Mutual Learning Exercise

Alignment and Interoperability of National Research Programmes

Horizon 2020 Policy Support Facility

POLICY RECOMMENDATIONS

EXCHANGE OF PRACTICE

ON-DEMAND SUPPORT

PEER LEARNING

HIGH-LEVEL EXPERTISE

Mutual Learning Exercise: Alignment and Interoperability of National Research Programmes (Horizon 2020 Policy Support Facility)

Directorate-General for Research and Innovation

Directorate A – Policy Development and Coordination

Directorate B – Open Innovation and Open Science

Unit A4 – Analysis and monitoring of national research and innovation policies

Unit B2- Open Science and ERA Policy

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EUROPEAN COMMISSION

Mutual Learning Exercise

Alignment and Interoperability of National Research Programmes

NATIONAL COORDINATION

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Directorate-General for Research and Innovation

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THE PSF MLE PANEL

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Jana is the executive director of CERIC-ERIC and has many years of experience in the fields of research and innovation policy. Among others, she has been Director General of Science in Technology at the Ministry in Slovenia, chairman of the board of the Slovenian Technology Agency and a member of the Slovenian Research Agency's board. Between 2009 and 2012 she was a member of the High Level Group on Joint Programming. She is currently a member of the European Institute of Technology and Innovation (EIT) board, a member of the High Level Group of Innovators for the European Innovation Council and a member of the ERA Council Forum Austria, a high-level expert body advising the Austrian minister responsible for science and research.

Angus Hunter – Rapporteur (United Kingdom)

Angus is the Managing Director of Optimat Ltd, a UK-based strategy consultancy specialising in the policy areas of innovation and sustainability. He has been involved in projects related to the European Research Area since 2003 when he managed one of the first ERA-NET Actions on behalf of the UK industry ministry and funding agencies from another 14 European countries. More recently, he has participated in several important evaluations, including the Impact Assessment of the FP6 ERA-NET Scheme, interim evaluation of FP7 Article 185 on Metrology, and evaluation of the Joint Programming Process. He has also led the Optimat activities within the ERA-LEARN2 and ERA-LEARN 2020 projects. As well as supporting the MLE on alignment and interoperability, he is also a member of the Expert Group for the Meta Evaluation of the Article 185 instrument.

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Patries is Managing Director of the Technopolis Group. She is responsible for the Group's performance and strategy, across nine company offices (Amsterdam, Bogotá, Brighton, Brussels, Frankfurt/Main, Stockholm, Tallinn and Vienna). In her consultancy role, she has worked on research and innovation policy for over 25 years. Her activities include international policy studies, programme management advice and evaluations of research programmes and organisations. Her assignments are at the interface of public research, the private sector and government. She advises regional and national government organisations on innovation strategy and (high-tech)-cluster development. She is particularly interested in multi-governance research and innovation policy and the interaction between European, national and regional stakeholders.

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Thomas works as a leadership coach with a focus on team development and change management, as well as a policy consultant on research and innovation policy. Following a few years with Roland Berger Strategy Consultants, he worked in market research before writing a PhD on science cooperation in the high-tech and security sector at the European University Institute in Florence. As a policy consultant Thomas worked for the Manchester Institute of Innovation Research in the UK and for Technopolis Group in Germany. He advised the European Commission, national governments and international organisations on research and innovation policy. Thomas attended both the CTI coaching and leadership courses, and is currently working with individuals and teams, focusing on how to lead a more fulfilling personal and professional life.

1 EXECUTIVE SUMMARY

Horizon 2020, the EU programme to support research and innovation (R&I), has a dedicated instrument called the Policy Support Facility (PSF). This includes the possibility for Member States (and countries associated to Horizon 2020) to participate together in a mutual learning exercise (MLE) to address a specific R&I policy challenge.

This new opportunity was taken up by the European Research Area Committee (ERAC) High Level Group for Joint Programming Group (GPC), which proposed an MLE to help address the need to foster better alignment[1] and interoperability in national research programmes. The MLE took place as a follow-up to the Lund Declaration, thereby ensuring momentum for a stronger alignment of national research programmes aimed at addressing societal challenges.

The MLE was designed to identify opportunities and good practices to overcome national challenges that hinder stronger participation in the joint programming process (JPP). The main assumption behind the MLE is that improving the design and implementation of national R&I programmes towards societal challenges will contribute to overall European alignment and interoperability as a main objective of the JPP.

Launched in July 2016, the MLE brought together representatives from Austria, Denmark, Estonia, France, Norway, Portugal, Romania, Slovenia, Sweden and Turkey, with Germany participating as an observing country.

The participating countries agreed to address the challenge in three steps: i) looking at national preconditions for participation in JPP; ii) national governance structures; and iii) communication flows and visibility. The topics were to be addressed one-after-another and explored during dedicated country visits, each accompanied by a report on the specific topics.

A learning tool (self-assessment framework) was developed to support the countries in the analysis of the national situations and to communicate opportunities for improvements in a structured manner. The tool (which is annexed to this report) is based on 16 key factors for the alignment and interoperability of national research programmes. It enabled the participants to assess the degree of alignment on one side and the degree of difficulty to improve a particular factor on the other. This provided a framework not only for thinking about scope for improvement but also for helping to be realistic about the barriers to change.

The structured discussion stimulated by the assessment tool led to identification of several transferable lessons which are presented in this report and are

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[1] The GPC working Group had defined alignment as "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".

structured along the key phases of the R&I programming cycle2 – planning, strategy, funding, implementation, dissemination and uptake and evaluation and reporting. Under each phase, the key success factors are presented alongside good examples from the countries participating in the MLE. The most relevant are mentioned below to illustrate some of the transferable lessons.

The issue of increasing **political commitment**, in particular beyond the research ministry, was considered important by many participants. A good example was provided by Germany, where the R&D ministry worked very closely with the German parliament and eventually secured strong political support for its overall European Research Area (ERA) strategy, including its commitment to joint programming. This also helped to motivate other ministries to look at opportunities for participating in the JPP.

As the number of opportunities to participate in JPP networks increases, so does the need to define a systematic **process for deciding on which ones to join**. This subject has become increasingly important and valuable examples of selection criteria were presented by Austria, Slovenia and Portugal.

The importance of increasing **engagement with other ministries** was also highlighted by many. To this end, a good practice was provided by Estonia, where each sectoral ministry now has a scientific counsellor, partly financed by the ministry of education and research, with the aim of improving communication and engagement. Alongside scientific ambassadors (well-known researchers), these help the research ministry to promote the JPP and opportunities for participation to the sectoral ministries with the aim of making communication a two-way task.

As regards **funding**, an innovative approach was provided by Sweden which uses the central budget to leverage co-funding from sectoral ministries and/or funding agencies. A similar approach has been adopted in Estonia and Slovenia. Another example is Romania which had introduced a dedicated budget for joint programming into the National Plan for RD&I (2015-2020).

In the implementation phase, **the governance model**, which includes various stakeholders, is of particular importance. One example of a good practice that some Member States hope to replicate is the system in France whereby each individual JPI has a national 'Mirror Group', which supports the work of the two French representatives on the JPI governing boards. Similarly, Austria has established several 'strategic networking platform' pilots to bring communities of stakeholders together (not just researchers) in interdisciplinary areas of research, while Denmark has strong informal networking between stakeholders in a thematic area (strategic reference groups). Another innovative example concerns Portugal, which has recently introduced public participation laboratories, an initiative aiming to involve citizens, local and regional actors, public and private entities in developing thematic R&I agendas contributing to new models of public policy design.

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[2] Report on the Definition and Typology of Alignment, ERA-LEARN 2020, September 2015 (https://www.eralearn.eu/alignment/definition-typology)

In addition to the funding, **interoperability** is considered important. Since full participation in joint programming is regarded as instrumental for the national RDI system in Turkey, the rules are being redesigned to create a more flexible funding framework for participation.

The systematic **monitoring and evaluation** of outcomes and impacts from participation in JPP networks is considered one of the key success factors. However, the majority of MLE countries see this as a main weakness in their national system, linked with serious methodological and practical barriers to tackle this weakness. The participants have identified the evolving work of ERA-LEARN on developing common frameworks and learning tools to help JPP networks with impact assessment as an opportunity to reduce the barriers to improvement.

This report summarises the main results of the MLE, with a particular focus on sharing the learning. To this end, it also includes country overviews that briefly summarise the present situation in each participating country, its strengths and weaknesses, and list potential actions to be implemented at national level as identified by the national representatives during the course of the MLE. More comprehensive information on the activities and results is presented in the three detailed reports on preconditions, governance and communications. These three accompanying reports can be found at the Policy Support Facility portal[3].

Since more time is needed to test the feasibility of the proposed actions, the national representatives are keen to reconvene in a year's time to discuss the progress made based on the weaknesses identified.

This MLE on Alignment and Interoperability of National Research Programmes is one of the first to implement the new MLE approach developed in the context of the Horizon 2020 Policy Support Facility. Thus, there was a strong focus throughout the exercise on whether it met the country experts' expectations. Their personal testimonies, expressed in the country overviews, convey a very positive attitude towards the MLE. They emphasise the importance of the self-assessment tool, the good practices and the reports, but also the value of the face-to-face discussions and the personal contacts with their peers, established during the exercise. In particular, it was this positive, friendly atmosphere based on trust that contributed significantly to the success of the exercise.

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[3] https://rio.jrc.ec.europa.eu/en/policy-support-facility/mle-alignment-and-interoperability-research-programmes-national-coordination

2 INTRODUCTION

This is the final report of the Mutual Learning Exercise (MLE) on '**Alignment and Interoperability of National Research Programmes: Sequence 1 - National Coordination'**, which was carried out in the second half of 2016 and the first half of 2017.

The MLE is one of three instruments available under the overarching Policy Support Facility (PSF), which was set up by the European Commission within Horizon 2020 (H2020). The aim of the PSF is to give EU Member States (and countries associated to H2020) practical support to design, implement and evaluate reforms that enhance the quality of their R&I investments, policies and systems.

2.1 Background

The High Level Group for Joint Programming (GPC) expressed initial interest in an MLE on alignment and interoperability in the summer of 2015. It was considered that this would offer a timely framework to follow up on the GPC Implementation Group on the same subject (GPC/IG2).

Preparations for the MLE began with a workshop in February 2016 involving representatives of 16 countries. This meeting considered the potential scope of the MLE and concluded that the range of issues were too broad for a single exercise. It was therefore agreed that a sequential approach would be appropriate for an MLE on alignment and interoperability, with the first sequence addressing the important subject of **national coordination**. It was further agreed that this should include three topics: national preconditions for participation in the JPP/JPI, national governance structures, and communication flows and visibility. There followed an open invitation to express interest in participating in this first MLE sequence and to provide feedback on the three topics to help in drafting the scope of the exercise.

A draft 'modus operandi' was prepared and discussed at the MLE formal kick-off meeting on 7 July 2016. This set out the scope, objectives/outcomes, time schedule, working approach/methodology, distribution of work, meetings, reports and deadlines. The final version was produced shortly after the meeting and used to guide implementation of the MLE.

2.2 Participating countries

The MLE attracted strong interest and 11 countries (Austria, Denmark, Estonia, France, Germany (as observer), Norway, Portugal, Romania, Slovenia, Sweden and Turkey) participated actively in the MLE. Their experience and feedback is summarised in Section 5 of this report.

3 METHODOLOGY

The overall methodology was defined in the modus operandi. This acknowledges that an MLE should be a Member-State-driven and policy-challenge-based activity to promote mutual learning between the participating countries. Implicit within this is that the methodology should remain flexible from milestone to milestone to maximise added value and policy learning. The distribution of work involved five parties:

- The participating countries, which were required to appoint at least one participant with sufficient experience of the policy challenge to contribute effectively to the MLE;

- A group of four independent experts who played a facilitating and supporting role;

- Representatives from the European Commission's Directorate-General for Research and Innovation, including Unit A4 (Analysis and monitoring of national research and innovation policies) and Unit B2 (Open Science and ERA Policy);

- A rapporteur to the GPC;

- The Policy Support Facility contractor, which would provide operational and logistics support to the chair and rapporteur.

The MLE was implemented through an iterative series of workshops, interim reports and self-assessment activities.

3.1 Workshops and reports

Besides the kick-off and final meetings, four workshops were organised, each around a specific topic:

- Workshop on the overall subject of **'national coordination'** hosted by the Commission (Brussels, 3 October 2016)

- Workshop on the overall subject of **'national preconditions'** hosted by the Austrian Research Promotion Agency (Vienna, 13 October 2016)

- Workshop on the overall subject of **'national governance structures'** hosted by the Slovenian Ministry of Education, Science and Sport (Ljubljana, 15 December 2016)

- Workshop on the overall subject of **'communication flows and visibility of JPP'** hosted by the Research Council of Norway (Oslo, 16-17 February 2017).

In each case, the independent experts prepared a background/challenge paper as the main input for discussions in the workshop. A subsequent intermediate report on each topic was delivered presenting the experience and transferable lessons identified during the workshops.

All MLE intermediate reports (Report No. 1 on National Coordination[4], Report No. 2 on National Preconditions[5], Report No. 3 on National Governance Structures[6] and Report No. 4 on Communication Flows and Visibility of JPP[7]) as well as other MLE materials are available on the PSF portal[8].

3.2 Self-assessments

The workshops were designed to be interactive and participants were encouraged throughout to be very open about the strengths and weaknesses of their national system so that the whole group could offer suggestions for improvement. To complement this group learning process, the experts developed a self-assessment and reporting framework (appendix). This enabled each country participant to carry out a customised analysis from the triangular perspective of preconditions, governance and communication. The self-assessment framework allowed them to:

- Describe the current national situation and rate its degree of alignment with each of 16 key factors encompassing preconditions, governance and communication;

- Consider the barriers to improvement, for each key factor, and the degree of difficulty in overcoming them;

- Propose opportunities for improvement based on the self-assessment and peer learning.

The individual self-assessment scores were presented and discussed at the workshops in Vienna, Ljubljana and Oslo. An example is presented in Section 4.6 of this report.

The self-assessment methodology and the (anonymous) results are included in the MLE Reports 2, 3 and 4 and are available on the PSF portal.

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[4] MLE Report No 1: National Coordination, November 2016

[5] MLE Report No 2: National Preconditions, February 2017

[6] MLE Report No 3: National Governance Structures, March 2017

[7] MLE Report No 4: Communication Flows and Visibility of JPP, April 2017

[8] https://rio.jrc.ec.europa.eu/en/policy-support-facility

4   TRANSFERABLE LESSONS

As mentioned in Section 3 above, the MLE workshops, self-assessment activities and interim reports were segmented into three predefined topics, i.e.

- National preconditions

- National governance structures

- Communication flows and visibility of JPP

This was helpful in that it allowed the participants to consider their national situation, and how it could be improved, from three different perspectives. As the MLE progressed, however, it became clear that the three topics were not mutually exclusive, which created some difficulties for the participants in classifying ideas for improvement actions.

Thus, this section, on transferable lessons, attempts to consolidate the main lessons learnt by using a single framework: **'the research programming cycle'**. It draws on the work of ERA-LEARN 2020[9], which developed a typology of alignment actions and instruments across the research programming cycle from the perspective of the JPP networks. A simplified version is shown below:
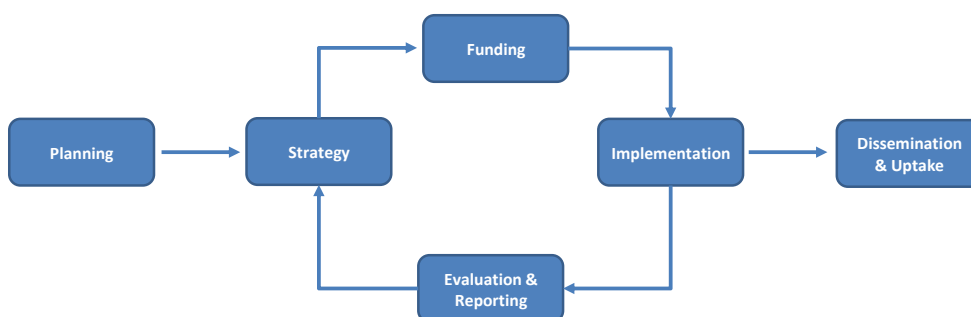
This recognises that the programming of R&I activities, whether national or international, should not be a linear process but more cyclic whereby the strategy is adapted according to feedback from the results and outcomes/impacts. Each of these six elements is discussed below using the results from the topic-specific reports and the associated good practice examples. More detailed elaboration of the transferable lessons and specific national examples can be found in the previous, topic-specific reports.

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[9] Report on the Definition and Typology of Alignment, ERA-LEARN 2020, September 2015 (https://www.era-learn.eu/alignment/definition-typology)

4.1 Planning

Two obvious factors should be considered by any national administration willing to engage in joint programming and, in particular, where this concerns 'jointly addressing societal challenges' (national ERA Roadmaps, Priority 2A):

- There should be an ERA (or at least an international cooperation) element within the national R&I strategy;

- The national R&I policy and priorities should include societal challenge research and involve all the relevant ministries.

It is clear from the work of the MLE, and other evidence, that transnational research activities tend to be an add-on to national R&I strategies. Countries like Germany and Norway provide examples of a more integrated approach that takes both national priorities and the EU Framework Programme into account.

> *The Ministry of Education and Research in **Norway** published a 'Strategy for research and innovation cooperation with the EU' in 2014 that encompassed Horizon 2020 and ERA in parallel with its 'Long-term plan for research and higher education 2015-2024', including/encompassing thematic priorities.*
>
> *In February 2017, the Federal Government in **Germany** adopted a new 'internationalisation strategy for education, research and innovation'. The European dimension is an integral part of this strategy, with a strong focus on the internationalisation of joint programming as an overarching objective of the German Federal Government. In order to improve cross-ministerial cooperation in general, but also in joint programming more specifically, regular coordination meetings between the ministries at state secretary level have been introduced with the new strategy.*

The concept of increased alignment and/or interoperability between the strategic agendas of national, transnational and EU research programming means that societal challenge research needs to be embedded in the policy and priorities of national programming. This was the exception rather than the norm at the beginning of Horizon 2020 but there are signs that it is starting to influence the subsequent updates of the more recent strategy updates in at least some countries.

> ***Austria** established a specific research programme for societal challenge oriented research in 2017. It is called 'Mission ERA' and is covering so far four JPIs. The programme is designed to be open for the inclusion of more mission oriented topics and gives the flexibility in terms of budget allocation and implementation instruments.*
>
> *In a few months, the Danish Agency for Science and Higher Education will complete its latest five-year update of the research foresight catalogue (Forsk2025). This provides a consolidated overview of the most important research for **Denmark** in the future based on consultations with industry, knowledge institutions, ministries and other stakeholders. The aim of the catalogue is to guide decisions on prioritising research investment decisions at both the policy level and for participation in international cooperation opportunities.*
>
> *The **Estonian** Research and Development and Innovation Strategy 2014-2020 (Knowledge-based Estonia) has four priorities including societal challenges.*

France published a national research strategy in 2015 (France-Europe 2020) that focuses on 10 societal challenges with a strong synergy to those of Horizon 2020.

The research system in Portugal has a strong EU and international orientation. The evolving influence of Horizon 2020 and the JPP means that both policymakers and the research community are now more engaged in societal challenge research priorities that are relevant to the national context.

Romania has set up dedicated sub-programmes to support the Joint Programming Process (JPIs, ERA-NET Cofund, Article 185 initiatives) within the current National Plan for RD&I (2015-2020).

4.2 Strategy

Assuming that the political commitment is in place to ensure that joint programming is fully embedded in the national programming cycle, and societal challenge research is on the agenda, the next stage is to ensure a strategy and procedures for effective participation in JPP activities. This should include:

- A formal process/criteria for decisions on participation in JPP networks;

- A coordinated framework for the management of all European R&I activities.

As the number of opportunities to participate in JPP networks increases so does the need for a systematic process for deciding on which ones to join. This subject has become increasingly important and several interesting examples were highlighted during the MLE.

Slovenia has adopted a 'procedure' for integration into European initiatives, which has four criteria

In Austria, FFG – the agency for industrial research and development – generated a common set of selection criteria for prioritising JPP network participation. So far, this has only been used in a voluntary way.

Portugal also has a set of criteria which can be used to prepare for the decision whether or not to enter international collaboration activities

Participation in joint programming activities at the European level requires a significant commitment of human resources, well beyond what is required for national programming. This is especially the case for societal challenge R&I activities that must involve stakeholders outside the traditional research community. The governance structure for JPI participation that has been established in Norway is seen as a good example.

Norway is one example of a research-intensive country that has implemented a national structure and processes for efficient and effective participation in the JPP. The Research Council of Norway (RCN) acts as the implementing agency on behalf of the ministries that provide funding for societal challenge research. RCN and the relevant ministry are involved in JPI governing boards, with the Ministry of

As the research budgets in Norway are distributed across the sectoral ministries, this model is more difficult to replicate in countries that have a centralised research funding system. In this situation, the other ministries may need to be encouraged, as in Estonia.

*In **Estonia**, each sectoral ministry now has a scientific counsellor, partly financed by the Ministry of Education and Research with the aim of improving communication and engagement. These, alongside scientific ambassadors (well-known researchers), help the research ministry to promote the JPP and opportunities for participating in the sectoral ministries with the aim of ensuring that communication becomes two-way. For some topics – e.g. marine science – the relevant JPP networks are the only option for thematic research.*

The MLE has highlighted useful ideas to involve a wider group of national stakeholders in the development and implementation of national strategies for joint programming that reflect a particular national situation. One example of such an initiative is the development of a national theses paper on alignment in Austria.

*In **Austria**, the national theses paper on 'alignment' has been developed by a policy steering group which included the two main research funding ministries and agencies. It involved extensive interviews with key stakeholders from other ministries, the research community and industry. This initiative, which was presented at the MLE workshop in Vienna, aimed to develop a common understanding of the status of alignment in Austria and the motivation of the different actors. Based on a consensus of the main RTD stakeholders, the paper concluded with 18 hypotheses concerning the status of alignment in Austria.*

Whilst there are some interesting examples above, it is important to remember the golden rule that 'strategy-should-follow-situation', so a customised approach to the national strategy for joint programming will always be necessary.

4.3 Funding

The availability of funding for joint programming is a major issue for most countries. Even the larger and more research-intensive countries are reporting funding constraints due either to austerity measures and/or competing priorities both at home and from a wide range of ERA options. Other factors include funding imbalances between countries participating in joint calls, adequate funding of management resource and restrictions on type of research and/or beneficiaries that can be funded. Two main factors were highlighted during the MLE:

- Pre-allocation of (at least nominal) budgets for JPP (or international) research activities;

- Flexible, or coordinated, funding model that enables unrestricted participation in selected JPP networks.

One innovative approach shared during the MLE concerns the selective use of a central budget to leverage co-funding from sectoral ministries and/or agencies. Romania and Sweden offer good examples of such an approach.

Romania has a dedicated programme (and budget) for international cooperation within its National RDI Plan for 2015-2020.

Sweden has a dedicated budget for participation in joint programming that is under the control of the managing organisation for the research councils. This budget tops up the contribution from each research council for participating in various JPPs. The managing organisation decides which JPI/P2P collaborations to finance depending on policy considerations and financial commitments from the individual research councils.

Sweden is a very research-intensive country and the use of such a central budget will clearly be more difficult for the smaller countries and those with more limited national research budgets. Estonia and Slovenia have demonstrated that the leverage effect can be even more powerful in such cases.

Estonia does not have thematic research programmes but has developed a co-funding model to enable participation in the joint ERA-NETs calls that overlap with national priorities (as defined in the RDI Strategy for 2014-2020). The Research Council will provide central funding, and coordination support, for specific joint calls if the relevant sectoral ministry is willing to co-fund. This has led to greater participation by Estonia in transnational R&D projects.

Slovenia provided another example of inter-ministerial collaboration to address the funding and human resource barriers to effective participation in P2P joint calls at the MLE workshop in Ljubljana. This involved a coordinated approach by the research and agriculture ministries which combined forces to enable more Slovenian researchers to secure funding through the joint calls for two ERA-NETs (SUMFOREST and ARIMNET2).

In some cases, the problem is not so much about the availability of national funding for joint programming but about the restrictions on how this can be used. These could include the type of research, and/or beneficiaries that can be funded. Most also find it difficult to contribute to a common fund, even at a relatively low level, such as for central management costs.

Turkey is at a stage of developing a stronger focus on thematic priorities such as energy, water and food in The National Science, Technology and Innovation Strategy. Since full participation in joint programming is regarded as critical for the national RDI system, the rules are being redesigned to create a more flexible funding framework for participation.

France has been able to overcome some of the national research agency's funding restrictions, for example to contribute to the central management costs of JPIs, by involving some public research institutes that have more flexibility.

4.4 Implementation

The implementation of joint programming is not simply about co-funding transnational R&I projects, especially for JPIs and other JPP networks aimed at addressing societal challenges. A variety of governance and communication systems are needed to participate effectively, including:

- Clear governance structures with sufficient resources for participation;

- A cross-ministerial framework for each JPP network;

- A two-way communication framework with national R&I stakeholders.

One of the national models considered able to offer transferable lessons in good governance and communication was the 'Mirror Groups' that have been established in France to align with the JPIs.

> In **France**, each individual JPI has a national 'Mirror Group' that typically meets twice per year. These support the work of the two French representatives in the JPI Governing Boards (one from ANR, the other from the relevant national research alliance). The JPI Mirror Groups are coordinated by the Ministry for Higher Education and Research (MESR). They include representatives from the relevant sectoral ministries (health, environment, agriculture, culture), selected research performing organisations (RPOs) and, in some cases, other funders or private sector representatives. They are used for information sharing and to agree on the position of ANR as the French voting representative on JPI governing boards. Some Mirror Groups, such as those for the environment, do not only cover JPIs but all the European initiatives in their thematic areas (with a goal of priority setting and dedicating budgets to transnational calls).

Another is the Norwegian framework for JPI participation mentioned previously in Section 4.2 above. Each JPI in Norway has an advisory board organised by the Research Council, and the plan is that all JPIs will have inter-ministerial groups.

Several other countries have also established stakeholder groups or networks to support the implementation of joint programming activities and many of the others consider this is an area for improvement.

> **Denmark** has a strong informal networking between stakeholders in a thematic area.
>
> In **Sweden**, the Ministry for Education and Research has the overall coordinating responsibility and now has a clear ambition to set up reference groups for all JPIs.
>
> In **France**, the Ministry involved the regional networks that have been set up in strategic technology domains.
>
> **Austria** has established several 'strategic networking platform' pilots to bring stakeholder communities together (not just researchers) in interdisciplinary areas of research, such as climate change and smart urban development.

The various implementation issues and systems uncovered during the MLE are discussed in more detail in the prior topical reports on governance (Report No. 3) and communication (Report No. 4).

4.5 Dissemination and uptake

The dissemination and uptake of the exploitable results from joint programming activities is essential if the socio-economic benefits of the collective investments are to be realised. There are two main priorities:

- A systematic process for outreach to end-users and other stakeholders;

- Regular communication of case-based evidence to relevant policy decision-makers.

The fruits of joint programming can either be exploited through innovative new solutions or by providing better evidence for policy decisions. It is therefore important that stakeholder engagement is a two-way continuous process and not just something done at the end of research projects. This is an area where there are some interesting developments and ideas for improvement.

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*In **Denmark**, the Ministry for Science and Higher Education uses specialised reference groups for communicating relevant information and gathering input for shaping the Danish position. Academia, industry and ministries are represented in these fora. In addition, stakeholders in Denmark get involved through strong informal networking activities.*

*In **Portugal**, the new policy instrument Public Participation Laboratory is being introduced to improve two-way communication with all stakeholders in the design of R&I agendas. These agendas have a strong link to the regional innovation systems, including the research and business community.*

Of course, there is also a need to demonstrate that the investment in joint programming is worthwhile to maintain and/or increase the political commitment at a time of severe competition for both financial and human resources in public administrations.

4.6 Evaluation and reporting

To complete the research programming cycle, it is necessary to review what is being achieved and, if appropriate, to adjust the strategy. This means there is a need for:

- A systematic process for the monitoring and evaluation of outcomes and impacts from participation in JPP networks.

The multi-factor, self-assessment exercises that were carried out during the course of the MLE showed that the participating countries display a mix of relative strengths and weaknesses regarding alignment and interoperability with the joint programming process. The main exception to this was that virtually

Measuring impact and dissemination of results

MINOR BARRIERS TO CHANGE

LOW DEGREE OF ALIGNMENT

HIGH DEGREE OF ALIGNMENT

MAJOR BARRIERS TO CHANGE
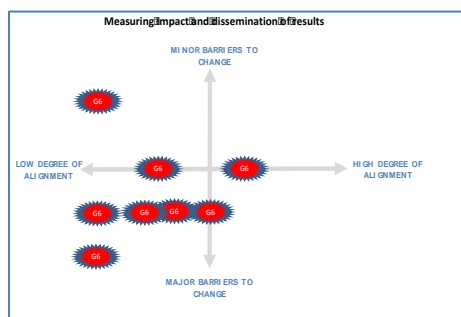
all of them considered that their country was relatively weak (low degree of alignment) with respect to 'measuring impacts and dissemination of results'. Also, most considered that there were significant difficulties (major barriers to change) in improving the situation.

Some of the participants were aware that the H2020 ERA-LEARN project has been developing common frameworks and learning tools to help JPP networks with the increasingly important subject of impact assessment[10]. The evolving work of ERA-LEARN could be an opportunity to reduce the perceived barriers to improvement.

The **ERA-LEARN 2020** *project consortium has been developing common frameworks and learning tools to help JPP networks with the increasingly important subject of impact assessment. This is currently being extended to the development of a central process for systematically gathering information on outcomes and impacts from the beneficiaries of co-funded projects.*

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[10] https://www.era-learn.eu/monitoring-and-assessment/Monitoring-and-impact-assessment-of-networks

5   EVIDENCE OF LEARNING

The previous section indicates that, whilst the situation and framework conditions are different in every country, there are many transferable lessons from this MLE. This section provides personal reflections from those individuals who participated on behalf of their country and demonstrates the power of the MLE to make a real difference. It also summarises, country by country, the contextual situation and specific actions that have been proposed by the participants to address particular issues, as a result of the MLE. The intention is that these will be presented and discussed with national stakeholders in the coming months using the various intermediate MLE reports as evidence for the proposed actions.

5.1   Austria

"Realising that other countries are facing similar problems but apply different solutions is a big added value of the MLE."

The Austrian representative was Thomas Zergoi from the Austrian Research Promotion Agency (FFG). He is also a member of the Austrian delegation to the GPC.

He found the MLE to be very relevant, particularly the country-specific workshops, as it enabled him to identify a broad range of ideas for improving the Austrian situation. One such is to prepare a national roadmap on challenge-driven research involving all the ministries and exploring how to increase the commitment of the autonomous universities. This might include applying some of the approaches used in Estonia to involve other ministries such as ambassadors, scientific counsellors and co-funding. Thomas intends to present these ideas and start discussions in relevant national groups, such as, for example, the Austrian JP Group, following the conclusion of the MLE.

5.1.1   National context in Austria

Austria has both a relatively high share of public expenditure on R&D (GBOARD) and associated investment in transnational programmes. This includes seven JPIs, two A185s and a wide variety of ERA-NET and other transnational initiatives. Austria has been involved in 43 networks since the beginning of H2020, participating in more than 270 calls[11]. This underlines its commitment to joint initiatives and the large amount of national funding invested so far.

Its participation in joint programming involves a number of different ministries and agencies. These mainly include the Federal Ministry for Science, Research and Economy (BMWFW); the Federal Ministry for Transport, Innovation and Technology (BMVIT); and the Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW). Other sectoral ministries are rarely involved. The research funding budget is either distributed directly (e.g. a large proportion of the BMWFW research budget goes to the autonomous universities) or via competitive funding programmes. Some of these national

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[11] https://www.era-learn.eu/network-information/countries/at/@@country-report

funding programmes are co-financing joint programmes, as in the case of JPI Urban Europe, which is coordinated by Austria. A big share of the competitive funding is managed by two agencies (FFG and FWF) which focus on industrial and basic research, respectively. There is no overall national prioritisation of investment in joint programming: each ministry makes its own decisions, based on strategic and/or financial aspects.

One of the initiatives to improve national coordination of joint programming in Austria concerns preparation of a national theses paper on 'alignment'. Produced in 2016 by a working group from the different ministries and agencies, this involved extensive stakeholder consultation and concluded with 18 hypotheses on the country's status on alignment. The paper was presented at the country-specific MLE workshop in Austria and the slides are available on the MLE portal. It will be used to support the work of the Austrian ERA Roadmap working group on Topic 2A.

Another initiative to improve alignment, and widen stakeholder participation, is the establishment of 'Strategic Networking Platforms' for societal challenge research. Three pilots have been launched and will be evaluated in 2018.

Since the beginning of 2017, there has also been a national funding programme (Mission ERA) covering all the transnational calls of four JPIs.

5.1.2 Actions proposed by the national representative based on mutual learning

The situation analysis carried out during the MLE highlighted several areas for improvement in Austria. These include a more systematic overall approach for prioritising (and evaluating) investment in joint programming; increasing the commitment of the autonomous universities towards societal challenge research; broadening the involvement of sectoral ministries; and improving the overall coordination among the relevant ministries/agencies. The following ideas emerged throughout the exchanges of good practices and information sharing during the MLE process:

- Consider preparing a national roadmap on challenge-driven research involving all ministries, or adopting a 'strategy for R&I cooperation with the EU', which outlines the country's ways of actively participating in the ERA, including JPP (like Norway);

- Consider whether the scientific counsellor and co-funding approaches in Estonia would be an option to create better coordination links with the sectoral ministries;

- Try to raise joint programming on the agenda of the Austrian Council for Science and Technology to increase political commitment and visibility;

- Identify well-known researchers or Austrian Members of Parliament who could become influential JPI ambassadors;

- Design possible incentives for universities to increase their commitment to societal challenge research;

- Increase the level of communication with policymakers through several activities, including short policy briefs showing the added value of JPIs and organising policy events;

- Establish close contact between the Austrian JPI group and experts in the ministerial cabinets;

- Explore whether the ERA-LEARN work on evaluation and impact assessment could be used in Austria to support commitment and prioritisation.

These will be presented and discussed with the key ministry and agency stakeholders following the conclusion of the MLE.

For further information on the Austrian situation and plans, please contact Thomas Zergoi at Thomas.Zergoi@ffg.at

5.2 Denmark

"Participation in an MLE is specifically helpful if the topic discussed with other countries is high on the agenda of your organisation."

The Danish representative was Lisbet Elming from the Ministry of Higher Education and Science. Lisbet found the MLE to be partly relevant to her present work. The MLE allowed her to foster closer ties with colleagues from other countries, whom she might have met before but only now was given a chance to engage with in a thorough manner.

Through the MLE, Lisbeth became aware of the importance of governance structures for more effective participation in joint programming. This would be high on the agenda, should Denmark decide to get more involved in JPP work. The MLE provided specific ideas, in particular from Sweden, on which the country could draw in the future.

5.2.1 National context in Denmark

Denmark has a relatively high share of public expenditure on R&D (around 3 % in 2015). It participates in all but one JPI (cultural heritage) as well as all of the A185 initiatives.

While Denmark has no national R&I strategy, the RESEARCH2020 (Forsk2020) catalogue identifies the most promising areas for research investment. The document, which is currently being updated to 2025 (Forsk2025), will also have a stronger emphasis on the European dimension. The catalogue serves as a basis for budgetary decision-making by parliament. It follows a societal-challenge approach and identifies four priority areas for research.

Whilst Denmark has quite a flexible system that enables participation in joint programming, and prioritises societal-challenge research, there is increasing competition for funding between national and international priorities. International collaboration involves several ministries and agencies. Some of these are primarily shaping research policies while some are primarily funding Danish participation in P2Ps. For these activities, the Ministry of Higher Education and Science established a 'Strategic Reference Group' in 2016 with relevant representatives from universities, ministries and industry. A number of professionally specialised reference groups have been used for some years to supplement Danish participation in Horizon 2020 programme committees. Moreover, the ministry is mapping Danish participation in Horizon 2020, including in co-financed instruments. Based on this mapping, a strategy and an action plan will be developed for future Danish participation in the EU Framework Programme for Research and Innovation.

5.2.2 Actions proposed by the national representative based on the mutual learning

The situation analysis conducted during the MLE highlighted that despite all these efforts there still seems to be some potential for a more coordinated approach towards public funding of the Danish participation in P2Ps. The areas for improvement in Denmark include issues of governance and communication. The following ideas, which emerged during the MLE process, include:

- Development of a better common approach and explicit decision-making process across all ministries to help prioritisation. A meeting of the Strategic Reference Group is planned for mid-2017, which will certainly have a positive impact on the communication flows, too. Here it would be important to agree on providing regular information and feedback for the Ministry of Higher Education and Science;

- Follow-up on the mapping of different measures will be considered to further a common approach to participation in the P2Ps;

- Mapping Danish participation in joint programming as part of a larger mapping of Denmark's participation and success in Horizon 2020 (in spring 2017);

- Consider how JPIs could be encouraged to play a more active role in communicating with other sectoral ministries.

For further information on the Danish situation and plans, please contact Lisbet Elming at lel@ufm.dk

5.3 Estonia

"Of all the working groups I joined, this one has been the most beneficial. It gave very specific recommendations. The good thing was that the MLE was not only about participation in the workshops but that it encouraged us to start the national discussions on how to implement things."

The Estonian representative was Ülle Napa from the Estonian Research Council which is a foundation financed by the Ministry for Education and Research.

Ülle found the MLE to be very relevant for her work. It was particularly helpful for her to get detailed positive feedback on the unique aspects of the Estonian approach, the scientific counsellors and the co-founding. She also appreciated the country visits with their very practical examples, which would have been more difficult to achieve if the meetings had only been held in Brussels.

The MLE also worked as a kind of catalyst for what the ministry and the Research Council had planned to put in place. While Ülle and her colleagues had a vision before the MLE started, the exercise helped them to start thinking systematically and strategically about joint programming. It also helped them to identify weaknesses in the current system, for example, initially to build a JPP community and to address the question of who in the government takes ultimately responsibility for joint programming. All in all, the MLE has enabled the Research Council to provide better advice and support to the ministry on all issues concerning joint programming.

5.3.1 National context in Estonia

Estonia spends about 1.5 % of its GDP on R&D (2015), a figure that has increased significantly since 2005. The country participates in three JPIs and is an observer in four more. It also contributes to the A185 BONUS programme, as well as a number of ERA-NETs.

Estonia's participation in joint programming involves a number of different ministries, generating interest across government through a specific co-funding model that has already proven its success. The Estonian Research Council finances, either directly or indirectly, some of the JPP research activities. To secure sufficient national funding for ERA-NET participation for topics that overlap with national priorities (defined in the RDI strategy Knowledge Based Estonia 2014-2020), the Estonian Research Council has involved the relevant sectorial ministries by offering co-funding for ERA-NETs provided that the sectoral ministry also allocates funding to the ERA-NET. In addition, the Council supports management activities, such as organising a joint call, while the other sectoral ministry is responsible for concluding contracts directly with Estonia's scientific groups of funded projects.

An aspect that has gained considerable interest among MLE-participants from other countries is the so-called 'scientific counsellors'. In each ministry, the counsellor works with the Research Council to articulate the potential need and interests (= overlaps with sectoral R&D plans/strategy) of the sectoral ministry. This is expected to help define the key research topics that are of interest to Estonia. Currently, eight ministries out of 11 have joined this scheme.

5.3.2 Actions proposed by the national representative based on the mutual learning

The MLE catalysed the thinking about joint programming in Estonia. While the Research Council had previously developed a broad vision, the MLE helped to define it. More specifically, Estonia made the first steps to forge a JPP community, simply by creating a mailing list to regularly inform and connect up all relevant actors, and to address fundamental governance issues. Moreover, a first meeting of the Research Council discussed ways of improving communication about joint programming at national and international levels. In particular, the Research Council intends to seize opportunities presented by Estonia's presidency of the Council of the EU (July-December 2017) and the wider political debate about the country's involvement in European science initiatives.

During the MLE, Estonia was particularly active and devised a number of specific measures to improve the current situation, including:

- Encourage, support and propose scientific counsellors to take strategic actions in the ministries;

- Prepare a list of strategic actions (Estonian Ministry of Education and Research and Estonian Research Council) which could be implemented by counsellors, including items such as develop/review R&D strategy for their ministry, make/order analysis of synergy mapping of the priorities set out in 'Knowledge-based Estonia' and in P2Ps for the sectoral ministry;

- Bring different parties (Ministry of Education and Research, Estonian Research Council, GPC delegates, etc.) together to build a consensus on how to divide the work and define the official responsible body for JPP coordination at national level;

- Engage other ministries in a series of meetings to discuss how to best communicate about joint programming with the different stakeholder groups, which tools to use, and about sharing best practices;

- Map the P2P-related events in Estonia with the target groups (ask for input from different ministries, the Estonian Research Council, main universities);

- Start discussions with scientific counsellors about measuring the impacts of joint programming in the future. During the interim evaluation of H2020, feedback was collected from sectoral ministries and other organisations on different initiatives; analysis of the results is in progress;

- Demonstrate the importance of joint programming during a conference to be held by the Estonian Parliament in Autumn 2017 under the general topic 'Introduction of scientific initiatives/programmes where Estonia is involved';

- Involve national stakeholders in the preparation of the Informal Meeting of Ministers Responsible for Competitiveness (Research), which will be held during Estonia's presidency of the Council of the EU.

For further information on the Estonian situation and plans, please contact Ülle Napa at Ulle.Napa@etag.ee

5.4   France

"Where do we go from here? We now need to disseminate the MLE results. At some other level, e.g. the GPC, we need to take the most important elements of the five reports and encourage other countries that did not take part in the MLE to do more about joint programming."

The French representative was Emmanuel Pasco-Viel from the Ministry of Higher Education and Research.

Emmanuel found the MLE to be useful for his work. In particular, he valued the possibility to have an in-depth exchange about practical issues and potential solutions. He was specifically interested in developing questions of communication to impact other sectoral policies, and in ideas to measure and demonstrate the impact joint programming has at the national level.

While Emmanuel considers the group size to be optimal, he would like to give those countries that have not taken part in the MLE the opportunity to benefit from the results of the joint work. Through his position in the GPC, Emmanuel will seek to encourage those countries to consider the lessons learned for developing their national approach to joint programming.

5.4.1   National context in France

France spends well above 2 % of its GDP on R&D (2015), a figure that has increased considerably since 2005. The country participates in all JPIs.

While in France decision-making on joint programming is centralised in the Ministry of Higher Education and Research, a sophisticated system ensures consultation across government departments and the involvement of important stakeholder groups. Each individual JPI has, alongside the official JPI Governing Board (GB), a Mirror Group. The JPI Mirror Groups are chaired by the JPI Governing Board members, coordinated by the Ministry for Higher Education and Research (MESR), and include experts from H2020, representatives from other sectoral ministries (health, environment, agriculture, culture), specific RPOs, and in some cases, other funders or private-sector representatives. The main function of the Mirror Group is to share information and agree on the position of ANR (The French National Research Agency) as France's voting representative in JPI GB. In addition to communication, the Mirror Group also enables the involvement of other ministries in discussions on priority research topics and interesting outcomes of research projects.

5.4.2   Actions proposed by the national representative based on the mutual learning

Any measures to improve alignment would build on this governance structure. The objective would be to give other ministries more ownership so that they would consider JPIs as less of a Ministry of Research-issue, thereby increasing the chances for impact on policymaking in other sectors.

Another issue, raised in discussions during the MLE, concerns the logic and impact that joint programming may have at national and European level. Here,

conceptual and empirical work is required which can also serve as a basis for focused improvement in the future.

Finally, the MLE addressed the issue of the visibility of joint programming. In this context, the idea of an annual forum presenting societal challenges and how they are addressed through research was developed. While such a forum may offer an opportunity to raise the visibility of joint programming by addressing a variety of stakeholders, it still needs greater detail and, for example, to be seen whether this should be organised by each JPP network or 'centrally' for all of them.

The situation analysis carried out during the MLE highlighted several areas for improvement in France, focusing in particular on communication issues:

- Continue to improve the coordination process with Mirror Groups, especially regarding the involvement of other ministries (the level of commitment varies among them) as well as representatives of the private sector (in those Mirror Groups that already involve them, it is difficult to see their added value);

- Explore the possibility of setting up an interministerial structure for societal challenges;

- Explore the format and scope for presenting societal challenges and how they are addressed through research;

- Develop a framework on the impact of joint programming, especially in view of enhancing the inputs for sectoral ministries regarding sound, evidence-based, public policymaking.

For further information on the French situation and plans, please contact Emmanuel Pasco-Viel at emmanuel.pasco-viel@recherche.gouv.fr

5.5 Norway

"I recommend other countries to participate in a Mutual Learning Exercise. It is a very useful arena where you get to know people, and can exchange information, and check out if you are on the right track. I am impressed about the professional team of experts, their leadership, and good methods of cooperation, which include the European Commission. Governance is key in this MLE. It would be very interesting to have the same discussions on governance when we know how the P2Ps/JPIs will fit into FP9. Hopefully, they will play a major role!"

The feedback from Norway was provided by Torill Engen Skaugen and Ingunn Borlaug Lid from the Research Council. Ingunn has been involved in the GPC for a number of years and has had some personal experience of the situation in other countries from prior work of the GPC Implementation Group on the same subject.

Both Ingunn and her colleagues (including Kristine Naterstad from the Ministry of Education and Research, who is a GPC delegate) found the MLE to be very relevant and useful.

Ingunn considered that the MLE had really made a difference and had enabled a more open dialogue than before. The Norwegian participants appreciated the whole mutual learning process and were also pleased that other countries had been inspired by Norway's governance system.

In spite of the country's excellent governance system, the MLE inspired participants to explore areas for further improvement, such as interministerial groups for each JPI. It also highlighted the need to better understand how to measure the impacts. Another less obvious benefit of such an MLE is that it provides the participants with tangible evidence of good practice that can be very helpful in communicating opportunities for improvement to national stakeholders.

"MLE is an excellent tool to learn from good practices in other countries! To share experience with ministries and RFOs from other countries on how to organise national research systems for best possible national coordination of resources, e.g. on topics spanning several sectors, as well as for optimal trans- and international cooperation, is valuable. I have seen countries with huge differences in research and innovation systems. That countries work in organising and enhancing transnational cooperation *through JPIs amazes me even more after the MLE. The JPIs are going up important paths for transnational cooperation and coordination, and I have realised that the JPIs are increasingly becoming a gateway to the MS and AC's policymakers on their societal challenges."*

5.5.1 National context in Norway

Norway is a research-intensive country and very active in joint programming. This includes all 10 JPIs, the SET-plan (Strategic Energy Technology Plan) and a wide variety of ERA-NETs and A185 initiatives. As well as a long-term research strategy, which includes R&I for societal challenges, the Ministry of Education and Research has also published a 'Strategy for research and innovation cooperation with the EU' that covers both Horizon 2020 and the ERA.

It has an excellent framework for participation in joint programming and especially for the JPIs. This involves both the sectoral ministries (which have responsibility for a research strategy and funding, and some also have research institutes within their remit) and the Research Council of Norway (RCN), which manages the national programmes on behalf of the ministries. Each JPI GB includes two Norwegian representatives: one from the RCN and one from the responsible ministry. The RCN representatives meet monthly and produce an annual report for each JPI. The leader of this group represents Norway on the GPC (the expert) together with the representative from the Ministry of Education and Research (the national delegate). Participation in other joint programming networks, such as ERA-NETs, is normally delegated to the RCN.

5.5.2 Actions proposed by the national representatives based on the mutual learning

Although the RCN provides the focal point for national coordination, there is a culture of continuous improvement. For example, the RCN has developed guidance on how to organise and manage JPIs and the SET-plan at the national level, and work on implementation is in progress. As part of this guidance, it has been agreed that every JPI should have a national mirror/external advisory group and that an effort be made to increase the involvement of those institutes that receive core research funding (institutional funding). Another important part of this guidance is to develop a common model for the ministries' management and funding of JPIs, as none of the different responsible ministries have interministerial groups. The Ministry of Education and Research is in charge of this. The following main ideas for improvement were highlighted during the MLE:

- Consider how to measure the impacts from P2Ps, such as using some of the emerging tools from the ERA-LEARN platform;
- Implement an overall holistic strategy relevant to all societal challenges on P2P priorities at the national level;
- Complete the setting up of the mirror/external advisory groups for all JPIs and move them into an operational phase; the same applies to the interministerial groups;
- Improve the communication of lessons learned on good practice and good examples on impacts to those responsible for the relevant national research programmes so as to share the overall workload and to be aware of the potential for international collaboration that lies in the JPPs/P2Ps.

Norway is also keen to help other countries raise their commitment to the joint programming process and associated joint calls/activities.

For further information on the Norwegian situation and plans, please contact Ingunn Borlaug Lid at il@forskningsradet.no

5.6 Portugal

The Portuguese representatives were Madalena Antunes Pereira and Rui Durão, both from the Fundação para a Ciência e Tecnologia (Ministry of Science, Technology and Higher Education).

"The MLE is a good opportunity to share experience and to identify the issues that exist in structures and processes and to have a mutual reflection about the entire topic. Already during the MLE the internal coordination has been improved and organisational structures and procedure will do so in the future."

Madalena and Rui think that the MLE offered an "extraordinary opportunity" to learn and discuss in real time the advantages and challenges of each country model/process and particular measures for participation in joint programming. This helped them with a swift assessment of what could be implemented in Portugal. Moreover, they valued the intensive face-to-face discussions with their colleagues from other countries, which are needed to fully absorb ideas in a similar way. Finally, the MLE allowed them to develop and analyse ideas for procedures and measures that could be put into place immediately and independently of a lengthy policy process.

Through the MLE, Madalena and Rui had the opportunity to mature their knowledge of the JPP, namely, reinforcing their recognition of the importance of interministerial coordination in the strategic decision-making process of participation as well as of impact assessment and visibility of results. While countries like France and Norway may follow rather different approaches in this regard, the discussion revealed the strengths and challenges accompanying each model. Similarly, the set of decision-making criteria developed in Austria inspired their thinking about a systematic approach to interministerial involvement in the decision-making process for participation in joint programming instruments.

"While we have always had close contacts at institutional level with other countries, the MLE brought us in touch with a new set of people to talk to. With them, we share a common understanding and experience which allows us to take the discussion further and into much greater detail. This is a very useful instrument."

5.6.1 National context in Portugal

Portugal spends about 1.3 % of its GDP on R&D (2015), a figure that has increased sharply since 2005. It participates in various European collaborative instruments for joint programming, namely four JPIs, and is an observer in one more, four Article 185 initiatives, three EJPs and membership of more than 40 ERA-NETs in diverse scientific areas.

The Portuguese innovation system is by its very structure internationally oriented. International collaboration has been part of the system since the 1960s due to geographical dimension, size and political will.

One consequence is that visibility of joint programming across government has been quite high and there is political commitment to participate in these instruments. The Ministry for Science, Technology and Higher Education makes the decisions on international collaboration, taking into account the national priorities. While other ministries have yet to be formally involved in the policy-formulation and decision-making procedures, the Research Agency, which is preparing the proposals for Portugal's participation in joint programming, has communicated at working level with other ministries on an ad-hoc basis. Similarly, the research community is included in a consultative manner.

5.6.2 Actions proposed by the national representatives based on the mutual learning

One of the ideas to improve alignment in Portugal, which was presented during the MLE, concerns the stronger involvement of other ministries and other stakeholders. As regards the latter, the Public Participation Laboratories pilot project recently introduced in Portugal has been presented and analysed as a possible way to make joint programming more visible and to engage with a range of stakeholders and, potentially, with politicians concerning the JPP.

Another issue raised during the MLE concerned the need for measuring the impacts of JPP research. This is not only required to assess the benefits and cost of participation in joint programming but would also help in the communication and engagement with stakeholders and politicians. To this end, a validated methodology must be developed and applied.

The situation analysis and discussions during the MLE revealed several areas for improvement in Portugal, including:

- Introduce the 'Joint Programming Process' topic in the agenda of the Council of Ministers as a way of making it visible and create/improve the political commitment of other stakeholders;

- Conducting a similar study on alignment to that developed by Austria could be an opportunity to 'capture' the participation of other policymakers in joint programming;

- Involve other ministries in the JPP. In the short term, more regular meetings with other ministries could help improve their understanding of joint programming and could involve them in defining common S&T policies, as well as the allocation of funds for JPP activities;

- Consider how the recently introduced and implemented Public Participation Laboratories could integrate joint programming within the communication strategy;

- Develop and validate a methodology for impact assessment of JPP activities.

For further information on the Portuguese situation and plans, please contact Madalena Antunes Pereira at Madalena.Pereira@fct.pt or Rui Durão at Rui.Durao@fct.pt

5.7 Romania

"The MLE was an enriching experience for all those who would like to have in-depth knowledge about practical models used for JPI implementation."
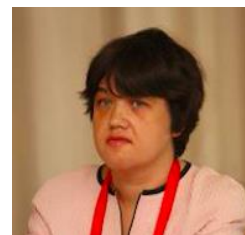
The Romanian representative was Ioana Ispas from the Ministry of Research and Innovation (MCI) where she works as the European Affairs Advisor. She is also a member of the Romanian delegation in the GPC.

Ioanna considered the MLE was very relevant. The aspect she appreciated most was the chance to talk to those colleagues who are implementing JPIs in different countries and to discuss the problems stemming from practical implementation and their solution.

The concept of the French 'Mirror Groups' and the Estonian schemes, in which policy ministries co-fund JPP activities, drew her attention. During the MLE, Ioanna started to explore possibilities of adapting these elements to the Romanian situation. To this end, she and her colleagues started to think about a potential update of the legislation for the National Research Programme 2015-2020.

5.7.1 National context in Romania

Romania has a limited R&D budget and spends only about 0.5 % of its GDP on research and development. The country takes part in nine JPIs and a variety of ERA-NETs, A185s and other transnational initiatives.

Currently, all funding for and decision-making on joint programming is centralised in the Ministry of Research and Innovation, with no involvement from any other ministry in preparation of the funding decisions.

The National Research, Development and Innovation Plan in Romania for the 2015-2020 period includes a dedicated programme for international cooperation under which there exists a sub-programme for participation in JPIs. This is expected to begin in mid-2017. In particular, the National Research, Development and Innovation Plan is expected to contribute to:

- Strengthening governance of active participation in the implementation of strategic research and innovation agendas;

- The development of a robust national structure for appropriate JPI national coordination;

- The allocation of funding to support active participation in JPIs.

5.7.2 Actions proposed by the national representative based on the mutual learning

The Romanian participant's interest in the MLE focused on issues of governance, which is also the area for the envisioned actions for improvement:

- Contribute to set up a cross-ministerial working group for each JPI following the German model;

- Set up national Mirror Groups for each JPI, which has already been planned under the ERA Roadmap;

- Create a governance structure for JPP as a whole, which will help communication within the JPP community and beyond;

- Consider the involvement of Horizon 2020 NCPs, as well as of the ERA NET Cofund contact points in communication processes;

- Improve the understanding of the tools that are appropriate for communication with policymakers and the wider public, building on the experience shared through the ERA-LEARN platform.

For further information on the Romanian situation and plans, please contact Ioana Ispas at *ioana.ispas@research.gov.ro*

5.8   Slovenia

"We were sleeping for a couple of years in the field of JPIs – we woke up just in time for MLE. We received a great deal of ideas and direction on how to proceed, be more active and become a better ERA partner."

The Slovenian participant in the MLE was Petra Žagar from the Ministry of Education, Science and Sport. She was appointed national delegate to the GPC in March 2015, making her the national JPI coordinator, too. Petra found the MLE to be extremely relevant and very timely for her work.

Her expectations were that it would help her to raise the status of joint programming in her country and provide direction on how to improve national governance, not just for the JPIs but for all P2Ps. She was also interested in developing formal systems for the selection, monitoring and evaluation of JPI activities as well as how to increase the cooperation between national research institutes in relation to major challenges. The MLE has provided learning and direction for all of these.

One of the creative tactics Petra used was to host one of the country workshops (on national governance structures) and involve her ministry's state secretary in the meeting. This had a positive impact on raising the profile of joint programming at the policy level, and the national Research Agency will be launching a call for proposals in 2017 that will include the option for societal-challenge projects.

Petra is also keen to broaden the involvement of the sectoral ministries in joint programming activities and took some inspiration from the co-funding model in Estonia, the mirror groups in France and the governance structure in Norway. Furthermore, she appreciated having access to the Austrian work on selection criteria for prioritising participation in JPP networks as Slovenia does not have sufficient budget to participate actively in all relevant networks.

5.8.1   National context in Slovenia

Slovenia is a relatively small country with limited national budgets for R&D. It only participates formally in two JPIs (observer status in three others) but is actively involved in various ERA-NETs, one EJP and four Article 185 initiatives (including PRIMA).

One of the main issues highlighted prior to the MLE concerned how to raise the status of joint programming at higher levels in the Ministry of Education, Science and Sport and other relevant ministries. As there are no specific research programmes it is difficult to secure advance commitment to P2P calls. A new procedure was implemented to formalise the decision process for participation in P2P activities. This involves the director general of the Science Directorate, the head of the relevant scientific area and others such as the relevant H2020 programme committee delegates.

5.8.2 Actions proposed by the national representative based on the mutual learning

The lack of sufficient funding and human resources continues to be a major barrier to active participation in JPIs and other P2Ps. An interesting approach on interministerial cooperation was presented at the MLE workshop in Ljubljana. The Ministry of Science and the Ministry of Agriculture combined forces (money and human resource) in two ERA-NET calls with the result that a higher number of Slovenian organisations were successful in securing funding in transnational projects.

A number of ideas for improvement emerged from participation in the MLE, including:

- Slovenia is a small country with limited human resources and financial limitations. Rather than designing its own societal-challenge programmes it could address these primarily by using EU-level instruments;

- On a limited scale, introduce societal challenges into the 'interdisciplinary' pillar of the calls for projects that are published by the Slovenian Research Agency;

- Improve the selection procedure for participating in joint programming based on the examples from Austria and Estonia;

- Promote the need for an overarching coordination structure and coordinator for all P2P activities in Slovenia based on the examples from Norway and Sweden;

- Try to influence drafting of the national strategy for internationalisation and the new act on research and development to include a provision that it should be the mission of all ministries to address societal-challenge research;

- Increase the interest of other ministries by preparing briefing material for one of the government sessions in autumn 2017.

The first two proposals have already been achieved. In addition, high-level political commitment was given during the MLE country visit in Slovenia, during which State Secretary dr, Tomaž Boh announced that a share of the additional funds received by the ministry will be allocated to societal-challenge programmes and that the system for the selection of societal-challenge programmes and their priorities will be significantly upgraded, and various stakeholder will also be involved in the process.

For further information on the Slovenian situation and plans, please contact Petra Žagar at Petra.Zagar@gov.si

5.9   Sweden

"Getting a larger and closer network of colleagues in Europe is in itself alignment. The exchange of knowledge, problem solving and reflection on our own system and processes has been useful and encouraging."

Karin Schmekel of the Ministry of Education and Research and Pontus Holm from the Swedish Research Council (SRC) participated in the MLE on behalf of Sweden. They also chaired the prior GPC Implementation Group on 'Alignment and Improving Interoperability (IG2)', which completed its report in April 2016.

They had already initiated some actions based on what they had learned from the GPC/IG2 but reported that the MLE had added more depth to their knowledge about other countries. For example, the MLE allowed them to gain a practical understanding about the French Mirror Groups, which is an interesting model for Sweden. Another positive feature of the MLE was the number of participating countries, as this provided a broad view of many different national systems.

Karin and Pontus are exploring how the national organisation structure can be enhanced to improve communication and knowledge transfer between government offices and agencies. This could include the development of reference groups for each JPI based on the French model. Another timely opportunity is to focus on the new national research programmes that will be introduced later in 2017 to initiate new processes for mapping stakeholders and monitoring impact.

"A main purpose for participating in the MLE on national alignment was of course to learn of ways to improve our national system. However, it is equally important to us that fellow European countries participate to develop their systems and thus become improved collaboration partners for us."

5.9.1   National context in Sweden

Sweden is a research-intensive country and has been actively involved in a wide range of P2Ps. This includes all of the JPIs.

The Swedish research funding system includes three research councils and an innovation agency. The largest of the research councils (Swedish Research Council) covers all areas of research. The other two are focused on specific sectors (e.g. environment, health) and operate under the appropriate ministry. The Ministry for Education and Research has the overall coordinating responsibility. In general, the agencies have sufficient autonomy to participate in P2P networks, including the JPIs. The government produces a national research bill every four years, the most recent of which was introduced at the end of 2016. This has allocated more overall funding to societal-challenge research and has 10 specific research programmes, several of which have direct synergy with specific JPIs.

5.9.2 Actions proposed by the national representatives based on the mutual learning

A new framework is being set up to increase the communication between JPIs and the national ministries to create a more coherent policy framework for JPI engagement. At the centre is the Swedish 'JP-group', with representation from both ministries and research-financing bodies. The meetings are chaired by the GPC delegate and have previously been used mainly for information from the GPC to the JPIs. They will now evolve towards workshops dealing with actual tasks. Two additional groups will generate these tasks: the 'interministerial group' with representation from all concerned ministries and the 'JPI funding group' that has representation from all the JPIs.

Whilst Sweden has strong involvement in joint programming, there is a lack of an overall coordination framework. This includes a fragmented view of stakeholder engagement and impact of the different JPI/P2Ps. The following ideas for action will therefore be explored:

- Develop a national organisational structure that encompasses the funding agencies as well as governmental offices to create better communication and knowledge transfer at all levels. This will also enable a higher level of coordination with working groups, development and implementation of best practice, etc.;

- Use the national research programmes that will be introduced in Sweden later this year to map stakeholders and for impact monitoring;

- Encourage the national JPI actors to increase their stakeholder communication and involvement by setting up broad and inclusive reference groups;

- Increase impact monitoring of the JPIs by making use of the enhanced functionality of a newly launched application and monitoring database system.

Norway's JPI governance system and the French Mirror Groups are seen as offering some lessons that could be adopted by Sweden.

For further information on the Swedish situation and plans, please contact Karin Schmekel at karin.schmekel@regeringskansliet.se or Pontus Holm at Pontus.Holm@vr.se

5.10 Turkey

"I would definitely recommend any colleague with similar duties like me to participate in such an MLE, as it provides a place to exchange knowledge and share ideas about problems we all face in our countries, albeit in different manners."

The Turkish representative was Serhat Melik from the TUBITAK EU Framework Programmes National Coordination Office, where he works as a knowledge hub for JPP and is the National Contact Point for Horizon 2020 Smart, Green and Integrated Transport. He also serves as the Clean Sky 2 JTI national representative.

Serhat found the MLE to be very relevant for his work. In particular, it was useful for him to see how his colleagues in other countries face issues similar to those he encounters in Turkey and what solutions they have been developing in response. A major interest for Serhat to take part in the MLE was to learn about ways to integrate joint programming in the national research strategy. The country visit to Norway was specifically insightful as it gave him new knowledge and ideas on how to structure the approach at home. More generally, he considered the country visits as an excellent opportunity to study "tangible examples" and to hear policymakers and stakeholders talk about issues from their different perspectives.

Based on the experience of the MLE, Serhat is investigating ways to adapt the ideas from other countries, such as Mirror Groups created in France or the co-funded approach used in Estonia, to the specific needs of the Turkish R&I system.

5.10.1 National context in Turkey

Turkey spends about 1 % of its GDP on R&D. It participates in nine JPIs and two Article 185 initiatives.

Turkey has recently been engaged in a significant science, technology and innovation (STI) impetus with the vision to contribute to new knowledge and develop innovative technologies to improve the quality of life by transforming the former into products, processes and services for the benefit of the country and humanity. Turkey's R&I system is still at the development stage, which partly explains the comparatively higher budget growth rates. International cooperation is seen as an effective instrument to support the development of the R&I system.

The Turkish R&I system uses a centralised policymaking and governing approach to joint programming so that communication between the national P2P communities is easy and quick. TUBITAK meets regularly under the coordination of the International Cooperation Department. Similar meetings are also organised with the relevant ministry departments (such as with the General Directorate of Agricultural Research and Policy of the Ministry of Food Agriculture and Livestock). Most of the ministries do not contribute to the funding.

5.10.2 Actions proposed by the national representative based on the mutual learning

The situation analysis conducted during the MLE highlighted that the areas for improvement in Turkey include issues of governance and communication, as follows:

- Establish better communication channels within the national JPP community, in particular other relevant sectoral ministries and stakeholders;

- Involve other sectoral ministries in the programming process early on to increase the likelihood that JPP research results will be considered for policymaking;

- Approach NCPs, who are in-between researchers and other stakeholders, for future communications with researchers.

For further information on the Turkish situation and plans, please contact Serhat Melik at serhat.melik@tubitak.gov.tr

6   NEXT STEPS

As a follow up to the latest MLE, possible next steps were discussed with each of the participants during individual exit interviews and at the final group workshop on 16 May 2017. The main concern expressed was the risk of losing momentum, so there was strong interest in a review meeting after one year.

> *"We should have a reunion in 12 months after the end for an update on progress. It is too easy to lose momentum."*

The group also considered whether the original plan to split the MLE into three sequences was still valid. The consensus was that the proposed sequence no. 2 (efficient/effective activities at national level) had been at least partially covered during this MLE. Likewise, the proposed third sequence (resources needed for efficient/effective participation in JPP) had been partly covered and is now considered to be rather narrow for an MLE.

One of the advantages of this MLE was that it was sufficiently broad to appeal to everyone. The process highlighted 16 'key factors' for national alignment and interoperability (see appendix). This, however, also meant that it was impossible to focus on particular factors that were regarded as common areas of weakness, such as evaluating the impacts. A follow-up on this MLE focusing on those key factors that are particularly challenging would seem to be the most appropriate way forward.

> *"Maybe concentrate on particular common issues – e.g. impact evaluation."*

APPENDIX: SELF-ASSESSMENT FRAMEWORK

A self-assessment framework was developed by the experts to ensure that the participating country representatives were able to carry out a customised analysis of their national situation and then develop ideas for improvement based on the peer-learning activities. The MLE had three main phases based on the pre-agreed topics (preconditions, governance, and communication) and so the self-assessment exercises were split accordingly.

A consolidated version of the framework is included below and enables the user to:

- Describe the current national situation and rate its degree of alignment with each of 16 key factors encompassing preconditions, governance, and communication;

- Consider the barriers to improvement, for each key factor, and the degree of difficulty in overcoming them;

- Propose opportunities for improvement based on self-assessment and peer learning.

The self-assessment starts by considering the **national situation** for each factor. This is described then the user gives their country a subjective score for alignment (1-5). This is followed by a similar assessment of the **barriers to improvement**. The final step is for the user to answer the question: what do you think could be done to improve the national situation?

The national participants completed the self-assessment exercises in advance of the topic-specific workshops and the aggregated results were presented, factor-by-factor, at the workshop using anonymous quadrant diagrams like the one shown in Section 4.6. This allowed the group to discuss the overall pattern for each factor and for individual countries to elaborate on their assessment, thereby setting up a creative forum on how particular weaknesses might be addressed in particular countries.

The detailed results of the self-assessments for each key factor are included in the more detailed topic reports, namely:

- MLE Report No. 2 (National Preconditions) covers five key factors: political commitment to JPP, a national R&I system that prioritises societal challenges, a dedicated budget for participation in JPP activities, lead ministry/agency with dedicated resources to enable effective participation, and flexible funding instruments for participation in JPP.

- MLE Report No. 3 (National Governance Structures) covers six key factors: effective strategic decision-making structures for JPPs, coordination between ministries across policy domains, mobilising financial resources for JPP activities, coordination between ministries and agencies, offering platforms for stakeholder involvement, and measuring impacts and making them visible.

- MLE Report No. 4 (Communication Flows and Visibility of the JPP) covers five key factors: communication within the JPP community, communication to impact on sectoral policy, communication to attract researchers, communication to reach out to end-users and other stakeholders, and communication to build political support.

These reports can be found on the Policy Support Facility portal.

Analytical Framework for a Self-Assessment of the Degree of Alignment in Joint Programming											
		Degree of Alignment					Self Assessment				
Key Factors		1	2	3	4	5	National Situation	Score for Alignment	Barriers to Improvement	Score for Barriers	Scope for Learning & Improvement
		Very low degree of alignment				Very high degree of alignment	*How would you describe the national sitiation?*	*What score would you give (1-5) for the national situation?*	*What would be the main barriers to improvement?*	*How would you rate the barriers (from 1=very low to 5=very high)?*	*What do you think could be done to improve that national situation?*
1	Political commitment to JPP	Political culture that favours national RDI activities				Clear commitment and targets within national RDI strategy and ERA Roadmap					
2	A national research & innovation system that prioritises societal challenges	Societal research is not on the agenda of either the funding organisations or the researchers				Societal challenge research is prioritised and relevant ministries are involved					
3	Dedicated budget for participation in JPP activities	Funding for JPP activities is dependent on the availability of an existing national budget				A substantial budget is ring-fenced for JPP activities and allocated using robust criteria					
4	Lead ministry/agency with dedicated resources to enable effective participation	Participation in JPP activities is based on bottom up decisions				JPP coordination is delegated to a lead organisation from the policy level					
5	Flexible funding instruments for participation in JPP/JPIs	Participation is inhibited by traditional rules and restrictions				Specific funding instruments have been introduced to overcome the barriers					
6	Effective strategic decision making structures for JPPs	Ad hoc decision making on participation				Systematic criteria that governs national decision on JPP entry and exit					
7	Coordination between Ministries across policy domains	No other than one JPP funding Ministry involved. No coordination processes or structures with other Ministries				All relevant policy and funding actors for the JPP domain are involved					

8	Mobilising financial resources for JPP activities	Funding is committed to joint calls if available from national budget				Dedicated central funding pot forJPP with transparent rules for distribution				
9	Coordination between Ministries and Agencies	No cooperation between Ministries/Agencies in JPP. No formal rules on JPP governance				Effective coordination between Ministries Agencies with clearly defined roles and responsibilities				
10	Offering plattforms for stakeholders involvement	No processes to involve others outside direct participants				Formal frameworks with systematic processes to involve relevant stakeholders				
11	Measuring impacts and making them visible	No resources or processes are set up to gather and disseminate evidence for results and impacts				A systematic process is in place to monitor, evaluate and disseminate results and impacts				
12	Communication within the JPP community	No forum of exchange among the members of the JPP community				One or several fora involving the entire JPP community				
13	Communication to impact on sectoral policy	No, or only sporadic/infrequent, communication among relevant ministries				Regular and systematic communication and consultation with all relevant ministries				
14	Communication to attract researchers	Basic information only				Effective means of communication to ensure high degree of participation				
15	Communication to reach out to end-users and other stakeholders	No systematic contact with industry and other stakeholders				Regular and systematic engagement with industry and other stakeholders				
16	Communication to build political support	No systematic contact with policy makers				Regular and systematic dissemination to, and engagement with, policy makers				

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This is the final report of the Mutual Learning Exercise (MLE) on 'Alignment and Interoperability of National Research Programmes: National Coordination', which was carried out in the second half of 2016 and the first half of 2017 by nine EU Member States and two associate countries.

Launched in 2008, the 'joint programming process' (JPP) was intended to be one of the building blocks of the European Research Area (ERA), aiming at a systematic way of coordinating the programming of research policy among Member States. In 2012, however, 'alignment' and 'interoperability' were identified as being one of the main barriers holding back a more effective joint programming process. This MLE therefore focused on three relevant topics for its improvement: 'National preconditions for participation in JPP/JPI', 'National governance structures', and 'Communication flows and visibility'.

The Mutual Learning Exercise is one of three instruments available under the Policy Support Facility (PSF), which was set up by the European Commission as part of the Horizon 2020 programme. The aim of the PSF is to give EU Member States (and countries associated to the Horizon 2020 programme) practical support to design, implement and evaluate reforms that enhance the quality of their research and innovation (R&I) investments, policies and systems.

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