
Mobilisation of co-investment and alignment actions	Investment in joint research and innovation projects	<p>Launched several joint actions and calls for a total that should reach €80m in 2015, including two ERA-NET Cofund calls. Thematic research call closed in 2014 (€9m) without EU cofunding. 2014 Call for technological solutions to support EU water policy (€10m total including grants, loans and almost €5m of EU funding). ERA-NET Cofund action launched in 2015 (WaterWorks) – €18.37m total including €6.06m from EU. Two Joints Calls (9 M€ on emerging contaminants in 2014, 16 M€ on waste water treatment and water reuse in 2015). One upcoming Joint Call (25,5 M€ on water and Agriculture challenges) in 2016. Large impact on the scientific communities with 64 proposals for the 1st Call, 118 pre-proposals for the 2nd Call from 15 countries.</p>	4
	Share of total national investment in the subject that is coordinated through the JPI	<p>Expects to coordinate 20% of the combined €500m MS/EC budget by 2020. Partners account for 88% of the estimated national public RDI funding in Europe. They spend €371m per year – JPI coordinates 0.2% share in 2014 and 0.48% in 2015. 64 proposals to 1st call, 118 pre-proposals for 2nd – more than €110m requested. Higher and more continuous commitment needed from big countries.</p>	4
	Degree of national alignment	<p>SRIA used for alignment of national plans in Ireland, Norway, Cyprus and France – alignment action-by-action in Netherlands. The reason, at least for Norway, is the lack of dedicated calls in this area. Issues vary between geographic zones – eg Mediterranean and Scandinavian.</p>	3
	Sustainability of the JPI infrastructure	<p>Good Transfer from first leadership (Spain) to new one (France). Broader and better governance now (including three vice chairs with specific mandates) and a Management Board that meets every 2 months allowing for more discussions and ideas for improvement. More involvement of different countries such as Ireland, Italy, Spain and France. Have increased the role of the scientific and stakeholder advisory boards. The need for a longer term agreement with the Commission has been expressed in 2015. The Water JPI GB members decided that they should establish a "business plan" for the future activities.</p>	2

	JPI Assessment Indicators	JPI Oceans	Qualitative Score
Progress towards impact on societal challenge	Positioning within European societal challenge landscape	<i>Many of the national members are involved in relevant committees for the challenge including those concerned with EU Directives such as the ones on Marine Planning Framework (MPF) and Marine Spatial Planning (MSP). New knowledge is needed to support implementation. Strong synergies with the 'Blue Growth' Strategy and good links being developed with DG MARE and ENVIRONMENT. Links to A185 BONUS, Blue Med and marine ERA-NETs. The recently approved 2nd CSA will allow JPI Oceans to explore alignment with the EU Blue Growth Strategy.</i>	3
	International research leadership	<i>Relatively high profile at the level of the G7 science ministers (JPIO mentioned in recent statement as a tool for cooperation in international research). Involved ICES (International Council for Exploration of the Sea) in one of its pilot actions. On the Board of Trans-Atlantic Alliance, and invited peers from US/Canada to next JPI management board meeting. Also starting to engage with New Zealand and some Latin America Countries regarding southern oceans.</i>	1
	Driving demand for innovative new solutions	<i>JPI has a strong commitment to innovation through its SRIA, its alignment with the Blue Growth strategy and its proposed ERA-NET Cofund (foreseen in H2020 WP2016). This includes the SRIA priority areas of deep sea resources, technology and sensor developments and use of marine bio resources as well as actions in traditionally less scientifically driven sectors (for example innovative societal aspects such as oceans and human health and the health benefits of marine tourism). Involvement of industry/SMEs will be a feature of the ERANET Cofund Call.</i>	3
	Variety and type of joint actions and calls	<i>Various pilot actions aimed at testing innovative approaches to cooperation as well as joint calls. JPIO has established panels of member country experts, provided support to policy, shared infrastructures (research vessels) and carried out foresight and bibliometric studies. It has also mapped an area that was still to be fully defined in advance of the adoption of its SRA. Seeking to apply different approaches for different issues and hope to use of different funding instruments to implement agenda.</i>	3
Mobilisation of co-investment and alignment actions	Investment in joint research and innovation projects	<i>Has worked on joint actions using institutional funding rather than joint calls. Joint action on 'ecological aspects of deep-sea mining' was worth some €10m. Single cash call on ecological aspects of microplastics closed in 2015 - €7.5m budget, no EU cofunding. Expect to launch ERA-NET Cofund in 2016/17 (indicative commitments of €33.5m for two Cofund Calls).</i>	2
	Share of total national investment in the subject that is coordinated through the JPI	<i>Mapping activities indicate that the JPIO member countries annually invest some EUR 2 billion in marine and maritime research.</i>	1
	Degree of national alignment	<i>Norway, Italy and Germany have established specific inter-ministerial boards for JPIO (UK already had a Marine Science Coordination Committee). France and others have mirror groups. The SRIA is influencing national policy in some member countries.</i>	2
	Sustainability of the JPI infrastructure	<i>The current model is based on Norway paying most of the operating costs for the international secretariat in Brussels as well as seconding several staff. Belgium, Germany, France, Italy and Spain have also seconded staff. The management board has developed an alternative strategy based on a more equitable model to co-fund the permanent secretariat and establish a legal entity (AISBL under Belgian law). The 2nd CSA (recently approved) will provide some of the resource to implement the proposed joint actions. Crowded landscape of marine science initiatives (eg BONUS 2) all looking for national money.</i>	2

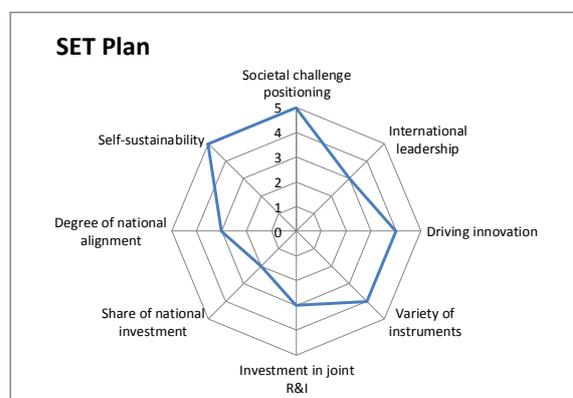
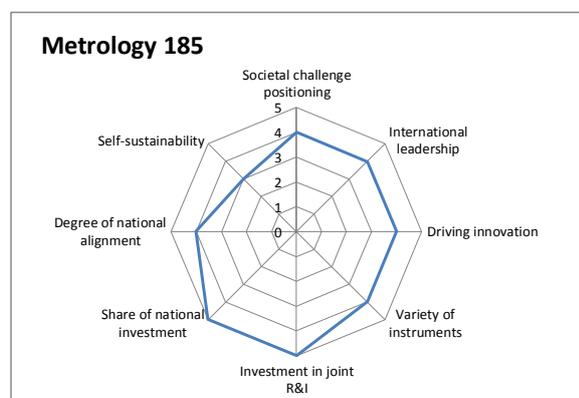
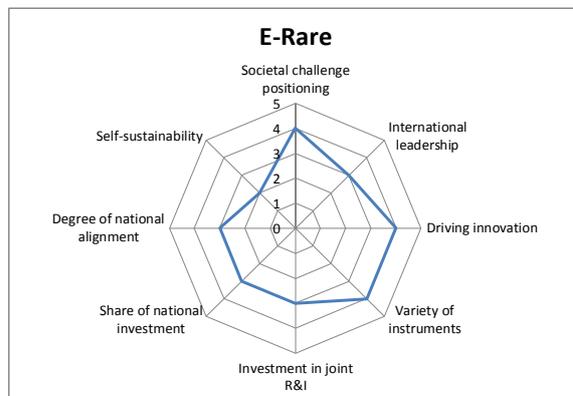
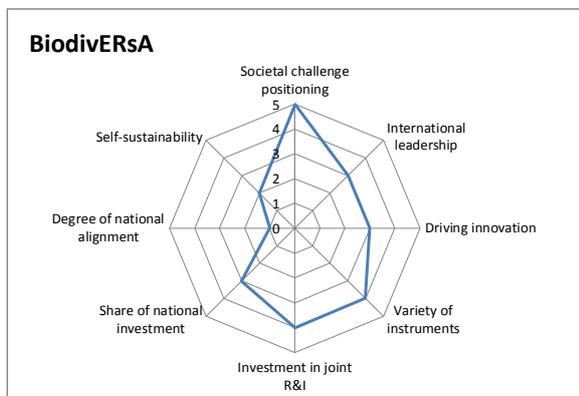
	JPI Assessment Indicators	JPI Climate	Qualitative Score
Progress towards impact on societal challenge	Positioning within European societal challenge landscape	<i>Strong interaction with Commission SC5 challenge group to develop complementary framework with MS but not apparently connected to DG Climate. Numerous structures and organisations in the climate area but lack of interaction and coordination (fragmentation) - New SRA is coming up with cross-sectorial approach and stronger cooperation with others European initiatives, as the JPI is very aware of the four "silos" that today leads to fragmentation. Four partly overlapping JPIs (Oceans, Water, Urban Europe, FACCE) - more complementary on sectorial effects of climate change, cooperation in process within new CSA ECOMS2 and Additional Activities of new ERAnet COFUND for Climate Services, two proposed A185 (PRIMA and BONUS2), INTENSAfrica, COPERNICUS and Climate KIC (advisors in new ERAnet COFUND) – often different national actors to bring closer in future</i>	3
	International research leadership	<i>Joint call (no 2) was with Belmont Forum. 2nd call enabled cooperation with Brazil, China, India, Japan and Qatar. Joint session with EC/R&I and Climate KIC on user driven R&I at the 2015 UNESCO conference (Paris). Also close interaction with World Meteorological Organization programs (GFCS and WCRP)</i>	4
	Driving demand for innovative new solutions	<i>Original SRA is under revision towards new one with strong inputs from the transdisciplinary advisory board representing climate stakeholders (half are stakeholders, half are top scientists). Strongest impact comes from involving all the necessary disciplines – not just climate sciences - to prevent and adapt climate changes</i>	3
	Variety and type of joint actions and calls	<i>Fast track activities (eg. position paper), information portal with network of climate service providers promoting user driving demand, mapping of deployment of national climate services within MS, assessment and quality control of CS. white papers, synthesis report, literature review on research needs, joint research calls (incl. international cooperation).</i>	4
Mobilisation of co-investment and alignment actions	Investment in joint research and innovation projects	<i>Launched in 2013 a joint action and joint call for a total of €12m, proving the potential of the JPI members to collaborate. Developing a large ERA-NET Cofund action on 'climate services' in the €75m range, aiming at combining joint calls and the mobilisation of institutional funding through in-kind contributions. Two calls without EU cofunding closing in 2013 (€11.4m) and in 2015 (€15m) with international Belmont Forum – also ERA-NET Cofund with total of €75m for 2017. Large mobilisation of social sciences and humanities in 1st call.</i>	4
	Share of total national investment in the subject that is coordinated through the JPI	<i>No details. 3rd Call (EN Confund) will involve both cash from research funders and also in kind contributions from 28 top research performing organisations in Europe for institutional integration. Low level of funding induced a selection rate of 1:10 for joint call</i>	2
	Degree of national alignment	<i>Launching a large ERA-NET Cofund should contribute to the alignment of national strategies from most of the 16 JPI members and associated, plus Portugal, Greece and Romania. Main alignment opportunity in this domain is institutional funding. Great diversity of MS structures. Some countries (eg ANR/France) have partial alignment of their national plan. General mapping of 16 MS and beyond will be made in 2016 to identify key areas for co-alignment experiments in 2017-2020. Ministerial level structures (like French mirror groups) needs to be promoted to other countries to reduce fragmentation between national actors. Nearly 80% of climate research funders in Europe are involved, while Eastern countries start to be included in activities. A lot of countries have difficulties in giving long term guarantees for funding.</i>	3
	Sustainability of the JPI infrastructure	<i>Governing board is headed by ANR, but scientists are dominant in opinion making processes as management committee (consisting of co-leaders of four WG committees) are mainly from performing organizations. Role of funders as well as stakeholders needs to be strengthened. Strong interaction at scientific level but not at top management level - need stronger political support from the ministries to reduce fragmentation of actors at national level.</i>	2

	JPI Assessment Indicators	JPI UE	Qualitative Score
Progress towards impact on societal challenge	Positioning within European societal challenge landscape	Stakeholders have been engaged through Forward Looking Activities on 'urban megatrends'. Interests cut across most of the H2020/SCs (engaged with lots of EC DGs). Considered to be a fresh approach (R&I agenda) to provide a knowledge base for evidence based policy making on sustainable urbanisation. Good links with Committee of the Regions and smart cities EIP. Lots of related initiatives. Contributed to a range of urban-related high level events across Europe. Some overlap with JPI Climate. The JPI has had one meeting in the Parliament "Connecting the Actors – Transition towards sustainable and liveable urban futures"	4
	International research leadership	Good links with China, India, Australia and the USA + Belmont Forum. Liaison with the Strategic Forum for International Cooperation and initiated dialogue with China on RTDI collaboration under the EU-China partnership for Sustainable Urbanisation – initiated dialogue with India, Australia and New Zealand. Proposed ERA-NET Cofund for 2016-2018 period with INCO/Belmont Forum.	3
	Driving demand for innovative new solutions	Aiming to establish strong links with city administrations. SRIA (Strategic Research and Innovation Agenda) doesn't follow the normal approach but is aiming for transdisciplinary and trans-sectorial approaches. Aims to respond to the needs of city administrations in transition towards urban sustainability. The JPI UE is a 'research' initiative but at the same time is providing solutions to problems. Innovation is the next goal	3
	Variety and type of joint actions and calls	An Urban Europe Research Alliance of RTOs (similar to FACCE Knowledge Hub) is being developed in order to align national institutional funding. Reviewed urban related RTDI programmes and funding practice in participating countries. Urban Europe Forum for stakeholders is challenging, and the strategy now is to participate in existing arenas using the FP7 project SEiSMiC. Working towards a joint call with China as an additional activity of the ERA-NET Cofund "Smart Cities and Communities". Trying to establish a fully-fledged transnational programme through a variety of joint actions, including: a transnational programme management to implement a long-term, mission- and demand-oriented programme, joint calls, new instruments (including living labs and innovation clusters), alignment actions (including alignment of national RD&D programmes), shared RD&D infrastructures (like urban observatories and new big data infrastructure), monitoring and evaluation, and, finally, activities for valorisation, dissemination and communication.	4

Mobilisation of co-investment and alignment actions	Investment in joint research and innovation projects	Several joint actions and joint calls that have committed €46m until end of 2015. Becoming active in EN Cofund and the Belmont Forum – funding agencies from other countries worldwide are getting involved in the calls. Expects to commit an additional €50m through two additional ERA-NET Cofund actions in 2016 and 2017. In detail: Two calls, without EU co-funding, for non-technical research completed in 2012 (€9,6m) and 2013 (€10,6m). ERA-NET Cofund on Smart Cities and Communities (€26m total) with main call closing in 2015. Two further EN Cofund proposals planned for 2016 on "Smart Urban Future" (SC6) and for 2017 on "Sustainable Urbanisation" (SC5, with Belmont Forum).	3
	Share of total national investment in the subject that is coordinated through the JPI	Due to the multidisciplinary nature of the sustainable urbanisation challenge the share is difficult to estimate.	1
	Degree of national alignment	Specific work package within the CSA. Exploring alignment with national RTDI and Structural Funds. In Austria there was tremendous interest in the JPI and a MOU was signed with the city of Vienna and several universities/RTOs. The SRIA is expected to influence national programmes and priorities.	2
	Sustainability of the JPI infrastructure	Sustainability has become strong – professional JPI management now in place – based on in-kind contributions from AT, NL, Nordic countries, DE. Didn't ask for full CSA budget to develop the SRIA. Aspiration for A185 or JP Cofund in longer term. Exploring whether the scientific advisory board should be changed with the inclusion of cities or with a stakeholder board. Commitment of members increasing over time. Several countries have contributed in kind personnel. Strengthening of trust and collaboration within the JPI Urban Europe network and the voluntary participation of most countries in joint activities and initiatives is apparent. Annual fee of €5K for management costs.	4

Appendix D: Assessment of four other P2P networks

Four other P2P networks that are both mature and have some synergy with the grand societal challenges were included in the evaluation to consider whether they offered any lessons for the less mature JPIS. This included two ERA-NETs (Biodiversa and E-Rare), an Article 185 (Metrology) and the SET Plan. They are also assessed with respect to the indicators of JPI Excellence in Appendix C above.



	JPI Assessment Indicators	Biodiversa	Qualitative Score
Progress towards impact on societal challenge	Positioning within European societal challenge landscape	<i>5th Joint Call was carried out in collaboration with the FACCE JPI, discussions with JPIs Water and Climate about joint activities. Policy briefs on EU Strategies & Directives/Regulations, regular meetings with DG RTD and DG ENV, links with European Parliament through the intergroup on 'climate change, biodiversity and sustainable development'.</i>	5
	International research leadership	<i>Agreement with the Belmont Forum on a possible CRA on biodiversity – links with Future Earth. Collaboration with the ALCUE-NET European initiative between the ERA and Latin America/Caribbean region. Active participation (including funding) of the overseas partners in the sixth call</i>	3
	Driving demand for innovative new solutions	<i>Pioneered the 'stakeholder model for research' and transdisciplinary approach to address societal challenges. Main focus currently on biodiversity and Nature-based solutions. Improved link between RTD and business with Biodiversa 3</i>	3
	Variety and type of joint actions and calls	<i>Very active including various policy briefs, position papers and workshops. Annual joint calls since 2010, staff exchanges between partners, BiodivERSa database including over 6,500 research projects, stakeholder engagement procedures and handbook, analysis of funded projects' outputs. Development of program alignment, early career researcher and mobility scheme</i>	4

Mobilisation of co-investment and alignment actions	Investment in joint research and innovation projects	<i>Single FP6 joint call in 2008 totalling nearly €29m, four joint calls in FP7/ ERAnet period totalling over €76m – around 50% "directly provided by BiodivERSa partners in cash". H2020 Cofund has a total budget of over €100m</i>	4
	Share of total national investment in the subject that is coordinated through the JPI	<i>Figure likely to exceed 10% for the BiodivERSa3 period. 80% of European research on biodiversity and services is covered by the BiodivERSa members</i>	3
	Degree of national alignment	<i>Synthesis of national funding agencies strategies and priorities in 2012, regularly updated. Trying to encourage the setting up of mirror groups (already one in France) at national level. Program alignment ongoing part of BiodivERSa3</i>	1
	Sustainability of the JPI infrastructure	<i>Cofund instrument is inadequate to continue high level of strategic activities, and being outside the 'JPI club' would restrict future national/political commitments. Advisory Board includes top scientists and key stakeholders including business.</i>	2

	JPI Assessment Indicators	E-Rare	Qualitative Score
Progress towards impact on societal challenge	Positioning within European societal challenge landscape	<i>Policy links to national plans on rare diseases, EU Regulation on orphan medicinal products, Commission Expert Group on Rare Diseases, Rare disease European reference networks etc. Organising major international congress in Barcelona in 2016 in collaboration with Blackswan Foundation and IRDiRC. Collaborating on 3rd party workshops. Collaboration with European infrastructures for clinical trials, transnational research and biobanks.</i>	4
	International research leadership	<i>Well connected to international initiatives. Follows the recommendations issued by the International Rare Diseases Research Consortium (IRDiRC) since 2012. Aligned with IRDiRC international consortium – E-Rare becoming a way to engage IRDiRC funding partners in joint transnational activities of E-Rare and funding of transnational projects. Enlargement of the Consortium and implication of new funding agencies in E-Rare activities in 2015 (eg Canada, Switzerland become full partners)</i>	3
	Driving demand for innovative new solutions	<i>Strong links with industry – clear target to develop 200 therapies by 2020, currently at 147 – driving development of innovative, new products from Europe. Pilot action for co-funding with Patients Organisations in 2016 joint call. Collaboration with IMI under discussion – some partners can't fund companies. Collaboration with Eurordis and Rare Diseases Joint Action to increase the link with patients to E-Rare.</i>	4
	Variety and type of joint actions and calls	<i>Workshops, surveys of national research programmes, web-based catalogue of facilities, database of international experts, meetings of funded projects, collaboration with European infrastructures. Ethical aspects. Annual joint calls including six without EU co-funding and ERA-NET Cofund. 2012 call for proposals for young researchers. Many actions from calls were for upstream research but also more targeted calls on therapeutic approaches involving industry. Considering a call on clinical trials with implication of EFPIA and relevant European research Infrastructures like ECRIN.</i>	4
Mobilisation of co-investment and alignment actions	Investment in joint research and innovation projects	<i>Close to €60m invested in six Calls from 2007-2014, EN Cofund call closing in 2015 with €19m total budget, planning next call.</i>	3
	Share of total national investment in the subject that is coordinated through the JPI	<i>Estimated at 10%. Most countries have no national programme so the only way is via E-Rare.</i>	3
	Degree of national alignment	<i>All Italian money for research in this area goes into E-Rare. E-Rare mentioned in national plan for rare diseases in several countries (eg France) – around 50% have a national plan. NL has launched a national plan based on E-Rare. Strong connections with German national programme. Two kinds of situation: complementary or total alignment. UK and Nordic countries not so keen on European cooperation.</i>	3
	Sustainability of the JPI infrastructure	<i>Some joint actions sustainable without finance. Missing some important countries. Many discussions – very stable from the beginning – new FPA will put E-Rare and JPND in same box but more political commitment for the JPIs – would like closer cooperation with the Commission. Lack of connection between research and health ministries.</i>	2

	JPI Assessment Indicators	Metrology 185	Qualitative Score
Progress towards impact on societal challenge	Positioning within European societal challenge landscape	<i>Policy links with DG MOVE, GROW, CNCT, ENER, RTD, SANTE. Technology focussed but with dedicated interdisciplinary calls on various societal challenge topics including energy, environment and health. Funded participation of third parties has grown from 10 % under FP7 to 19 % under H2020. Formal process agreed with CEN/CENELEC to identify priorities for normative research projects. Provides more visibility of the role of measurement science to address specific societal challenges.</i>	4
	International research leadership	<i>EMPIR is fully open to 3rd country participation. National members and legal entity (EURAMET) participates in global measurement system.</i>	4
	Driving demand for innovative new solutions	<i>Introduced new instrument for H2020 programme known as 'Support for Impact'. Includes specific calls for 'industry' research projects – 1.75 weighting for 'impact' score. Challenge-based approach has brought more end users to participate in metrology projects.</i>	4
	Variety and type of joint actions and calls	<i>Annual multi-thematic calls since before 2009. Calls Initially focussed on Joint Research Projects (and mobility grants) but H2020 programme includes new instruments including 'Research Potential' (aimed at capacity building) and 'Support for Impact' actions (aimed at innovation). Also dedicated calls for normative research. National infrastructures were always open and joint research projects have increased mutual usage. No trend towards consolidation or concentration of infrastructures.</i>	4
Mobilisation of co-investment and alignment actions	Investment in joint research and innovation projects	<i>National investment of over €200m for FP7/A185, similar rate for H2020 totalling over 300 M€. At least 50% devoted to societal challenge topics. Also had previous FP6/FP7 calls.</i>	5
	Share of total national investment in the subject that is coordinated through the JPI	<i>>50% - institutional funding – more in the largest countries (DE/UK) – national activities now follow the joint programme .</i>	5
	Degree of national alignment	<i>Alignment has been No 1 priority – in the past even bilateral collaboration was difficult because of misalignment. Long term national commitments until at least 2020 – big players believe in it.</i>	4
	Sustainability of the JPI infrastructure	<i>Risk that scientists will go back to technical domains without the joint programme so important to maintain the structures for joint working – EU funding crucial. Members provide cash funding (pro rata) for central infrastructure.</i>	3

	JPI Assessment Indicators	SET Plan	Qualitative Score
Progress towards impact on societal challenge	Positioning within European societal challenge landscape	<p>The SET Plan was originally designed to support the EU2020 energy targets (i.e. it is the technology pillar of the EU's energy and climate policy).</p> <p>The integrated SET Plan adopted by the Commission in Sept. 2015 aims 1) to move away from a technology-specific approach to an integrated approach addressing the R&I challenges of the energy system as a whole 2) to focus on the Energy Union's R&I priorities.</p> <p>The SET Plan is the de facto transnational policy initiative for coordinating energy research in Europe. While respecting national priorities, SET Plan priorities are increasingly informing the design of national programmes.</p>	5
	International research leadership	<p>Like Horizon 2020, the SET Plan is open to the world and to engaging with non-EU countries on the basis of common interest and mutual benefit. At the same time, due consideration must be given to aspects related to industrial leadership and security of supply which are essential to the energy domain and which are highlighted in the Energy Union context.</p> <p>Non-EU countries like Norway, Switzerland and Iceland are heavily involved in SET Plan joint programming initiatives such as ERA-NETs. In addition, strategic sector-specific research collaborations have been or are being set up with a number of countries like Canada (CCS), Brazil (biofuels), China (Smart Cities) or Mexico (geothermal).</p>	3
	Driving demand for innovative new solutions	<p>ERA-NETs in the energy domain are consciously targeted to high TRLs and to bringing innovations to the market. Increasingly, the SET Plan is also focusing on mobilising investment from public and private sources for demonstration projects. Several Public Private Partnerships (PPP) (e.g. the Joint Undertakings on Fuel Cells and Hydrogen (FCH), on Clean Sky or on Bio-Based Industries - the contractual PPP on Energy-efficient Buildings, Green vehicles, or Sustainable Process Industry through Resource and Energy Efficiency) are also directly implementing the integrated SET Plan priorities.</p>	4
	Variety and type of joint actions and calls	<p>Wide variety of ongoing actions in FP7 and H2020, including ERA-NET Coordination Actions, ERA-NET+, IRPs, Berlin Model CSA, ERA-NET Cofunds, ECRIAs, and European Joint Programmes (EJPs). This portfolio provides a range of joint actions which can be deployed for specific purposes (e.g. ECRIAs for low TRLs, ERA-NET cofunds for high TRLs) or according to varying levels of integration, from ERA-NET CSAs all the way to EJPs.</p>	4
Mobilisation of co-investment and alignment actions	Investment in joint research and innovation projects	<p>FP7 joint actions (ERA-NETs and IRPs) amounted to an EU contribution of almost €68m.</p> <p>H2020 ERA-NET cofund calls in 2014/15 have resulted in actions with an EU contribution of over €60m. For the 2016/17 Work Programme, the budgetary allocation is €77m, plus 10m for ECRIAs.</p> <p>The EU contribution to the EUROFUSION EJP is almost €425m, plus almost €20m to the EJP on radiation protection.</p> <p>Investments in the Public-Private partnerships are expected to amount to almost EUR 12 billion over 2014-2020, half coming from public funds and half from industry.</p>	3
	Share of total national investment in the subject that is coordinated through the JPI	<p>Bearing in mind that the SET Plan is not a JPI, it is worth mentioning the alignment effect that the SET Plan has had on the national institutional funding received by research organisations active in energy research, particularly through collaborative activities coordinated by the European Energy Research Alliance (EERA). This alignment effect contributes to achieving EU2020 energy targets and will contribute to the objectives of the Energy Union.</p>	2
	Degree of national alignment	<p>The SET Plan is the de facto transnational policy initiative for coordinating energy research in Europe. While respecting national priorities, SET Plan priorities are increasingly informing the design of national programmes. The new 2015 Integrated SET Plan provides the guidelines for ongoing and future alignment of EU and national programmes and priorities for all stakeholders in the energy research domain.</p>	3
	Sustainability of the JPI infrastructure	<p>Sustainability of the SET Plan has strengthened due to its framing within the Energy Union, one of the main political priorities of the Juncker Commission.</p>	5

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This report presents the finding, conclusions and recommendations of the Expert Group that was established by the Commission in June 2015 to carry out an Evaluation of Joint Programming to Address Grand Societal Challenges. The factual analysis shows broad participation of Member States in the JPIs and also associated countries like Norway, Turkey and Israel. It is clear that it is still too early in the Joint Programming Process to evaluate the impact of the JPIs on their particular societal challenges and so the Expert Group considered different ways of assessing whether they appear to be going in the right direction. This led to the development of a framework with eight indicators to enable a qualitative assessment. The evaluation also highlighted a wide range of issues that are inhibiting progress and these provide the logic for the main recommendations. The Expert Group has made fourteen (14) specific recommendations aimed at the main stakeholders of the joint programming process. The key message from this report is that the Joint Programming Process does not yet have sufficient Commitment from national stakeholders to achieve its potential. Whilst the short term recommendations should improve the situation, it seems unlikely that all of the current JPIs will be able to secure sufficient national commitment to becoming truly joint programmes. Since there is not yet any procedure or milestone to change this situation then there is a long term risk to the JPI portfolio beyond the current Framework Programme.

Studies and reports