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**Framework for P2P Activities**

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## 1. Context and description of the task

This report is **Deliverable 4.3 “Monitoring and Assessment Framework for P2P Activities”** of the ERA-LEARN 2 project. It was prepared by the University of Manchester (Institute of Innovation Research) through an expert subcontract.

The report proposes a monitoring and impact assessment framework of P2P activities. The development of the framework draws upon previous relevant work done covering mainly the ERANET scheme. The present framework suggested here extends to address other P2P initiatives like Art. 185 and JPIs. Furthermore, it covers both the project as well as programme / instrument levels.

The framework structure is based on relevant evaluation and impact assessment theories and practices about multi-lateral programmes following the approach of programme theory, intervention logic and objective hierarchy. It further builds on case study information from those networks that have had experiences of carrying out impact assessment at the project level. Thus the development of the framework and has been adjusted to the specific features of ERA-NETs, JPIs, and Article 185s. It is aspired that this framework can be the guide on data and information collection on a regular basis for monitoring and assessment purposes of P2P activities.

The report starts with reminding the reader of the limitations in monitoring and impact assessment exercises of research programmes and the specifics of joint programmes or P2P activities (Section 2). Then follows the theory about developing a monitoring and impact assessment framework laying down the assessment aims, and different levels of assessment and monitoring (project and programme / instrument levels) (Section 3). The final section of the report focuses on translation the theory into practice and more specifically into requirements for information collection on specific monitoring and assessment indicators that have been defined. This is accompanied by suggested appropriate timing and procedures to follow. (Section 4) The report ends with a short concluding remark about the need to pilot the framework but also highlighting that this is work-in-progress and that the framework and its elements can be refined / finalised only when applied in practice.

## 2. Developing a monitoring and impact assessment (M&IA) framework

### Main challenges in monitoring and impact assessment

Despite a long history, the measurement and evaluation of impact is a long-standing issue for evaluators. While some metrics can be relatively easy to monitor and measure, either directly (in the case of employment, turnover, etc.), or through the use of proxies such as joint publications, co-patenting, and licensing, several, particularly those relating to behavioural changes and longer term impacts (regional economic prosperity/growth, transfer/exchange of knowledge, etc.) are much harder to quantify and measure. The more sophisticated elements of knowledge transfer (improved technical understanding, improved image and reputation) can be particularly hard to capture and, as noted by Lemola and Lievonon (2008)<sup>1</sup>, the measurement of societal impacts is particularly problematic for evaluators.

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<sup>1</sup> Lemola, T. and Lievonon, J. The role of innovation policy in fostering open innovation activities among companies, April 2008.



The evaluation of collaborative schemes, such as ERA-NETs, share several challenges that are also common to the evaluation of types of policy instrument. These include:

### Timing and periodicity of evaluations

While formal collaborative arrangements are comparatively easy to identify from their outset, several further anticipated outcomes and impacts are not likely to manifest until some time into or even after the completion of the collaborative arrangement. Thus, anticipated outcomes and effects are less likely to be manifested until significant periods of time have elapsed: months or years may elapse until prototypes have been generated or new products, processes or services introduced to the market. Similarly, organisational and behavioural changes will take time to generate and become embedded, whilst the sustainability of these and other desired effects will require even longer time frames.

Although impact evaluations tend not to require the delivery of timely management information, thus avoiding the necessity of an early stage evaluation, the influence of management and administrations processes may play a role in the final delivery of impacts and, hence, cannot be ignored. Typically, evaluations of collaboration schemes often focus on the operational characteristics of the programmes, thereby providing feedback to managers and scheme administrators in order that the administration of the scheme is streamlined and tailored to the needs of the users. This use of evaluation as a management tool implies that evaluation results should be timely and not be available only towards the end of a project. **Thus, there is a clearly a role for the evaluation of management practices in any monitoring process.**

In addition, collaborative arrangements develop and mature over time. Moreover, the collaboration project itself often forms the focal point for the continued development of a collaborative relationship that, ideally, can last several years and can develop into numerous subsequent collaborative activities. Such follow-on activities may be difficult to assess within the available time frame of an evaluation – i.e. they take too long to develop and will be less tangible and quantifiable. Where the focus of the collaboration comprises several aims and objectives, all of which may be realised at variable lengths of time, this again poses difficulties for the timing of the evaluation. Therefore, depending on the specific objectives of the policy measure, it may be **necessary to undertake two or more evaluations at successive stages of the lifetime of the measure, or to adapt the monitoring process to account for such developments.**

Lastly, if a relatively long period has been left prior to the evaluation, in order to allow long-term impacts a reasonable opportunity to develop, there is a risk that project participants may be difficult to track down and locate or may not fully recall the details of the project to be able to answer detailed questions concerning the outcomes of the project itself.

### Scope of impact

Although certain metrics may capture the overall outcomes of a programme, the outputs and experiences of individual projects and relationships may be difficult to discern. Whilst collaborative projects, for example, may have apparently simple outcomes (R&D results such as joint publications, patent applications, new prototypes, etc.; trained personnel; follow-up projects), the true benefits of collaboration are more complex and involve longer term relationships, or behavioural changes amongst the partners engaged. Hence, quantitative data capture **must often be reinforced with more detailed qualitative interview or case study approaches.** However, the use of these



approaches raises a further problem: the use of interviews and similar methodologies to capture experiential information may not lend itself to data analysis particularly at an aggregate level, while the use of broad participant surveys may fail to capture important qualitative aspects and unanticipated outcomes. **A broad range of data collection and evaluative approaches may be utilised to improve coverage of these aspects but will have clear cost implications.**

Related to the scope of impact, the range of potential activities that can occur within a network implies that a precise specification of anticipated impacts can be highly problematic. Not only is it difficult to derive appropriate metrics for several of these anticipated outcomes, the **methodologies required to capture them will also need to be correspondingly diverse.** Moreover, networks typically encompass an extensive and diverse set of members. Consequently, the impacts on specific members and actors will be equally, if not more, diverse. In addition, as noted above, capturing the specific impacts on **individual members can be difficult and implies the need for comprehensive sampling approaches that are sensitive to individual outcomes.** The issue of aggregation of these results is also problematic. Finally, the **variable level of participation** by the **range of actors** presented in the network (and their possible successive entry over a period of time) also implies a diversity of anticipated impacts.

### Counter-factuality and benchmarking

In common with other types of policy intervention, it is difficult to identify the types of outcome and impact that arise from a collaborative relationship in the absence of counterfactual examples or **benchmarks established prior to the formation of the collaborations.** The identification and selection of control groups which may be used to derive baseline data can be difficult, for example, such control group members may exhibit characteristics that dissuaded them from applying for funding (for example, they did not require funding, the programme focus fell outside their strategic remit, funding entailed too many constraints, etc.) or which precluded them from a successful application (for example, an inability to meet eligibility criteria). Even if suitable comparators can be found, there may be a strong likelihood that the comparison samples are not following identical development and growth trajectories – firms with good innovation performances may be more likely to apply for, obtain and benefit from public support innovative than less innovative firms. Thus a **truly comparable sample of non-participants is difficult to create.** Likewise, benchmarking can also be problematic; for example, it is difficult to obtain sufficient performance data for firms prior to their application and receipt of public support, particularly, in the ideal case if this data is required to construct a profile of the firms' growth trajectory over a number of years rather than utilising a single point in time for an ex ante/ex post comparison. Such data is even less likely to be available for newly established or high-growth SMEs. Likewise, it will be difficult to benchmark the performance of the collaboration in the absence of a detailed ex ante assessment of the conditions and relationships prevailing before its initiation.

**The issue of attribution:** Closely linked to the above issues of counter-factuality and benchmarking, a major problem commonly encountered in the evaluation of policy measures is that of ascertaining whether the observed performance of the participants can actually be attributed to the measure itself, or whether they have occurred due to other, external, factors. In the case of some of the anticipated impacts of a network or collaboration project, this problem is less acute. For example, the creation of a formal network structure (in which members 'sign up' to participate and where their participation is thus formally logged) would not be achieved without any policy intervention –



although informal alliances and partnerships may have developed in the absence of the measure. On the other hand, whether such informal alliances and partnerships would have resulted in the achievement of the same **activities and outcomes cannot be determined in the absence of a counterfactual or benchmark analysis.**

Linked to the issue of attribution, the transfer of research results to society more broadly is a complex process. Although “some studies have identified mechanisms of transfer between businesses or between universities and businesses, these models are mainly empirical and often leave the full impact on society of such transfers unrevealed” (European Commission, 2011).

### Informal Relationships

One of the main rationales for the promotion of networking policy approaches is the value-added and synergies they deliver through the bringing together of a range of competencies and capacities. In part, some of these capacities and competencies reside beyond the immediate participants in a network or collaboration since they will bring these linkages to the collaboration. In addition, spill-over effects may extend in the opposite direction to these informal partners. In either case, the **evaluation of these effects will be extremely difficult.** This is a particular issue for the evaluation of ‘formal’ Government support policies which now operate against a much broader background of informal relationships and which makes an assessment of attribution and additionality much harder to undertake.

Stahl-Rolf and Hamann<sup>2</sup> found that many of the successful evaluation approaches they encountered in their 2003 review depended on the determination of a reference point or benchmark against which the performance of the network might be assessed. Typically this was undertaken during the selection of the network or network members for funding – **information being gathered during this process on the *status quo* and aims of the potential participants.** This information provided a **reference point against which subsequent activities could be monitored** and the extent to which **aims were achieved.** As an example, they cite the evaluation of the Austrian Centres of Competence programme where the evaluation made a comparison of performance against the situation at the start of funding. In contrast, in the Finnish evaluations of regional networking in electronics and telecommunication programmes, comparisons were made against international comparators in the same field. Few of the evaluations examined by Stahl-Rolf and Hamann made use of comparison group approaches where participant performance was assessed relative to that of networks that did not receive funding or networks that were funded under different programmes, either in the same country or abroad.

Other challenges include:

- **Sector specificities:** different research fields and industry sectors vary in the way in which output is created and channelled to the end user. Thus, a single framework for assessment is difficult to achieve.
- **Identification of users:** the identification of all end users who benefit from the research outputs can be difficult and/or costly, especially in the case of basic research.

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<sup>2</sup> Stahl-Rolf, S. and Hamann, O. International Experiences with Ex-ante and Ex-post Evaluations of Networks of Innovation, VDI-Technology Centre, Düsseldorf, 2003.



- **Multiple benefits:** basic research may have an impact in several (not easily identified) dimensions. Unintended effects are also hard to identify and subsequently measure, thereby causing problems when determining the scope of an impact assessment.
- **International/sectoral spillovers:** linked to the multiplicity of effects, knowledge spillovers may occur. Consequently, any measured impacts might result (partially or indirectly) from research performed abroad rather than from local research investments, or may accrue from research carried out in other sectors. The opposite case may also occur, with intended or unintended impacts accruing in sectors, or regions/countries other than those intended. Again, this forms a problem for defining the scope of an impact assessment.
- **Lack of appropriate indicators:** this is a frequently encountered problem in evaluation and one consequence is the development of, sometimes, inappropriate 'proxy' indicators.
- **Valuation:** whilst often highly desirable, in many cases, it is difficult to provide a monetary value of impacts to make them comparable. (European Commission, 2009).

## Specificities of Joint Programming Activities

One of the main aims of the European Research Area is to overcome the needless fragmentation of research efforts across different countries and regions and thus create the critical mass of resources and expertise needed to tackle Grand Challenges. In this regard coordination of cooperation of national and regional policies and programmes has always been one of the key ERA priorities since its inception in 2000<sup>3</sup>.

### The ERA-NET Scheme – history and evolution

Several policy implementation tools have been devised to serve the specific target of supporting the coordination and cooperation of national and regional research programmes starting with the ERA-NET scheme which was first implemented in FP6. The ERA-NET Scheme is addressed at programme managers and / or owners and has welcomed proposals for coordination actions in several fields of science and technology using a bottom-up approach. The Commission pays all additional costs related to the coordination up to 100%.

FP6 ERA-NET actions could follow a four step approach covering the following activities, and were encouraged to reach step 4:

- (1) Systematic exchange of information and good practices on existing programmes (with possible activities / outcomes such as databases of relevant national/regional programmes)
- (2) Definition and preparation of common strategic activities resulting in jointly developed strategic research agendas of common interest
- (3) Implementation of joint activities between national or regional programmes; this may include for example training programmes, exchanges, summer schools, sharing of facilities, etc. but the most common goal would be to organise joint calls for proposals

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<sup>3</sup> Communication from the commission to the council, the European parliament, the economic and social committee and The committee of the regions. Towards a European research area. Brussels, 18.1.2000 COM(2000) 6 final.



(4) Funding of joint transnational research; this would be the actual funding of research projects approved under the joint calls. The joint calls can refer to existing national / regional programmes that are coordinated for this purpose under the ERA-NET or to a new programme created jointly by the ERA-NET partners.

Examples of activities carried out under the ERA-NET scheme, are as follows<sup>4</sup>:

- Schemes for personnel exchange
- Schemes for joint training activities
- Schemes for mutual opening of facilities
- Development of strategic research agenda
- Monitoring and evaluation of national projects
- Coordination of nationally funded research projects' activities
- Action plan for common strategic issues and preparing joint activities
- Cooperation agreements between participating programmes
- Common funding rules for transitional projects
- Establishment of common, multinational proposal evaluation procedures
- Joint monitoring of transitional projects
- Design proposal for future research programmes collaboration
- Action plans for future research programme collaboration

Even since the early days it became evident that the ERA-NET scheme was successful in meeting an identified need. More than 1,000 programme owners and managers participated in the 71 ERA-NET actions funded under FP6, while out of the 71 ERA-NET actions, 64 (90%) implemented joint calls (step 4).<sup>5</sup>

Framework Programme 7 supported existing ERA-NET actions to extend and/or reinforce their integration while it also supported new ERA-NET actions. In total, 31 of the initial FP6 ERA-NET actions received further funding for coordinating their activities under FP7 and 51 new ERA-NETs started under FP7 on topics that were not covered formerly, thus resulting in 153 different ERA-NET topics under FP6 and FP7.<sup>6</sup>

A new module was also introduced in FP7, called "ERA-NET Plus", under which the Commission supported the organisation of joint calls between national research programmes by "topping-up" joint trans-national funding with Community funding. 23 ERA-NET Plus actions were funded under FP7.

In addition, a major change took place in relation to the governance of the ERA-NET scheme. From being a 'stand-alone' action in FP6 supported by a specific unit and budget in DG R&I, it was made

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<sup>4</sup> This list is taken from the NETWATCH IA survey carried out in 2013. It is stated that the survey centres on the participants and activities of ERA-NETs and ERA-NET Plus. However, information is also collected on Article 185s, Joint Programming Initiatives (JPIs) and networks that continue but no longer receive EU support (known as self-sustaining networks). Thus the list can be considered to cover activities under all the three different instruments and not only the ERA-NET scheme.

<sup>5</sup> [http://ec.europa.eu/research/fp6/index\\_en.cfm?p=9\\_eranet](http://ec.europa.eu/research/fp6/index_en.cfm?p=9_eranet)

<sup>6</sup> Bertrand, E., Niehoff, J. 2013. Report on ERA-NET, ERA-NET Plus and JPIs and their joint calls. European Commission.



available as another instrument to be used in the context of the Cooperation specific thematic programmes managed by the thematic Directorates in DG R&I, but also in part of the Capacities Programme of FP7. The provision was also made to issue horizontal calls to allow the support of ERA-NET actions not falling directly under one of the thematic areas of FP7 or combining several themes together.<sup>7</sup>

In H2020 a new tool was introduced, ERA-NET Cofund, based on the merger of the ERA-NET and ERA-NET Plus actions. ERA-NET Cofund is designed to support public-public partnerships, including joint programming initiatives between Member States, in their preparation, establishment of networking structures, design, implementation and coordination of joint activities as well as EC topping-up of a trans-national call for proposals. The main and compulsory activity of the ERA-NET Cofund is the implementation of the co-funded joint call for proposals that leads to the funding of trans-national research and/or innovation projects. This aims to increase the leverage on public funding of joint research and innovation agendas. It also indicates a shift from funding networks to top-up funding of joint calls.<sup>8</sup>

### Joint Programming Initiatives<sup>9</sup>

Another ERA policy implementation tool is the Joint Programming Initiatives, even though it is more considered a process rather than a tool like the ERA-NET scheme. The overall aim of the Joint Programming process is to pool national research efforts in order to make better use of Europe's precious public R&D resources and to tackle common European challenges more effectively in a few key areas. It is a structured and strategic process whereby Member States, on a variable geometry basis, agree to and commit to implement common visions and Strategic Research Agendas (SRA) to address major societal challenges. Joint Programming is a new process combining a strategic framework, a bottom-up approach and high-level commitment from Member States. It builds on the experience gained from existing schemes like ERA-NETs or Art. 185s in coordinating national programmes.

The Joint Programming process was launched by a Communication of the Commission in July 2008 and the Competitiveness Council has mandated a dedicated configuration of ERAC (the High Level Group on Joint Programming – GPC - consisting of nominees from Member States and the Commission) to steer the process and identify the themes for possible JPIs. Based on the result of the GPC, the Council, upon a proposal by the Commission, recommends a limited number of areas in which to implement Joint Programming as a priority.

From there on, participation of Member States in each initiative is "à la carte", based on voluntary commitments leading to partnerships composed of variable groups of countries. For each initiative, participating countries will start with:

- Developing a shared vision for the area;
- Defining a Strategic Research Agenda (SRA) and SMART objectives (Specific, Measurable, Achievable, Relevant and Time-Bound); and

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<sup>7</sup> [http://cordis.europa.eu/fp7/coordination/about-era\\_en.html](http://cordis.europa.eu/fp7/coordination/about-era_en.html)

<sup>8</sup> [http://ec.europa.eu/research/era/era-net-in-horizon-2020\\_en.html](http://ec.europa.eu/research/era/era-net-in-horizon-2020_en.html)

<sup>9</sup> [http://ec.europa.eu/research/era/what-joint-programming\\_en.html](http://ec.europa.eu/research/era/what-joint-programming_en.html)



- Preparing for implementation of the SRA by analysing the options, assessing expected impacts and defining the best mix of instruments to be used.

The Commission facilitates the Joint Programming process and, if they so wish, support Member States for Joint Programming by:

- Financing support actions to their management
- Launching possible complementary measures to actions undertaken jointly by participating countries as identified in each JPI Strategic Research Agenda
- Linking the JPIs to international actions and bodies where the Commission represents the EU
- Reporting on the JPI progress to the Council and informing the European Parliament.

So far 10 JPIs have been created<sup>10</sup>. However, progress in implementing joint calls has been slow. Out of the 10 JPIs created, 4 have adopted their Strategic Research Agenda and 6 have implemented or plan to implement joint calls.<sup>11</sup>

### Article 185s<sup>12</sup>

Article 185 of the Treaty on the Functioning of the European Union (TFEU)<sup>13</sup> enables the EU to participate in research programmes undertaken jointly by several Member States, including participation in the structures created for the execution of national programmes. Participating EU Member States integrate their research efforts by defining and committing themselves to a joint research programme, in which the EU promotes the voluntary integration of scientific, managerial and financial aspects.

The EU provides financial support to the joint implementation of the (parts of the) national research programmes involved, based on a joint programme and the setting-up of a dedicated implementation structure. The recipient of the EU funding in each Article 185 TFEU (ex-Article 169 TEC) initiative is a Dedicated Implementation Structure (DIS). The DIS is responsible for the administrative, financial and contractual management of the joint research programme. The rules for participation are those of the national programmes concerned, provided they are compatible with EU legislation, plus any additional requirements which may be imposed by the Delegation Agreement.

The actions supported may cover subjects **not** directly linked to the themes of the Framework Programme (FP), as far as they have a sufficient EU added value. They will also be used to enhance the complementarity and synergy between the FP and activities carried out under intergovernmental structures such as EUREKA and COST. The identification criteria for Article 185 TFEU (ex-Article 169 TEC), set out in the Seventh Framework Programme, are as follows:

- relevance to EU objectives,
- clear definition of the objective to be pursued and its relevance to the objectives of the Framework Programme,

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<sup>10</sup> [http://ec.europa.eu/research/era/joint-programming-initiatives\\_en.html](http://ec.europa.eu/research/era/joint-programming-initiatives_en.html).

<sup>11</sup> Bertrand, E., Niehoff, J. 2013. Report on ERA-NET, ERA-NET Plus and JPIs and their joint calls. European Commission.

<sup>12</sup> [http://ec.europa.eu/research/era/art-185\\_en.html](http://ec.europa.eu/research/era/art-185_en.html).

<sup>13</sup> ex Article 169 of the Treaty establishing the European Community (TEC).



- presence of a pre-existing basis (existing or envisaged research programmes),
- European added value,
- critical mass, with regard to the size and the number of programmes involved and the similarity of activities they cover,
- efficiency of Article 185 TFEU as the most appropriate means for achieving the objectives.

In the Specific Programmes of the Framework Programme, four initiatives under Article 185 TFEU (ex-Article 169 TEC) are identified (the three first under the Cooperation programme and the fourth under the Capacities Programmes):

1. AAL - a joint research programme on 'Ambient Assisted Living';
2. Bonus - a joint research programme in the field of Baltic Sea research;
3. EMRP - a joint research programme in the field of Metrology (the science of measurement).
4. Eurostars - a joint research programme for research-performing SMEs and their partners.

In addition, the EDCTP (European and Developing Countries Clinical trials Partnership) existed in the Sixth Framework Programme which was essentially the basis for the initiatives' continuation and evolution.

Article 185 TFEU (ex-Article 169 TEC) initiatives build on the ERA-NET scheme. This scheme facilitates the possibility for national programmes to test their capacity to integrate further, in some cases up to the stage where an Article 185 TFEU initiative could be contemplated. For instance, Bonus and EMRP are the continuation of ERA-NET and ERA-NET Plus networks that evolved into Art. 185.

### **Public-Public (P2P) Partnerships in H2020<sup>14</sup>**

In their entirety<sup>15</sup> the ERA coordination instruments have gradually become known as Public-Public partnerships (P2P) for ERA coordination under the so-called, ERA toolbox. Support of these instruments is safeguarded under Horizon 2020. Specifically, H2020 will support a number of Public-Public Partnerships in 2014 in the form of Art. 185 initiatives and ERA-NETs while paying particular attention to Joint Programming Initiatives.

The Commission has responded to proposals for joint programmes made by Member States and launched the ordinary legislative procedure for successor programmes under Article 185: The European and Developing Countries Clinical Trials Partnership (EDCTP 2), Eurostars 2 (see above), the European Metrology Programme for Innovation and Research (EMPIR), Ambient and Assisted Living (AAL 2). As stated earlier, the ERA-NET and ERA-NET Plus schemes have merged into the ERA-NET Cofund Scheme in H2020, while support will also be given, where appropriate, to enable Member States to align their funding to implement Joint Programming Initiatives.

### **Differences across ERA-NETs, Art. 185 and JPIs**

The differentiation of the coordination instruments is based rather on the level of integration of the respective programmes and programme-owners than the thematic focus, the size or the financial envelope (i.e. the mobilized budget) of the activity. ERA-NETs are often used as a basis or

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<sup>14</sup> [http://ec.europa.eu/research/era/era-net-in-horizon-2020\\_en.html](http://ec.europa.eu/research/era/era-net-in-horizon-2020_en.html);  
<http://netwatch.jrc.ec.europa.eu/web/lp/learning-platform/p2p-in-h2020>.

<sup>15</sup> In addition to ERA-NETs, Art. 185s and JPIs the ERA coordination instruments also involve European Innovation Partnerships (EIPs), Joint Technology Initiatives (JTIs), European Technology Platforms (ETPs).



predecessor for both ERA-Net Plus and activities according to Art. 185.<sup>16</sup> Yet, Article 185 Initiatives involve a full integration of national programmes (at the scientific, financial and management levels), while ERA-NETs hardly go beyond the implementation of joint calls. An example from the field of metrology is illustrated in the following figure. The initiation of collaboration was made possible under the MERA project (EU accompanying measure “Planning the European Research Area in Metrology - MERA”) which then evolved into an ERA-NET, then an ERA-NET Plus and eventually an Art. 185.

ERA-NETs allow for both the coordination of existing programmes and the creation of a new joint programme. In fact it has been noted that sometimes creating a new programmes is easier than coordinating or trying to harmonise long-established procedures (in relation to funding or application or reporting) within existing programmes. JPIs also provide for both the coordination of existing programmes and the creation of new ones. However their real aspiration is to engage and jointly decide and implement the full policy cycle (starting from vision building, agenda setting, to planning, implementation, monitoring and evaluation). Art. 185 aims at the full integration of usually existing programmes.

Joint Programming Initiatives aim at responding to common societal challenges and deepen the research cooperation between member states. Relationship links already exist between some JPIs and many ERA-Nets, for example, in the case of “Cultural Heritage & Global Change”.<sup>17</sup> The strong link of ERA-Net and Joint Programming suggests that it is wise and useful to benefit from the ERA-Nets and their stakeholders with their know-how and experience. This could be done, for example, by applying them as starting points for implementing a JPI.<sup>18</sup> However, the main difference between the two instruments is that ERA-NETs are an FP instrument while Joint Programming is a Member State led process.<sup>19</sup>

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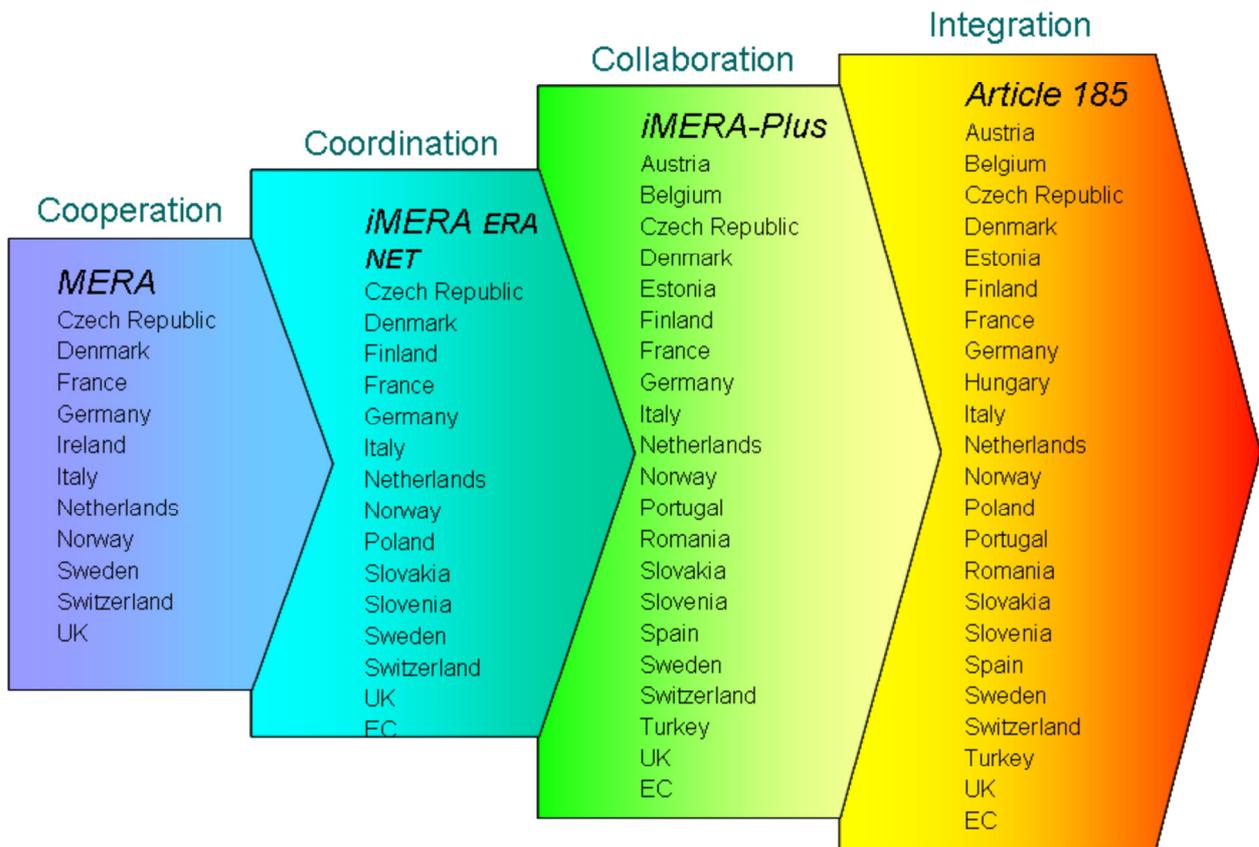
<sup>16</sup> Horvat, M., Guy, K. et al, “ERA-NET Review 2006. The Report of the Expert Review Group”, December 2006

<sup>17</sup> ERAC-GPC (2010), ‘Joint Programming in research 2008-2010 and beyond’ Report of the High Level Group on Joint Programming to the Council, November 2010

<sup>18</sup> ERA-LEARN (2011b) Work Package 4 - Final Report.

<sup>19</sup> Annerberg, R, Begg, I., Acheson, H., Borrás, S., Hallén, A., Maimets, T Mustonen, R., Raffler, H., Swings, J-P, Ylihonko, K., (2010) Interim Evaluation of the Seventh Framework Programme, Report of the Expert Group, Nov 2010.

Figure 1: From cooperation to integration in the field of metrology



Source: Wolfgang Wittke. Art. 185 TFEU. Issues to be considered for new initiatives. EC / DG R&I.

Additionally, the three instruments present some variations in relation to their setting up process, overall aims and agenda setting, the scientific focus, actors and management structures needed.

ERA-NETs need shorter times from the development of the idea to the project start in comparison, for example, to Art. 185, which involves the ‘co-decision’ process (ordinary legislative procedure). ERA-NETs only require a partnership of MS organisations that is usually formed before the relevant ERA-NET proposal is submitted. Art. 185 calls for the creation of a legal entity (DIS) that will then sign the relevant contract with the EC. JPIs are formed through partnerships (usually documented via a Memorandum of Understanding) based on “à la carte” participation of Member States depending on their interest to the themes suggested by Council and GPC.

ERA-nets aim at coordinating national research programmes, or at least part of them. The agenda is set at the national level and they presuppose the existence of areas of common interest. As many national programmes are defined bottom-up, the point of view taken to define the objective is that of the research community or national research agendas of a scientific field. At the same time, however, the research themes to be covered are each time dictated by the respective ERA-NET calls issued by the DG R&I thematic directorates.

Coordination of research is understood at the project level, with transnational cooperative projects being the basic tool and the main product of this coordination. Funding is provided by national



programmes participating, which in the case of ERA-net plus, are supplemented with additional resources from the EC Framework Programme (FP).<sup>20</sup>

Article 185 initiatives, as ERA-nets, also take the perspective from the researchers to define their objectives. The level of agenda definition, however, is brought from the national to the European level. The selection of themes to cover is based on specific criteria, stating among others that the themes should not overlap with those supported by FP or H2020 calls for proposals. At the same time, however, they should stay within the overall scope of H2020.

Art 185 initiatives are cofunded by Member States and the Commission and include substantial funding from the FP.<sup>21</sup> This is also the case for ERA-NET Plus but not for JPIs and ERA-NETs where EC funds only support management and coordination activities but not the actual research.

JPIs do not define their objectives or scope according to a scientific field, but relate to societal challenges, involving high-level decision-makers from Member States and integrating advice from representatives of science, industry and civil society. Thus, their objectives put more pressure towards a real coordination of research efforts at European level addressing the whole policy-making cycle. Compared to ERA-Nets, which JPIs could invoke as possible instruments to be implemented, the level of agenda setting moves from the national level to the European level of participating countries.<sup>22</sup>

The three types of instruments are similar in relation to the funding modes that can be applied. In making the national financial contributions to the funding of joint calls and trans-national research activities, they can choose among the real common pot, in which participants contribute set amounts to a separate common pool; the virtual common pot, in which participants make their own arrangements to fund participants from their own countries or regions; or a mixed mode-mechanism combining the two, where various combinations of virtual and common pot regimes are deployed. The types of beneficiaries are also similar and they depend more on the theme or challenge being addressed and the type of research carried out rather than on the instrument supporting this research.

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<sup>20</sup> JPIs TO CO WORK. A functional approach to joint programming initiatives.

<sup>21</sup> *ibid.*

<sup>22</sup> *ibid.*



**Table 1: Similarities and differences across the ERA-NET Scheme, Art. 185 and JPIs**

	<b>ERA-NET, ERA-NET +</b>	<b>Art. 185</b>	<b>JPIs</b>
<b>Level of integration</b>	Coordination of existing / creation of new joint programmes	Full integration of existing programmes	Joint design and implementation of the full policy-making cycle in a given area
<b>Setting up process</b>	Partners submitting a proposal under an ERA-NET call (H2020 process)	Ordinary legislative procedure (co-decision between European Council and Parliament)	MoU based "à la carte" participation of Member States
<b>Agenda setting</b>	National level; largely affected by national programmes	European level; call for real integration	European level; more top-down, strategic level
<b>Objectives</b>	Coordinating national / regional programmes.	Full integration of national research programmes.	Achieving critical mass to address major societal challenges
<b>S&amp;T themes covered</b>	Affected by national pgms but also dictated by DG R&I Directorates	Within the scope of H2020 but no overlap with H2020 calls	Affected by national pgms but dictated by GPC
<b>Scientific focus</b>	Bottom-up	Top-down Bottom-up	Top-down
<b>Actors</b>	Programme owners or funding agencies from MS.	Any legal entity by MS. Usually funding agencies or public bodies	Usually Ministries and relevant decision/policy-making bodies from MS.
<b>Management structure</b>	Management bodies supported by central secretariat (funded as CSA actions in FP/H2020)	Need for setting up a legal entity (DIS); contract between EC and DIS (option for EC support?)	Central secretariat for each JPI provided by EC
<b>Funding actors</b>	Member States (and European Commission in ERA-net +)	Member States and European Commission	Member States
<b>Funding mode</b>	Common pot; virtual pot; mixed mode		
<b>Types of beneficiaries</b>	Research community (public, private), industry, SMEs, third sector, depending on research theme addressed		

### 3. A Monitoring and Impact Assessment Framework for P2P activities

#### Programme Theory, Intervention Logic and Objective Hierarchy

Assessing the impacts of policy interventions is supported several evaluation theories and approaches. One of the most frequently encountered is the theory-based evaluation. *“A theory-based evaluation of a programme is one in which the selection of programme features to evaluate is determined by an explicit conceptualization of the programme in terms of a theory, a theory which attempts to explain how the programme produces the desired effects.”*<sup>23</sup> *“Theory-based evaluation examines conditions of programme implementation and mechanisms that mediate between processes and outcomes as a means to understand when and how programmes work.”*<sup>24</sup>

‘Theory-based evaluation’ focuses on answering questions beyond that of ‘have we done what we set out to do?’, but expanded to issues such as ‘what works for whom in which area and under what conditions?’ It sets out by defining the theoretical assumptions underlying an intervention i.e. a ‘**programme theory**’, according to which the intervention should work. This exploratory approach, primarily trying to understand the mechanisms that intervene between the delivery of programme services and the occurrence of outcomes and impacts (Weiss, 1997) enables the identification of both expected and unexpected impacts. The analysis also expands the scope to determining whether the required conditions are in place for the outcomes to occur and also in understanding the causal factors for the observed effects.<sup>25</sup>

Weiss<sup>26</sup> explicitly highlights the importance of the quality of the ‘programme theory’. The quality of the theory can be improved by better logical analysis of alternative causal explanations, better use of existing research theories, and better use of alternative perspectives on how programmes work, including understanding how programme clients or intended beneficiaries understand it, and through a process of comparative elaboration and testing against the data.

Building a programme theory is dependent upon a wealth of assumptions, statements, propositions, causal relationships, etc. from a wide range of sources (literature reviews, programme documentation, interviews, empirical evidence, etc.). Structuring all this information in a meaningful way is not an easy task. A tool that is helpful in this regard is the **Intervention Logic Model**. This model states that regardless of its nature (policy, programme, measure, project), a public intervention can be analysed as a set of financial, organisational and human resources mobilised to achieve, in a given period of time, an objective or set of objectives, with the aim of solving or overcoming a problem or difficulty affecting targeted groups.<sup>27</sup> The main elements of a logic model

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<sup>23</sup> Fitz-Gibbon, C., Morris, L., (1996), ‘Theory-Based Evaluation’, American Journal of Evaluation, No. 17, pp. 177-184, p. 177.

<sup>24</sup> Weiss, C. (1997) “Theory-Based Evaluation: Past, Present and Future” in D. J. Rog and D. Fournier (eds.), ‘Progress and Future Directions in Evaluation: Perspectives on Theory, Practice and Methods’, New Directions for Evaluation, No. 76. p. 68.

<sup>25</sup> Carvalho, S. White, H. (2004) “Theory-Based Evaluation: The Case of Social Funds”, American Journal of Evaluation, No. 25, pp. 141-160.

<sup>26</sup> as referred to by Rogers, P., J., (2007), ‘Theory-Based Evaluation: Reflections Ten Years On’, New Directions for Evaluation, No. 114, Summer 2007, pp. 63-67

<sup>27</sup> CIA4OPM, 2011. Optimizing the research and innovation policy mix: The practice and challenges of impact assessment in Europe. Findings from FP7 OMC-net project 234501 ‘Optimising the Policy Mix by the Development of a Common Methodology for the Assessment of (Socio-) Economic Impacts of RTDI Public Funding (CIA4OPM)’.

are usually the inputs of the programme (i.e. human, financial and infrastructural resources) structured along the various activities supported by the programme, the direct outputs of the programme activities, the outcomes i.e. the more distant results and the impacts, either intermediate or global impacts, i.e. more distant, indirect and far reaching.

At this point some confusion needs to be clarified between Logic Models and Theory of Change or the Programme Theory. As Clark and Anderson state<sup>28</sup> logic models graphically illustrate programme components, to help evaluators and stakeholders clearly identify and articulate outcomes, inputs and activities. The “programme theory” or “theory of change” links outcomes and activities to explain how and why the desired change is expected to come about. Thus, a logic model is an illustration of a programme’s main components while the programme theory is the explanation of this model’s components and inter-relations. Thus, a Logic Model that is underlined by the respective programme theory is the appropriate tool to use.

The outputs, results and impacts of the programmes activities then have to be linked and checked against the programme objectives and the wider policy goals. This requires building a so-called **Objectives Hierarchy**. In this, the objectives are structured hierarchically linking the lower-level objectives (i.e. operational) with the higher-level objectives (i.e. strategic, intermediate and global). In addition, at each of these levels the objectives are linked with the outputs, outcomes and impacts at the respective level of reference.

The Commission’s Guide to Evaluation<sup>29</sup> suggests the following definitions for the different components of the Objectives Hierarchy and Intervention Logic:

- Operational objectives provide a basis for assessing an intervention in relation to its outputs.
- Outputs are defined as that which is directly produced / supplied through the implementation process. Indicators at this level are called output indicators.
- Specific objectives provide a basis for assessing an intervention in relation to the short-term results (or immediate impacts) that occur at the level of direct beneficiaries/recipients of assistance. Indicators at this level are called results indicators.
- Results/immediate impacts: initial effect / outcome of an intervention.
- Intermediate objectives provide a basis for assessing an intervention in relation to its short to medium-term effects (or intermediate impacts) on both direct and indirect beneficiaries/recipients of assistance. Indicators at this level are called impact indicators.
- Intermediate impacts: intermediate effect / outcome of an intervention, i.e. affecting more indirect stakeholders and occurring at medium-term horizons.
- Global objectives provide a basis for assessing an intervention in relation to longer term and more diffuse effects (or global impacts). Indicators at this level are also called impact indicators.
- Global impacts: Longer-term effects / outcomes of an intervention.
- Inputs: these are the means used to produce outputs. Inputs include budgetary costs (financial, administrative and human resources), but also costs for the beneficiaries or target population

<sup>28</sup> Clark, H., Anderson, A., 2004. Theories of Change and Logic Models: Telling Them Apart. Available at [http://www.theoryofchange.org/wp-content/uploads/toco\\_library/pdf/TOCs\\_and\\_Logic\\_Models\\_forAEA.pdf](http://www.theoryofchange.org/wp-content/uploads/toco_library/pdf/TOCs_and_Logic_Models_forAEA.pdf) accessed 16 Sept. 2014.

<sup>29</sup> European Commission (2004): Evaluating EU Activities – A Practical Guide for the Commission Services, Luxembourg: Office for Official Publications of the European Communities



(co-financing, compliance costs stemming from administrative burden) and costs for third parties.

What follows below are examples of Intervention Logic Models and Objectives Hierarchies for an ERA-NET (MNT ERA-NET), an Art 185 (EMRP) and a JPI (FACCE-JPI).



Figure 2: Intervention Logic for ERA-NETs (Example based on MNT ERA-NET)

<http://www.mnt-era.net/MNT/>; [http://www.mnt-era.net/MNT/eranet\\_folder\\_09\\_web.pdf](http://www.mnt-era.net/MNT/eranet_folder_09_web.pdf)

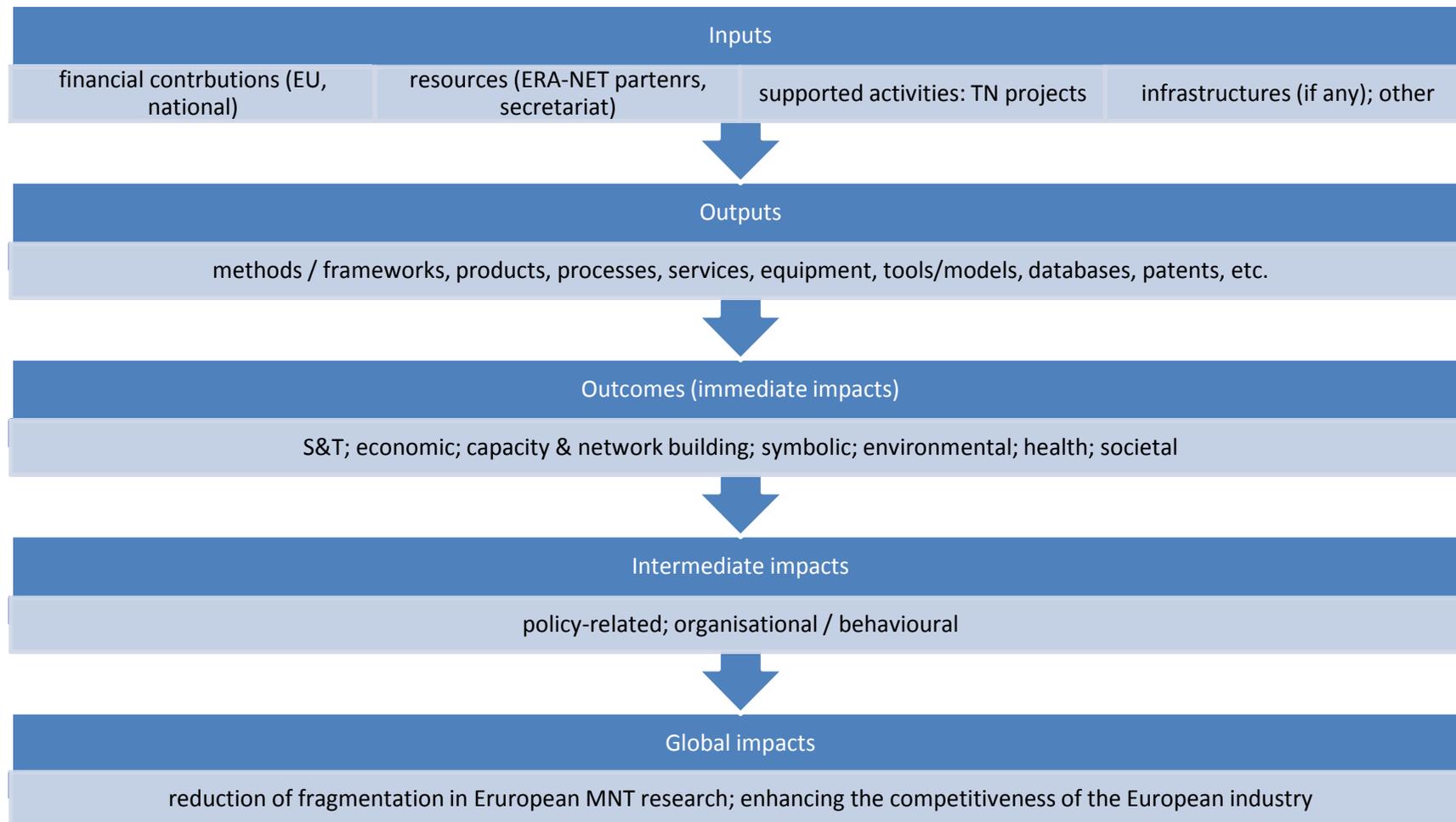
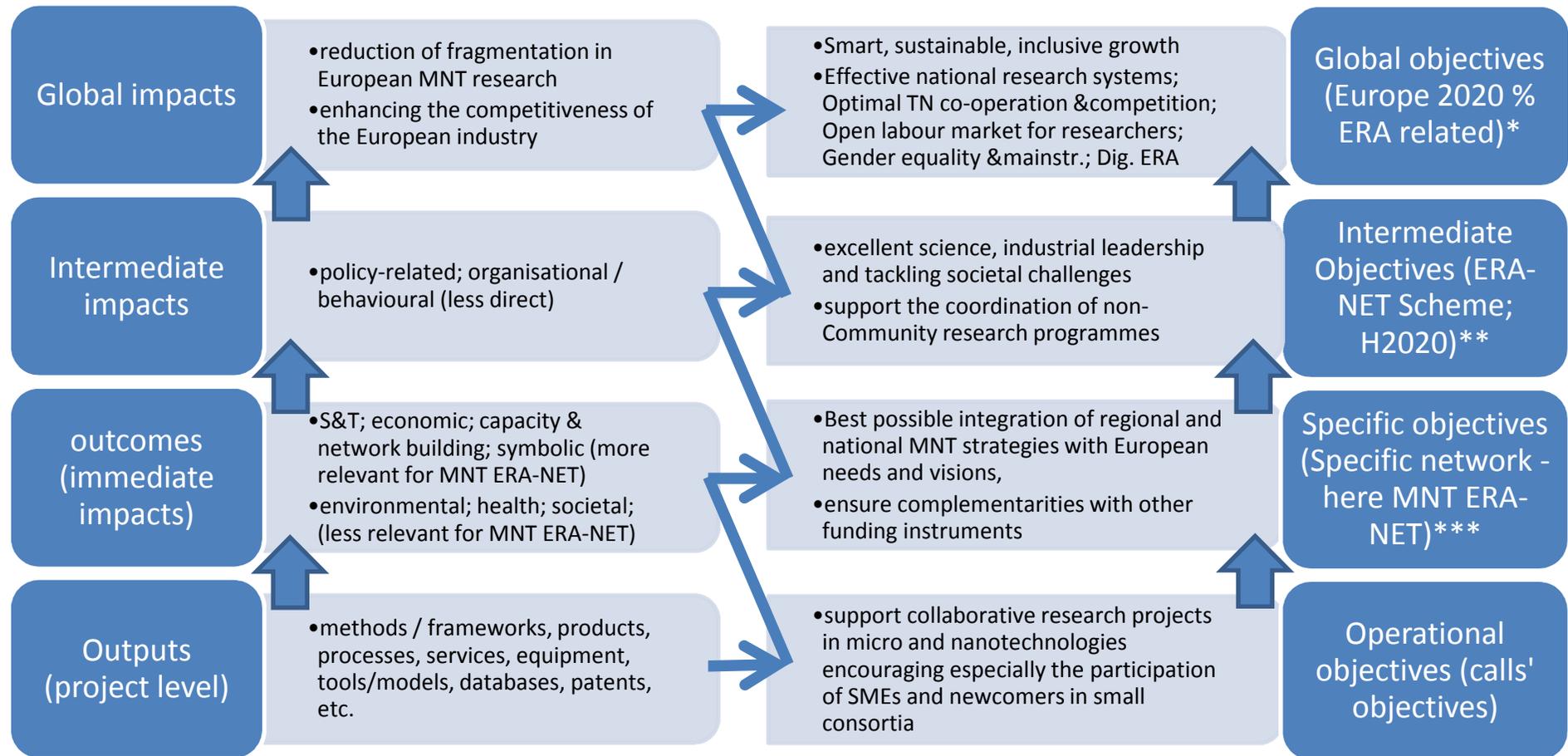




Figure 3: Objectives hierarchy for ERA-NETs (Example based on MNT ERA-NET)



\* [http://ec.europa.eu/europe2020/europe-2020-in-a-nutshell/index\\_en.htm](http://ec.europa.eu/europe2020/europe-2020-in-a-nutshell/index_en.htm); [http://ec.europa.eu/euraxess/pdf/research\\_policies/era-communication\\_en.pdf](http://ec.europa.eu/euraxess/pdf/research_policies/era-communication_en.pdf)

\*\* [ftp://ftp.cordis.europa.eu/pub/coordination/docs/eranet\\_fp7\\_background\\_document\\_v21dec06\\_final.pdf](ftp://ftp.cordis.europa.eu/pub/coordination/docs/eranet_fp7_background_document_v21dec06_final.pdf); <http://ec.europa.eu/programmes/horizon2020/en/what-horizon-2020>

\*\*\*MNT ERA-NET, <http://www.mnt-era.net/>



Figure 4: Intervention Logic for Art. 185 (Example based on EMRP - metrology)

[ftp://ftp.cordis.europa.eu/pub/fp7/docs/emrp-expert-panel-report-2012\\_en.pdf](ftp://ftp.cordis.europa.eu/pub/fp7/docs/emrp-expert-panel-report-2012_en.pdf)

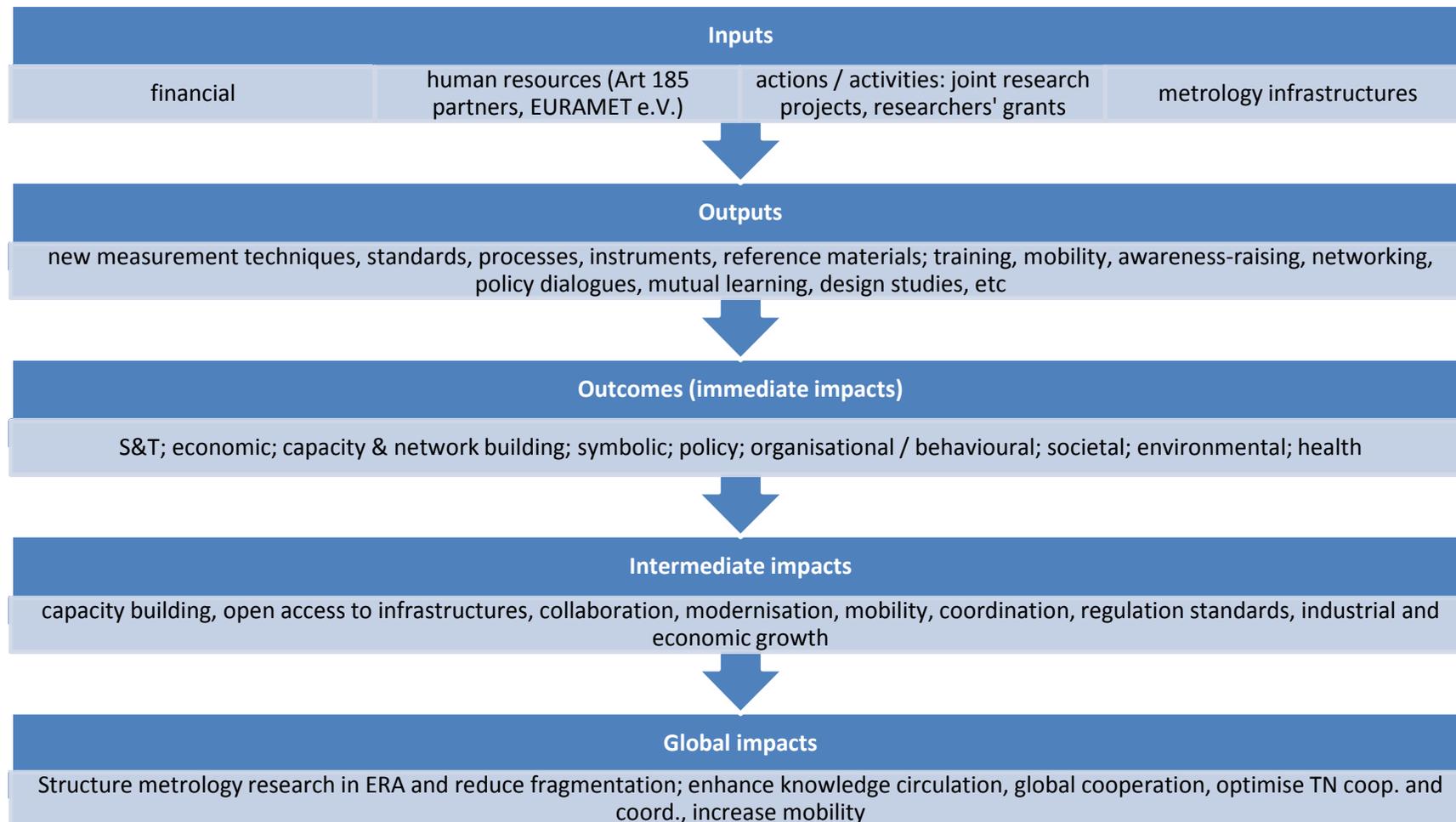
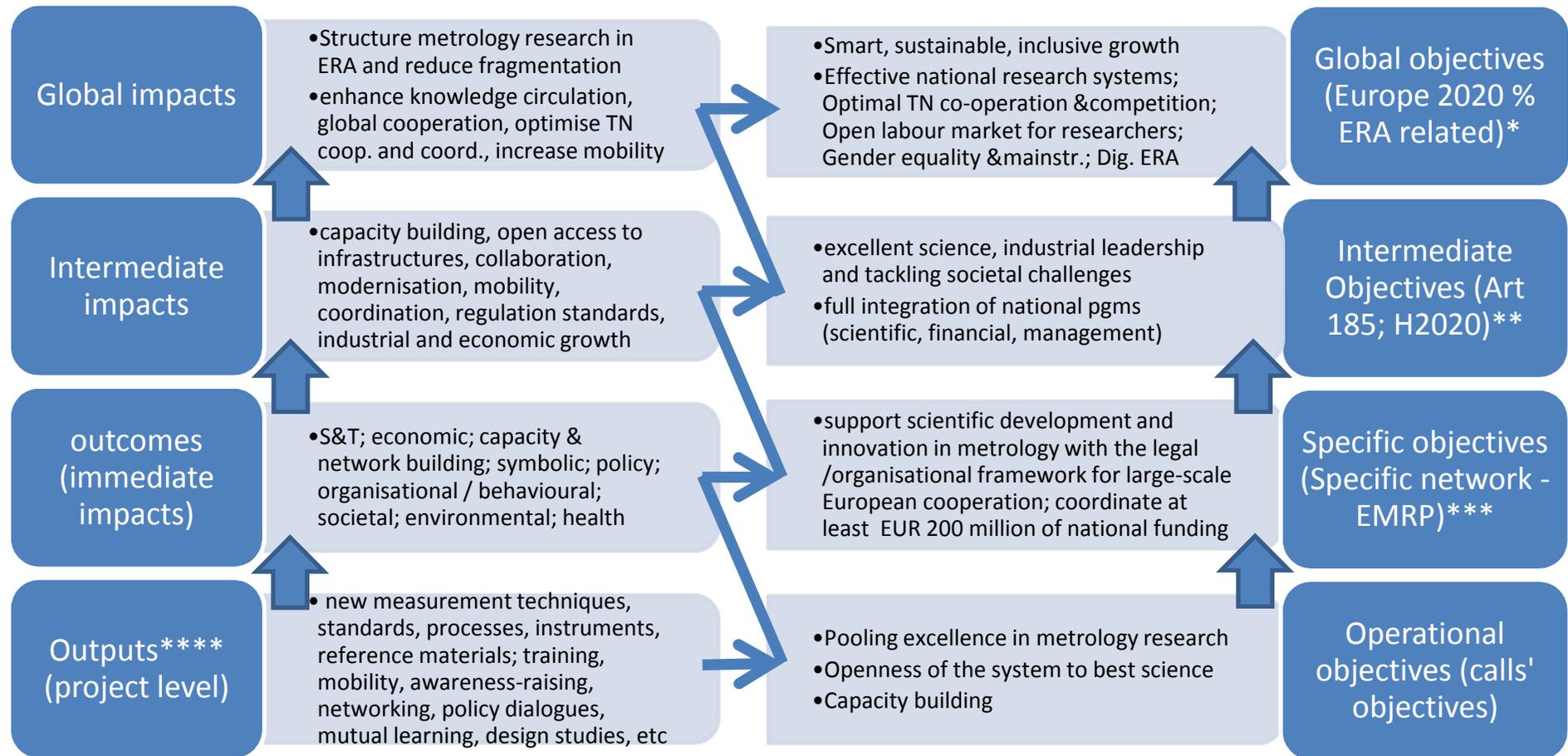




Figure 5: Objectives hierarchy for Art. 185 (Example based on EMRP - metrology)



\* [http://ec.europa.eu/europe2020/europe-2020-in-a-nutshell/index\\_en.htm](http://ec.europa.eu/europe2020/europe-2020-in-a-nutshell/index_en.htm); [http://ec.europa.eu/euraxess/pdf/research\\_policies/era-communication\\_en.pdf](http://ec.europa.eu/euraxess/pdf/research_policies/era-communication_en.pdf)

\*\* <http://ec.europa.eu/programmes/horizon2020/en/what-horizon-2020>

\*\*\* [ftp://ftp.cordis.europa.eu/pub/fp7/docs/emrp-expert-panel-report-2012\\_en.pdf](ftp://ftp.cordis.europa.eu/pub/fp7/docs/emrp-expert-panel-report-2012_en.pdf)

\*\*\*\* <http://www.emrponline.eu/a169.html>



Figure 6: Intervention Logic for JPIs (Example based on FACCE - JPI)

<http://www.facejpi.com/FACCE-Joint-activities/Evaluation-and-Monitoring-of-FACCE-JPI-activities>

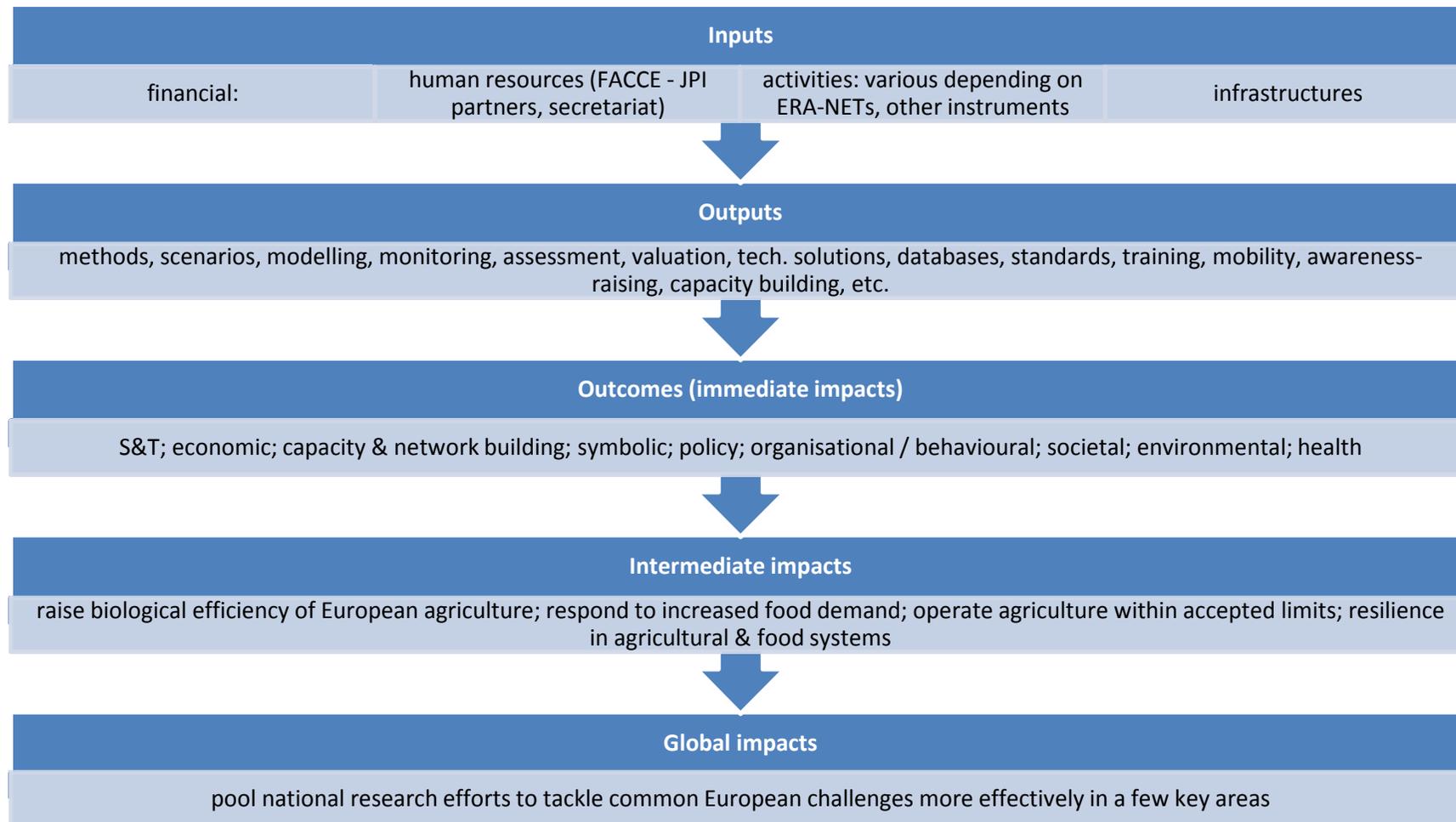
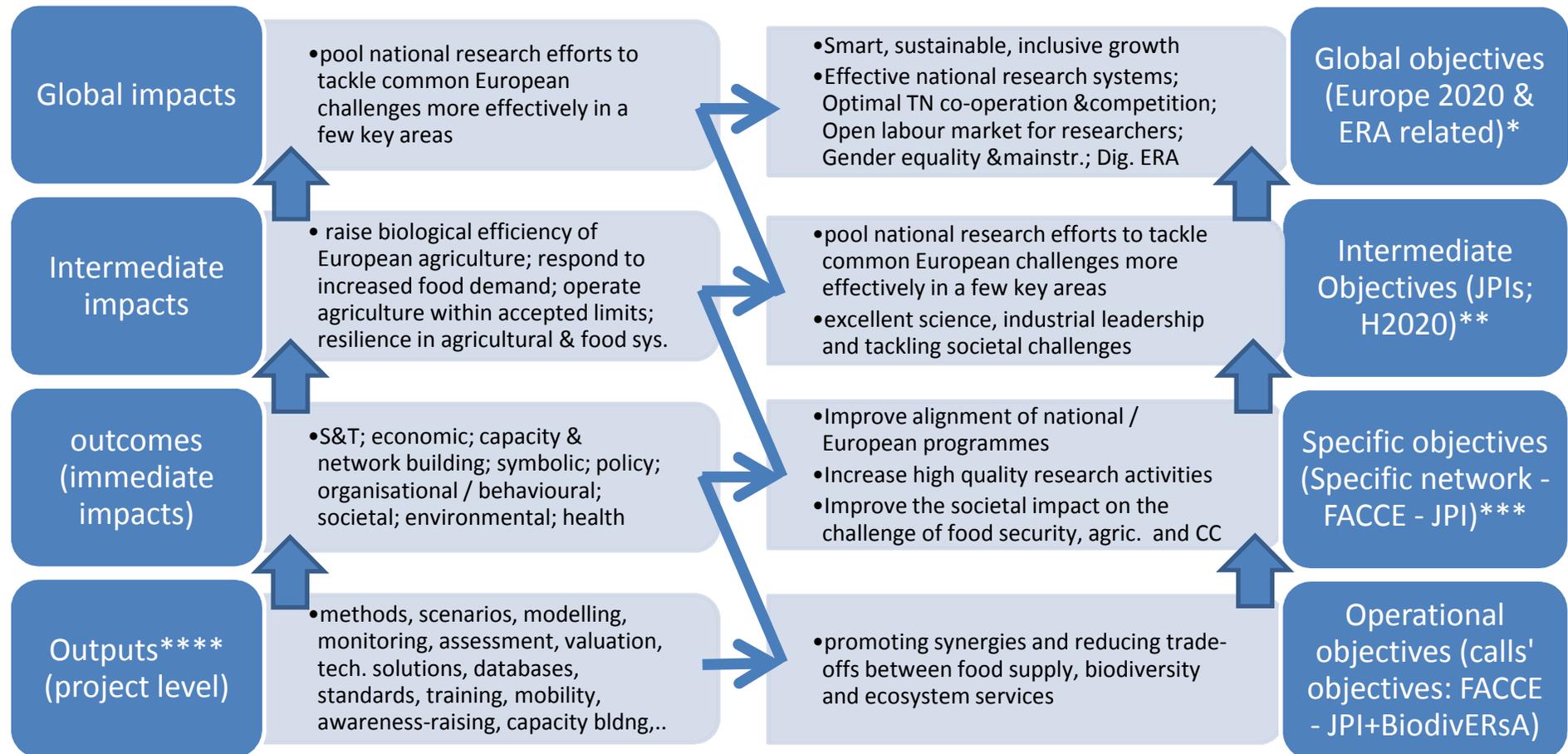




Figure 7: Objectives hierarchy for JPIs (Example based on FACCE - JPI)



\* [http://ec.europa.eu/europe2020/europe-2020-in-a-nutshell/index\\_en.htm](http://ec.europa.eu/europe2020/europe-2020-in-a-nutshell/index_en.htm); [http://ec.europa.eu/euraxess/pdf/research\\_policies/era-communication\\_en.pdf](http://ec.europa.eu/euraxess/pdf/research_policies/era-communication_en.pdf)

\*\* [http://ec.europa.eu/research/era/what-joint-programming\\_en.html](http://ec.europa.eu/research/era/what-joint-programming_en.html); <http://ec.europa.eu/horizon2020/en/what-horizon-2020>

\*\*\* <http://www.faccejpi.com/FACCE-Joint-activities/Evaluation-and-Monitoring-of-FACCE-JPI-activities>

\*\*\*\* <http://www.faccejpi.com/faccejpi/Document-library/Strategic-Research-Agenda/Strategic-Research-Agenda>



The components of the Intervention Logic and Objectives Hierarchy are among the basic parts of what Funnell calls “the programme theory matrix”<sup>30</sup>. Funnell collates all the information to be collected during an evaluation of a policy intervention in a matrix consisting of the following columns: 1) intended outcome, 2) success criteria, 3) programme factors affecting success, 4) non-programme factors affecting success, 5) activities and resources of programme, 6) performance information (examples for points 2 to 5 – qualitative and quantitative indicators and comparisons), and 7) sources of data (e.g. interviews, observations, records, etc.).

Although the intervention logic and objective hierarchy cover the needs for information about the objectives, activities, outputs and impacts, they need to be complemented by programme and non-programme factors affecting the success of the programme as well as a set of indicators and associated sources of data. The programme and non-programme factors affecting the success of the programme will be identified when developing the programme theory. Valovirta<sup>31</sup> notes that the inability of the programme to deliver the intended outcomes can be attributed to two kinds of failures, ‘theory failure’, where the causal assumptions prove to be false or an ‘implementation failure’, where the reasons can be for instance insufficient human resources, lacking stakeholder support or lack of administrative competencies.

The development of a set of indicators and the identification of associated sources of data as well as data collection and analysis methods are discussed in a following section. Identification of the relevant indicators needs to be guided by the underlying programme theory and intervention logic. These indicators also need to reflect the assessment aims and associated issues of interest. These are discussed in the next section.

## Assessment aims and issues

Impact assessment exercises can be carried out before the implementation of a policy intervention (ex-ante) or after its conclusion (ex-post). Across these cases the assessment issues (or evaluation questions) that can be examined vary (cf. Table 1).

In ex-post impact assessment, which is the focus of the present study, the issues that can be studied include effectiveness, efficiency, sustainability, utility, consistency, and allocative / distributional effects.

‘Effectiveness’ is the extent to which the objectives set are achieved through the impacts identified. The principle of effectiveness is concerned with attaining the specific objectives set and achieving the intended results and impacts.

‘Efficiency’ refers to the extent to which the desired effects are achieved at a reasonable cost. The principle of efficiency is concerned with the best relationship between resources employed and the results and impacts achieved.

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<sup>30</sup> Funnell, S., 2000 Developing and using a program theory matrix for program evaluation and performance monitoring. *New Directions for Evaluation*. Volume 2000, Issue 87, pages 91–101.

<sup>31</sup> In Lähteenmäki-Smith, K., (ed.) (2007), ‘Learning through Evaluation: the Nordic Experience’, Nordregio Report 2007:3.



‘Utility’ refers to the extent to which outcomes corresponded with the needs, problems and issues to be addressed. These will have been identified during the articulation of the respective programme theory.

‘Sustainability’ refers to the extent to which positive effects are likely to last after an intervention has terminated.

‘Consistency’ addresses the extent to which positive/negative spill-overs into other economic, social or environmental policy areas are maximised/minimised.

‘Allocative/distributional effects’ investigate the extent to which disproportionate negative/positive distributional outcomes of a policy are minimised/maximised. (OMC-NET, 2011)

**Table 2: Assessment issues for different types of evaluation / impact assessment**

	<b>Ex-ante evaluation/ impact assessment</b>	<b>Interim evaluation</b>	<b>Ex-post evaluation</b>	<b>Ex-post impact assessment</b>
Relevance	X	X		
Coherence	X			
Economy	X	X	X	
Effectiveness	X	X	X	X
Efficiency	X	X	X	X
Sustainability			X	X
Utility	X		X	X
Consistency	X	X	X	X
Allocative/ distributional effects	X	X	X	X

Source: CIA4OPM, 2011. Adopted from European Commission, 2004, p. 39.

In addition there are different levels at which a policy intervention can be evaluated: a) the policy level, under which a set of associated interventions are evaluated as well as their cumulative effects thus leading to conclusions about the success of a given policy, b) the agency level, under which the set-up and operation of an institution is evaluated or, c) the programme level under which the programme activities are assessed as well as their cumulative effects, thus leading to conclusions about the specific intervention as a whole. The above-mentioned assessment issues are usually examined at programme level.

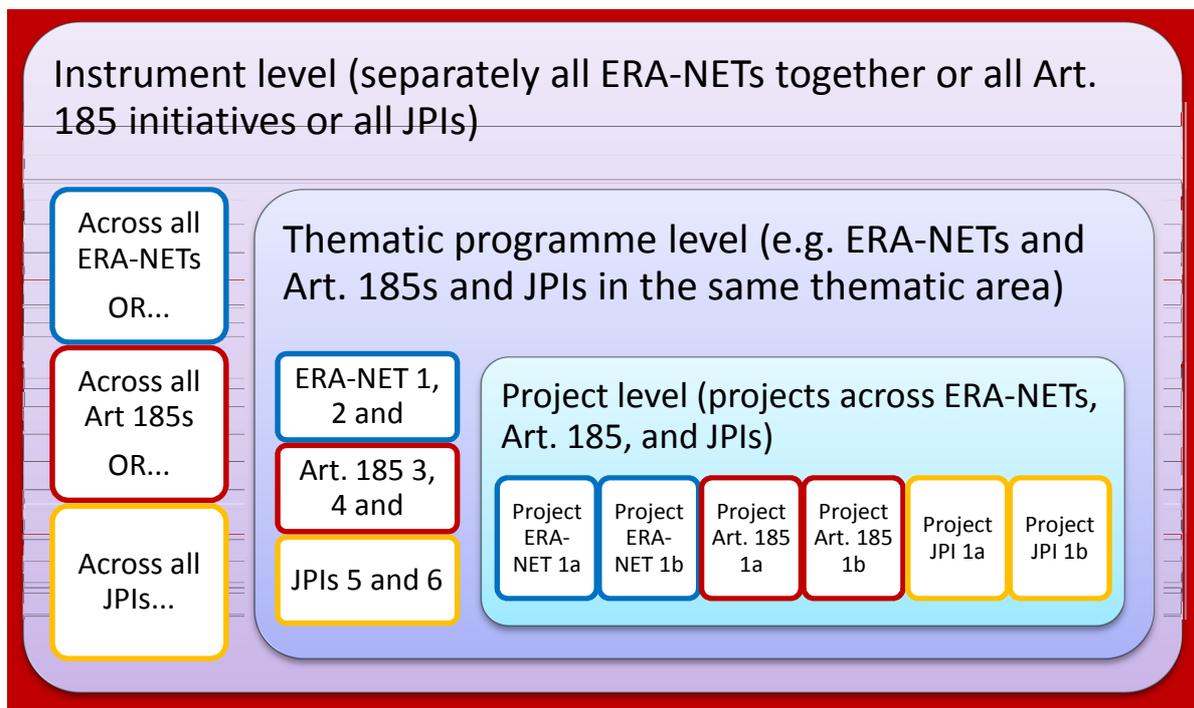
In the framework of the present study the programme level can be equated to the total number of ERA-NETs that fall under similar thematic areas. These would form the ERA-NET “Thematic programme” level as shown in the following figure. The total of ERA-NETs, irrespective of the thematic areas they individually address, can form the ‘ERA-NET Instrument level’ while the total numbers of Art 185 and JPIs might form the Art 185 and JPI Instrument levels respectively.

Due to the significant differences across the three types of ‘instruments’ it would be pointless to assess different networks at the instrument level, i.e. ERA-NETs together with JPIs or Art. 185. These differences mainly refer to the organisational, governance and management structures across the three types of instruments. However, these differences become less relevant when the assessment is executed at the level of projects.

The ‘project level’ refers to the achievements of the individual projects funded under the joint call(s) of individual networks (such as an ERA-NET). The projects funded under the joint calls of ERA-NETs, or ERA-NET Plus are typically collaborative research projects, and capacity related activities like exchange schemes, training, etc. These are also the types of projects funded under Art. 185s or JPIs. In addition, some JPIs (such as FACCE-JPI) rather than launching their own separate calls will, in some cases, join efforts with existing ERA-NETs or ERA-NET Plus in the same or similar thematic areas. Thus, separating the projects coming from different instruments makes little sense when carrying out an assessment at the project level.

The figure below shows the different levels of assessment are relevant for P2P activities.

**Figure 8: Different levels of assessment**



The assessment issues mentioned above are more appropriately applied at the programme level, i.e. in this case the ‘Thematic programme level’ and ‘Instrument level’. At the project level, the effectiveness, sustainability and utility issues are mainly applicable.

### Assessing impacts at the project level

Collaborative research projects may result to a variety of impacts, including impacts related to science, business and economy, policy, networking, internationalisation of research activities, human capital development, etc. Reviewing a number of evaluation studies, the INNO-Appraisal study concluded that evaluation studies of research and innovation programmes may refer to all the possible types of impacts (scientific, technological, societal, economic, environmental, etc.) under a very broad definition of impact assessment. However, the most dominant type of impact sought is economic, although technological and societal impacts may also be of importance. Nevertheless, the assessment of other impact types is still rather uncommon: societal impacts are often covered with



an estimation of new jobs having been created, but other topics, such as gender impacts are quite rare.<sup>32</sup>

At the same time, mission-oriented policies such as those targeted towards ‘grand challenges’ imply the need to achieve impacts beyond the scientific, technological and economic spheres and call for new evaluation approaches going beyond classical input/output evaluation models. Furthermore, addressing societal impacts and both intended and unintended impacts over long time-frames is important in evaluations in the context of mission-oriented policies. This highlights the importance of evaluation issues such as ‘behavioural’ additionality, i.e. the change of behaviour of the agents involved or affected by the policy measure.<sup>33</sup> This is particularly relevant for the ERA-NETs, Art. 185s and JPIs as they have been designed for, or are increasingly being oriented towards, dealing with grand challenges.

In addition, a major interest of instruments like ERA-NETs, Art. 185s or JPIs is the extent to which they offer levels of additionality when compared to national and other European programmes like FP, EUREKA, both in terms of different types of impacts and procedures (administrative).

### **Suggested indicators**

To the extent that the choice of impact indicators depends on the logic model underpinning the public intervention, the starting point for indicators is to define a hierarchy of linked indicators at different levels (output, result, impact) (OMC-NET, 2011). As we have outlined above, the logic model defines the following set of broad factors and issues which should frame the eventual selection of indicators:

- socio-economic impacts, behavioural change, impacts related to science, business, policy, networking, internationalisation, human capital development, etc.;
- factors for success,
- pre and follow-up activities,
- leverage effect in public investment (individual network / overall instrument level)
- accessibility / visibility of the programme / calls
- EU added value of projects
- Transdisciplinarity of research
- etc.

The requirement is to develop a number of broad indicator types that are representative of the objectives hierarchies across the full breadth of ERA-NET, Art. 185 or JPI instruments but which are applicable at the project level. These may be developed by focusing on the specific project level objectives from which we may derive comprehensive listings of the associated types of activities that are supported towards the achievement of these objectives. A preliminary set of these activities is suggested below. It may be argued that, in some cases, these activities relate more to outcomes

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<sup>32</sup> Manchester Institute of Innovation Research, Atlantis Consulting, ISI-Fraunhofer, Joanneum Research, Wise Guys Ltd, INNO-Appraisal: Understanding Evaluation of Innovation Policy in Europe, Final Report, Pro-INNO Europe, Commission of the European Communities, February 2010.

<sup>33</sup> Amanatidou, E., Cunningham, P., Gök, A. Garefi, I., (2014), ‘Using evaluation research as a means for policy analysis in a ‘new’ mission-oriented policy context’. MINERVA. DOI: 10.1007/s11024-014-9258-x.



(e.g. ‘trust building’) although they can be dependent on more ‘dynamic’ activities such as the production of specific guidelines of cooperation. Hence, there are some minor problems in differentiating clearly between an activity and its immediate or intrinsic outcome. Nevertheless, these provide a useful framework for the definition of a set of project-level indicators for the case of P2P activities.

**Table 3: Conceptualisation Framework for project-level assessment issues and indicators for P2P activities**

•	<b>Coordination</b>
○	Provision of access to facilities during project duration
○	Preliminary development of strategic research agenda by project participants
•	<b>Networking/collaboration processes:</b>
○	Personnel mobility
○	Information dissemination
▪	Joint training
▪	Capacity building
○	Trust building
▪	Guidelines for collaboration
○	Network development/sustainability Joint programming activities
▪	Research continuity (proposal design/action plans)
▪	Mobilisation of additional funds
•	FP7
•	National funds
○	Further collaboration opportunities
▪	Behavioural changes (greater propensity to collaborate)
▪	Improved collaboration coordination experience
•	<b>Research</b>
○	Technical effects/results
▪	Additional R&D input (money/personnel)
▪	Knowledge exchange
▪	Product, process & service innovations
•	Commercial returns
○	Increased turnover, employment
•	New market opportunities
▪	Standards formulation
▪	Patents, other IP
○	Scientific effects/results
▪	Creation of new knowledge
•	New methods
•	Equipment
•	Publications
▪	Development of scientific field
▪	Knowledge dissemination
•	Conferences, seminars
○	Knowledge exchange
▪	Formation of Human Capital (masters/doctoral students)

From the above framework, it is thus possible to propose a set of potential indicators that might be captured through the evaluation and monitoring process. The allocation of indicators between these two elements will be dealt with in the next section. The potential indicators are presented below. Note that certain activities/outcomes may be captured by similar indicators although it may be necessary to adopt a different methodology for their analysis.

### Assessing impacts at the programme / instrument level

It is during the ex post assessment that the main differences between the project and programme / instrument levels manifest themselves. First, the impacts at project level are associated with the projects and their participants, i.e. academia or industrial organisations. Impacts at programme / instrument level are linked to the networks and the network partners, i.e. national agencies as programme owners or programme managers. Assessment at project level is therefore more relevant to the identification of impacts stemming from the research performed, i.e. socio-economic, scientific / technological, networking, internationalisation of research, etc. Assessment issues at programme level can accommodate the aggregate results of the impacts coming from the individual projects but should also extend to more generic impacts related to the achievement of the network / instrument objectives such as coordination of national / regional programmes, collaboration, scientific / managerial / financial integration, etc. In addition more “horizontal” type issues that relate to the programme/network as a whole are also relevant here. These would include issues like effectiveness, efficiency, sustainability, etc. (cf. Table 2). Thus, the assessment issues to cover at programme / instrument level can be summarised as follows.

**Table 4: Conceptualisation Framework for programme / instrument-level assessment issues for P2P activities**

•	<b>Coordination, integration, alignment of national / regional programmes;</b>
○	Mutual learning
○	Mutual opening up of existing programmes
○	Joint coordination of existing programmes
○	Scientific integration
○	Sharing of facilities
○	Managerial integration
○	Financial integration
○	Joint design of new programmes
○	Joint implementation of new programmes
○	Joint monitoring and evaluation of new programmes
•	<b>Other impacts</b>
○	Networking/collaboration of national agencies
○	Capacity building in national agencies
○	Trust building across national agencies
○	Mobilisation of national funds / resources
○	Internationalisation of research
•	<b>Cross-cutting issues (applied horizontally to above issues)</b>
•	Network / instrument effectiveness;
•	Network / instrument efficiency;
•	Network / instrument utility;
•	Network / instrument sustainability;
•	Network / instrument additionality;



## 4. Requirements for data and information collection

### Monitoring and assessment procedures and timing

In any impact assessment there is need for baseline data. This strongly suggests the need for a process of data collection at the application stage or very close to the project commencement stage. Much of this data can be collected as part of the normal set of questions and information sought on project participants (see Table 4, for example).

The process of evaluation, particularly that of *ex post* evaluation, is greatly enhanced by the availability of robust and comprehensive information and data relating to project processes and outcomes. The availability of such data greatly facilitates the task of the evaluators and obviates much of the need to collect retrospective information, some of which may have been forgotten or lost as a consequence of participant mobility. In addition, the collection of such data *ex post* necessitates significant time and resources on the part of both the evaluators and the project participants. This underlines the advantages of implementing a process of monitoring which can be aligned with the normal reporting requirements. Through a 'light touch' monitoring process, a significant amount of information may be collated which will greatly assist the final evaluation process. The advantages of monitoring processes are listed by Cunningham and Nedeva in their proposal for a system of continuous evaluation and monitoring of the COST initiative (1999)<sup>34</sup>:

- the continuous (and regular) collection and assessment of information provides a reliable basis for timely corrective actions;
- in the case of continuous evaluations, all information that has been collected relates directly to the subject(s) of evaluation thereby dispensing with the need to extrapolate;
- several years into the continuous evaluation, as data accumulates, at least three types of analysis, namely "annual", "cumulative" and "historical", become possible;
- large one-off evaluation exercises require that the evaluation be carried out by a team of 'professional evaluators' while continuous evaluations can be run by an internal unit (although some external participation is also desirable). Continuous evaluations therefore allow for a high level of participation of the users of results which in its turn deals successfully with problems that can arise in the context of implementation;
- all information collected during a continuous evaluation is fully compatible, consistent and reflects the complex dynamics of social processes;
- implementing and running a process of continuous evaluation and monitoring is significantly less resource intensive than commissioning large exercises.

A suggested optimal period for monitoring/interim reporting for projects funded under ERA-NETs, Art. 185 or JPIs, is on an annual basis, 12 months from the project start.

Since many of the project outcomes will not have materialised until the end of the project, a final reporting stage is useful to capture the complete set of project outcomes and any information relating to experiences directly related to the project itself. Typically, a final report form is used for this purpose.

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<sup>34</sup> Cunningham, P.N. and Nedeva, M. (1999) Towards a system of continuous evaluation and monitoring for European cooperation in scientific and technical research (COST). *Research Evaluation*, 8, pp142-154, December 1999.



As this study is concerned specifically with the impacts of ERA-NET, Art. 185 or JPI-funded projects, and as these are unlikely to be manifested until after the lifetime of the project itself, a further *ex post* reporting period can be desirable. A suitable trade-off is required to ensure that sufficient time has elapsed to allow the development of longer term impacts and that the participants' 'project memory' is still sufficient to enable the collection of meaningful information. Thus, a period of between 6 months to one year following the end of a project is suggested.

A similar timetable for monitoring and assessment is useful to apply also at the programme / instrument level. Baseline information may be collected at the moment the networks become operational (i.e. as soon as their administrative mechanisms are in place). Monitoring / interim information and data should, ideally, also be collected at regular intervals through the course of the networks, i.e. every 12 months, and again when the networks cease their operation. The end of the networks' operation however may not be the point in time when the EU support finishes. Some networks continue their operation even after the end of the EU-supported life cycle based on their own contributions. In these cases it would be good to gather monitoring and assessment information at the end point of the EU support period to have a reference point for the whole EU supported operation of the networks as well as a baseline reference for their "independent life".

## Project level information collection

### Application/project commencement phase

At this stage it is very important that the appropriate project objectives are elaborated and understood. These are important not only for the first stage of the evaluation itself but also to underpin the derivation of appropriate indicators and performance measures which may be applied to the later stages of the monitoring and evaluation of ERA-NET, Art. 185 or JPI-funded projects. Thus, it is essential that proposals should provide certain types of information and contain clearly defined research (or related) objectives, targets and milestones. Contingent on the overall objectives of the project, the following types of information appear to be the most relevant to this phase:

- Information about intended networking;
- Information about academic/industrial relevance;
- Information about intended dissemination and follow-up research; and
- Information about availability of resources.

The specific instrument to be used at this stage would be a standardised proposal form, which can collect the required information in a structured manner. Typically data/information will be collected as a matter of routine on participant details (see Table 4). Further data may be collected relating to:

- Level of staff receiving support
- Sources/amounts of co-funding for the project
- Level of prior contact with other project participants
- Centrality of research project to core activities

### Interim/monitoring

The generic types of information required during the on-going evaluation and assessment will need to be of a standardised format and structure and thus will have to reflect the generic objectives of



ERA-NETs, Art. 185 or JPIs rather than the specificities of individual projects. At this point or phase of the project, data collection may be concentrated on collaboration and networking processes and on initial outputs, including, for example:

- Publications (articles, conference proceedings, books, book chapters, reports, grey literature, datasets, etc.)
- Conference/workshop attendances
- Project meetings
- Degree theses
- Products, process etc. (licensed/patented or otherwise)
- Student/staff exchanges
- Contributions to standards, public awareness, policy
- Further development of research networks
- Etc.

### **End of project evaluation**

At this stage, the evaluation will be largely concerned with issues relating to networking / collaboration, outputs and dissemination. It is anticipated that the monitoring process should, by this stage, already have resulted in the collection of a substantial amount of information relating to the indicators defined earlier. However, it will be necessary to collect additional information through a further reporting exercise, structured around an end-of-project questionnaire. The combination of accumulated information and the targeted questionnaire should obviate the need, at the individual project level, for a larger scale final evaluation undertaken by a designated evaluation panel (including external experts) – although this may be desirable at a higher level of aggregation. This should reduce the resources required for overall evaluation tasks and provide an additional source of consistent, comparable data which could be used by any future “meta-evaluations” of the entire ERA-NET, Art. 185 or JPI mechanism.

In addition to the collection of the types of data and information already described above, additional qualitative and forward-looking data could also be collected. This data could include:

- Extent to which project objectives were achieved
- Planned or actual collaboration activities resulting from project (describe project, partners, etc.)
- Planned or actual research activities (not involving project partners) arising from the project
- Source(s) of supporting funding for above
- Reasons for lack of continuation
- Impact of ERA-NET project participation on own research activities in this theme
- Other effects
- Outputs (see Interim/monitoring, above)
  - Assessment of scientific/technical quality of outputs
  - Were outputs of national, European or wider significance?
  - Most significant outputs
- Assessment of overall participation costs/benefits
  - Most significant benefits



- Alternative opportunities

A more elaborated list of indicators for which information may be collected at the different stages of the project lifecycle and beyond is presented in Tables 5 and 6 below.



**Table 5: Monitoring indicators at project level**

Indicators	Nature of indicator	Timing of entry	Frequency of entry	Collection method	Source of data
<b>Projects</b>					
1. Project number (unique)	Pre-selected by system (*)	Project start	Once	Entered by call secretariat	Project contract
2. Project Title	Free entry	Project start	Once	Entered by call secretariat	Project contract
3. Project Acronym	Free entry	Project start	Once	Entered by call secretariat	Project contract
4. Call identifier (unique) <sup>+</sup>	Pre-selected by system (**)	Project start	Once	Entered by call secretariat	Project contract
5. Project objectives	Free entry and / or pre-categorised according to the broad classes used in Table 3	Project start	Once	Entered by call secretariat	Project contract
6. Project start / end dates	Mm/yyyy	Project start	Once (possibility for updates if changes)	Entered by call secretariat	Project contract
7. Project duration	Automatically estimated from 6.	Project start	Once (possibility for updates if changes)	Entered by call secretariat	Project contract
8. Project type	Drop-down	Project start	Once	Entered by call secretariat	Project contract
9. Project total cost	Numeric	Project start	Once (possibility for updates if changes)	Entered by call secretariat	Project contract
10. List of deliverables	Free entry	Project start	Once (possibility for updates if changes)	Entered by call secretariat	Project contract
11. List of milestones	Free entry	Project start	Once (possibility for updates if changes)	Entered by call secretariat	Project contract
12. Amount of funding	Numeric	Project start	Once (possibility for updates if changes)	Entered by call secretariat	Project contract
13. Research field(s) ( <sup>++</sup> )	Drop-down (multiple-choice)	Project start	Once	Entered by call secretariat	Project contract



<b>14. Project website</b>	Free entry	Project start	Once	Entered by call secretariat	Project contract
<b>15. Coordinator's Contact details</b>	Free entry (name + e-mail)	Project start	Once (possibility for updates if changes)	Entered by call secretariat	Project contract
<b>16. No. of partners</b>	Numeric free entry	Project start	Once (possibility for updates if changes)	Entered by call secretariat	Project contract
<b>17. Country of Coordinator</b>	Drop-down	Project start	Once (possibility for updates if changes)	Entered by call secretariat	Project contract
<b>18. Project outputs</b>	Drop-down (+explanation)( <sup>+++</sup> )	Course of project	Periodically	Coordinator + participants after end of project	From progress and final reports
<b>19. Achievement of objectives</b>	Cf. item 5 and 1-5 Likert scale	Course of project	Periodically	Entered by coordinator	From progress and final reports
<b>20. Achievement of deliverables</b>	Cf. item 10 and tick if completed	Course of project	Periodically	Entered by coordinator	From progress and final reports
<b>21. Achievement of milestones</b>	Cf. item 11 and tick if completed	Course of project	Periodically	Entered by coordinator	From progress and final reports
<b>22. Absorption of total budget</b>	Cf. item 9 and % of absorption	Course of project	Periodically	Entered by coordinator	From progress and final reports
<b>Participants</b>					
<b>1. Project number (unique) (***)</b>	Pre-selected by system (*)	Project start	Once	Entered by call secretariat	Project contract
<b>2. Participant org</b>	Free entry (Institute name + dpt name)	Project start	Once	Entered by call secretariat	Project contract
<b>3. Organisation no. (unique)</b>	Pre-selected by system	Project start	Once	Entered by call secretariat	Project contract
<b>4. Contact person</b>	Free entry (Name + e-mail)	Project start	Once (possibility for updates if changes)	Entered by call secretariat	Project contract
<b>5. Participant type and NACE sector</b>	Drop-down	Project start	Once	Entered by call secretariat	Project contract
<b>6. Participant org. country</b>	Drop-down	Project start	Once	Entered by call secretariat	Project contract



## 7. Role in project

Drop-down

Project start

Once

Entered by call secretariat

Project contract

(<sup>+</sup>) The call identified will be the key connecting the indicators at project level with those at the Instrument /network Level (cf. Figure 8, and also indicators to be applied at the instrument level listed above)

(<sup>++</sup>) The Research Field will be the key connecting the indicators at project level with those at the Thematic Programme level (cf. Figure 8)

(<sup>+++</sup>) The drop-down list should cover all output-related indicators in Table 6 if possible.

(\*) Based on type of instrument+call+number of project

(\*\*) Based on instrument+ call number

(\*\*\*) This will be the key connecting the two datasets of project and participants





Research	Further collab. Opportunities	Behavioural changes	15. Participants in funding applications	qualitative	Indicates level of continuity of collaborations	monitoring/questionnaire	Interim/ex post	
			16. Likelihood of future collaboration	qualitative	Indicates potential level of continuity of collaborations	questionnaire	Ex post	
			17. Changes to research programme	qualitative	Indicates impact of project on research trajectory	questionnaire	Ex post	
	Improved collaboration coordination		18. Skills/expertise developed from participation	qualitative	Indicates increase in coordination/collaboration expertise	questionnaire	Ex post	
Technical effects/results	Additionality		19. Additional funding input	quantitative	Indicates financial input additionality	monitoring/questionnaire	Interim/ex post	
			20. Additional personnel	quantitative	Indicates personnel resources input additionality	monitoring/questionnaire	Interim/ex post	
	Knowledge exchange		21. Industry/HE co-publications	quantitative	Indicates science-industry KE/KT	monitoring/questionnaire	Interim/ex post	
			22. Personnel mobility (student/staff placements, etc.)	quantitative	Indicates science-industry KE/KT	monitoring/questionnaire	Interim/ex post	
	Innovations		23. Commercial returns – turnover, employment	quantitative	Indicates growth in output, employment (cf benchmark data)	questionnaire (industry)	ex post	
			24. Market share figures	quant/qual	Indicates development of new market opportunities (national/abroad)	questionnaire (industry)	ex post	
		Standards formulation	25. Input to standards	qualitative	Indicates impact on standards, etc.	questionnaire	ex post	
	Scientific effects/results	IP	26. Patents, licenses, leasing, etc.	quantitative	Indicates commercialisation/KT impact	questionnaire	ex post	
		Creation of new knowledge		27. New methods	qualitative	Indicates impact on research field	questionnaire (academic)	ex post
				28. Equipment developed	qualitative	Indicates impact on research field	questionnaire	ex post
			29. Publications	quantitative	Indicates impact on research field	monitoring/questionnaire	Interim/ex post	
		Development of scientific field	30. New theories, practices, trans-disciplinary activities	qualitative	Indicates occurrence of 'transformative' research	questionnaire	ex post	
Knowledge dissemination		31. Conferences, workshops, seminars	quant/qual	Indicates extent to which project results have achieved wider dissemination	monitoring/questionnaire	Interim/ex post		
Formation of human capital		32. Masters/doctoral students	quantitative	Indicates project impact on training/education	monitoring/questionnaire	Interim/ex post		



## Programme / instrument level information collection

### Network commencement phase

Despite the differences among the three types of instruments, the information to be collected at the programme / instrument level follows the same approach. The first type of information that has to be clearly articulated concerns the objectives of the programme or network irrespective of its specific type (ERA-NET, Art 185 or JPI). However at the programme level not only the programme or network objectives have to be clearly understood: these must be understood vis a vis the broader objectives of the specific instrument and the wider goals of the EU research and innovation policy. Clearly articulating the objectives of the specific network will help build up the objective hierarchy of the specific instrument (cf. Figures 3, 5 and 7). This will also help build the intervention logic (cf. Figures 2, 4, and 6) of the network to form a framework for its assessment.

Similar to the assessment needs of the project level it is also essential that proposals for networks provide certain types of information and contain clearly defined research (or related) objectives, targets and milestones. The following types of information appear to be the most relevant to this phase:

- Information about the networks (types of networks, funding sources, budgets, national contributions, funding modes, countries represented, network objectives, activities, thematic priorities and S&T fields addressed,
- Information about network partners (number, types, contact data, role of organisation in network, funding source of organisation for the participation in the network, etc.)
- joint activities (number, types of activities, types of research and research fields addressed, sources of funds, national budget, EU budget, other budget, funding mode)
- joint calls (number, types of research and research fields addressed, sources of funds, national budget, EU budget, other budget, funding mode)

This information can be collected in a standardised proposal form by the proposal coordinator.

### Interim evaluation/monitoring

As already noted for the project level, the information that has to be gathered at the interim stage will have to reflect the generic objectives of ERA-NETs, Art. 185 or JPIs rather than the specificities of individual projects. Relevant information would address, for example:

- The network activities (those completed against activities scheduled) and their features (e.g. number of training events, participants, exchange visits, etc.)
- The network budget (absorbed against overall)
- Joint activities completed against planned activities and their specific features (number, types of activities, outputs of activities, etc.)
- Joint calls completed against planned and their specific features (such as number, number of proposals, accepted proposals and participants, etc.)
- Stages in networks development achieved
- Etc.



## End of network evaluation

At this stage, the evaluation will be largely concerned with issues relating to the overall aims of the network and respective instrument type (i.e. ERA-NET, or Art. 185 or JPI), e.g. coordination or alignment or integration of national / regional programmes, excellent science, industrial leadership and tackling societal challenges (cf. Figures 3, 5, and 7).

The monitoring phase should have gathered a substantial amount of information that can be used as comparisons for the set of information that will be gathered ex-post. In addition the project level monitoring and assessment procedures will prove quite useful at this stage of network evaluation because of the wealth of information they will have produced. When aggregated this could provide valuable insights about impacts at the programme / instrument level. However, the type of information and data collected at the project level will have mainly addressed issues like scientific excellence or industrial leadership. Issues such as programme effectiveness, efficiency or additionally or the degree of achievement of the broader network objectives like alignment and coordination of national / regional programmes are still to be addressed mainly at this level. Thus, following on from Table 4, possible impact indicators would include:

- Mutual learning:
  - Joint workshops, joint training, joint papers, exchange visits, identification of areas of common interest, SWOT analyses
  - Capacity building in national agencies
- Mutual opening up of existing programmes
  - Agreed rules, procedures, initiatives for mutual opening up of infrastructure
  - Agreed rules, procedures, initiatives for mutual opening up of programmes
  - Agreed rules and procedures for joint access to research data, databases, etc.
- Scientific integration
  - Programme clustering
  - Changes in research priorities of agencies
  - Alignment of national agendas
- Managerial integration
  - Common programme monitoring and evaluation schemes
  - Harmonised rules and procedures for participation
  - Coordination of timing in funding and programme implementation
  - Multinational evaluation schemes
- Financial integration
  - Changes in legislation to allow payments to foreign researchers
- Networking/collaboration of national agencies
- Joint design, implementation and monitoring of new programmes
- Mobilisation of national funds / resources for international research
- Etc.

A more elaborated list of indicators is presented in Tables 7 and 8 below. As the assessment of the networks may entail strategic discussions about the future of the instruments, it may be useful to create a designated evaluation panel (including external experts) that would also consider the broader policy context and possibly other relevant evaluation reports in producing relevant recommendations.



**Table 7: Monitoring indicators at programme / instrument level**

Indicators	Nature of indicator	Timing of entry	Frequency of entry	Collection method	Source of data
<b>Networks</b>					
1. Network number (unique)	Pre-selected by system (*)	Network start	Once	Entered by network coordinator	Network contract / MOU
2. Network Title	Free entry	Network start	Once	Entered by network coordinator	Network contract / MOU
3. Network Acronym	Free entry	Network start	Once	Entered by network coordinator	Network contract / MOU
4. Network objectives	Free entry and / or pre-categorised according to the broad classes used in Table 4	Network start	Once	Entered by network coordinator	Network contract / MOU
5. Network start / end dates	Mm/yyyy	Network start	Once (possibility for updates if changes)	Entered by network coordinator	Network contract / MOU
6. Network duration	Automatically estimated from 5.	Network start	Once (possibility for updates if changes)	Entered by network coordinator	Network contract / MOU
7. Network type	Drop-down	Network start	Once	Entered by network coordinator	Network contract / MOU
8. Network funding mode	Drop-down	Network start	Once	Entered by network coordinator	Network contract / MOU
9. Network budget	Numeric	Network start	Once (possibility for updates if changes)	Entered by network coordinator	Network contract / MOU
10. National contributions	Numeric	Network start	Once (possibility for updates if changes)	Entered by network coordinator	Network contract / MOU
11. Research field(s) (**)	Drop-down (multiple-choice)	Network start	Once	Entered by network coordinator	Network contract / MOU
12. Network website	Free entry	Network start	Once	Entered by network coordinator	Network contract / MOU
13. Coordinator's Contact details	Free entry (name + e-mail)	Network start	Once (possibility for updates if changes)	Entered by network coordinator	Network contract / MOU



<b>14. No. of partners</b>	Numeric free entry	Network start	Once (possibility for updates if changes)	Entered by network coordinator	Network contract / MOU
<b>15. Country of Coordinator</b>	Drop-down	Network start	Once (possibility for updates if changes)	Entered by network coordinator	Network contract / MOU
<b>16. Network deliverables</b>	Free entry	Network start	Once (possibility for updates if changes)	Entered by network coordinator	Network contract / MOU
<b>17. Network milestones</b>	Free entry	Network start	Once (possibility for updates if changes)	Entered by network coordinator	Network contract / MOU
<b>18. Achievement of network objectives</b>	Cf. item 4 and 1-5 Likert scale	Interim stage	Periodically	Entered by network coordinator	From progress and final reports
<b>19. Achievement of deliverables and milestones</b>	Cf. item 16, 17 and tick if completed	Interim stage	Periodically	Entered by network coordinator	From progress and final reports
<b>20. Achievement of network activities</b>	Cf. item 3 in Joint activities section of the table below and 1-5 Likert scale	Interim stage	Periodically	Entered by network coordinator	From progress and final reports
<b>21. Absorption of network budget</b>	Cf. item 9 and % of absorption	Interim stage	Periodically	Entered by network coordinator	From progress and final reports
<b>Network partners</b>					
<b>1. Network number (unique) (***)</b>	Pre-selected by system (*)	Network start	Once	Entered by call secretariat	Network contract / MOU
<b>2. Partner org</b>	Free entry (Institute name + dpt name)	Project start	Once	Entered by call secretariat	Network contract / MOU
<b>3. Organisation no. (unique)</b>	Pre-selected by system	Project start	Once	Entered by call secretariat	Network contract / MOU
<b>4. Contact person</b>	Free entry (Name + e-mail)	Project start	Once (possibility for updates if changes)	Entered by call secretariat	Network contract / MOU
<b>5. Partner type and NACE sector</b>	Drop-down	Project start	Once	Entered by call secretariat	Network contract / MOU
<b>6. Partner org. country</b>	Drop-down	Project start	Once	Entered by call secretariat	Network contract / MOU



<b>7. Role in network</b>	Drop-down	Project start	Once	Entered by call secretariat	Network contract / MOU
<b>8. Partner funding source</b>	Drop-down (national, EU, other)	Network start	Once	Entered by network coordinator	Network contract / MOU
<b>9. Partner funding mode</b>	Drop-down (virtual common pot, real pot, mixed mode)	Network start	Once	Entered by network coordinator	Network contract / MOU
<b>Joint activities</b>					
<b>1. Activity type code (+)</b>	Pre-selected by system (+)	Network start	Once	Entered by network coordinator	Network contract / MOU
<b>2. Activity type number (++)</b>	Pre-selected by system (++)	Network start	Once	Entered by network coordinator	Network contract / MOU
<b>3. Activity type name</b>	Free entry	Network start	Once	Entered by network coordinator	Network contract / MOU
<b>4. Research field(s) (**)</b>	Drop-down (multiple-choice)	Network start	Once	Entered by network coordinator	Network contract / MOU
<b>5. Partners participating in activity</b>	Drop-down of partners' organisation names	Project start	Once (possibility for updates if changes)	Entered by network coordinator	Network contract / MOU
<b>6. Activity funding source</b>	Drop-down (national, EU, other)	Network start	Once (possibility for updates if changes)	Entered by network coordinator	Network contract / MOU
<b>7. Activity funding mode</b>	Drop-down (virtual common pot, real pot, mixed mode)	Network start	Once (possibility for updates if changes)	Entered by network coordinator	Network contract / MOU
<b>8. Activity budget</b>	Numeric	Network start	Once (possibility for updates if changes)	Entered by network coordinator	Network contract / MOU
<b>9. Activity national contributions</b>	Numeric	Network start	Once (possibility for updates if changes)	Entered by network coordinator	Network contract / MOU
<b>Joint calls (extra indicators from those on joint activities)</b>					
<b>1. Call identifier (unique) (+++)</b>	Pre-selected by system (+++)	Interim stage (when a joint call is launched)	regularly	Entered by call secretariat	Network progress reports



2. Number of applications received	Numeric	Interim stage (when a joint call is launched)	regularly	Entered by call secretariat	Network progress reports
3. Number of approved applications	Numeric	Interim stage (when a joint call is launched)	regularly	Entered by call secretariat	Network progress reports
4. Total budget applied for	Numeric	Interim stage (when a joint call is launched)	regularly	Entered by call secretariat	Network progress reports
5. Total budget of approved proposals	Numeric	Interim stage (when a joint call is launched)	regularly	Entered by call secretariat	Network progress reports
6. Name and country of unsuccessful applicants	Free entry	Interim stage (when a joint call is launched)	regularly	Entered by call secretariat	Network progress reports

(\*) Based on type of instrument+ number/name of network

(\*\*) The Research Field will be the key connecting the indicators at project level with those at the Thematic Programme level (cf. Figure 8)

(\*\*\*) This will be the key connecting the two datasets of activities and networks

(+) Based on instrument+ network name + activity type code; Activity type codes should be set up at least for the following based on Table 4 above:

- Mutual learning:
- Mutual opening up of existing programmes
- Joint coordination of programmes
  - scientific integration
  - managerial integration
  - financial integration
- Joint design, implementation and monitoring of new programmes
- Mobilisation of national funds / resources for international research

(++) Based on instrument+ network name + activity type code + Serial number

(+++ ) Based on instrument+ network name + call number; the call identified will be the key connecting the indicators at project level with those at the programme level.



**Table 8: Assessment indicators at programme / instrument level**

High level activity	Activity	Sub-activity	Indicators	Nature of indicator	Contribution to evaluation	Source of information	Timing
Coordination, of national / regional programmes	Mutual learning	Joint workshops, joint training, identification of areas of common interest, SWOT analyses	1. Number of events / schemes	quantitative	Indicates mutual learning activities	Monitoring/questionnaire	Interim/ex post
			2. Participants / attendants at events				
	Capacity building in national agencies	Internal training, exchange visits	3. Joint publications	Qualitative qualitative	Indicates mutual learning and capacity building activities	Monitoring/questionnaire	Interim/ex post
			4. Existence of relevant reports				
	Mutual opening up of existing programmes	Agreed rules, procedures, initiatives for mutual opening up of infrastructure	5. Number of events / schemes	qualitative	Indicates mutual opening up activities	Monitoring/questionnaire	Interim/ex post
			6. Participants / attendants at events				
Integration and alignment of national / regional programmes	Agreed rules, procedures, initiatives for mutual opening up of programmes	7. Increase of expertise in coordination / collaboration	qualitative	Indicates mutual opening up activities	Monitoring/questionnaire	Interim/ex post	
		8. Facilities opened					
Managerial integration	Agreed rules and procedures for joint access to research data, databases, etc.	9. Formalised research agendas	qualitative	Indicates mutual opening up activities	Monitoring/questionnaire	Interim/ex post	
		10. Formalised participation rules and procedures					
Integration and alignment of national / regional programmes	Scientific integration	11. Common evaluation procedures	qualitative	Indicates scientific integration	Monitoring/questionnaire	Interim/ex post	
		12. Joint monitoring					
Managerial integration	Managerial integration	13. Formalised agreements and rules	qualitative	Indicates managerial integration	Monitoring/questionnaire	Interim/ex post	
		14. Programme clustering					
Integration and alignment of national / regional programmes	Scientific integration	15. changes in research priorities of agencies	qualitative	Indicates scientific integration	Monitoring/questionnaire	Interim/ex post	
		16. changes in national research priorities					
Managerial integration	Managerial integration	17. changes in national research programmes' themes	qualitative	Indicates managerial integration	Monitoring/questionnaire	Interim/ex post	
		18. alignment of national agendas					
Integration and alignment of national / regional programmes	Scientific integration	19. Common programme monitoring and evaluation schemes	qualitative	Indicates managerial integration	Monitoring/questionnaire	Interim/ex post	
		20. (Not explicitly listed in the image, but implied by the table structure)					



<b>Creation and implementation of new joint programmes</b>	Financial integration		20. Harmonised rules and procedures for participation				
			21. Coordination of timing in funding and programme implementation				
			22. Multinational evaluation schemes				
			23. Changes in legislation to allow payments to foreign researchers	Qualitative / quantitative	Indicates financial integration, impacts on national budgets	Monitoring/questionnaire	Interim/ex post
			24. Changes in national budgets re national / regional programmes				
<b>Networking/ collaboration of national agencies</b>	Trust building Further collaboration	Guidelines for collaboration Network development Network sustainability Behavioural changes	25. Changes in national budgets re international activities				
			26. Existence of common research agendas	qualitative	Indicates aligned research agendas	Monitoring/questionnaire	Interim/ex post
			27. Common rules, procedures, timing, and evaluation panels	qualitative	Indicates aligned implementation of joint programme	Monitoring/questionnaire	Interim/ex post
			28. Common rules, procedures, timing, and structures	qualitative	Indicates aligned monitoring of new programme	Monitoring/questionnaire	Interim/ex post
			29. Common rules, procedures, timing, and evaluation panels	qualitative	Indicates aligned evaluation of new programme	Monitoring/questionnaire	Interim/ex post
	30. Formal/informal guidelines produced	Qualitative	Indicates formalisation of collaboration arrangements	questionnaire	Ex post		
	31. proposal designs, action plans	qualitative	Formal outcomes of cooperation	monitoring/questionnaire	Interim/ex post		
	32. Future intentions re collaboration	qualitative	Indicates level of continuity of collaborations or future theme development	questionnaire	Ex post		
	33. Likelihood of future collaboration	qualitative	Indicates level of continuity of collaborations	questionnaire	Ex post		

The indicators in the above two tables (7 and 8) can be used to inform, assess and / or benchmark the following cross-cutting issues: effectiveness, efficiency, utility, sustainability, and additionality at the programme / instrument level.



## Assessment responsibilities and special bodies & dissemination

As the above tables suggest the monitoring data needs to be collected once the projects / networks have become operational as well as at regular intervals, i.e. every 12 months during the project/network duration and at the end point based on the progress and final reports.

Responsibility for inserting the data should be with the call / network secretariat while the update of the information and inclusion of new data during the project course should primarily be the task of the project/network coordinator. However, it would prove useful to set up alert systems for upgrading the monitoring information as well as the information on project / network outputs. These alerts should be sent primarily to the project / network coordinators but also to project participants and network partners in order to record possible outputs that may not be known to coordinators. Project participants or at least the project coordinators should be periodically alerted to check/update their contact details even after the project end for a period of minimum three years.

The assessment data can be collected through various methods. Project/network outputs should be recorded by the coordinator based on the progress reports and final reports as well as by project participants or network partners whenever they occur after the project end.

The assessment exercise should be supervised by a designated assessment panel. At the project level (across the various networks) this panel should include a manageable number (around 10) of representatives of the various networks (ERA-NETs, Art. 185, JPIs) whose co-funded projects will be evaluated. Some thematic experts should also be part of this panel. The same should apply at the thematic programme level. At the instrument level this panel should consist of a manageable number of the various networks representatives, experts that have taken part in previous evaluations as well as representatives of high-level governance or advisory structures like GPC for the JPIs for instance. This panel should be responsible for quality control of the assessment task thus ensuring a high quality and relevant assessment report.

Inevitably a systematic monitoring and assessment approach implies increased responsibilities for the coordinators and participants / network partners. It may therefore be advisable to include in the relevant contracts a specific paragraph ensuring that the respective parts of the contracts undertake these responsibilities and are committed to respond to the relevant monitoring and assessment requirements.

Dissemination of the monitoring and assessment reports should also be considered. Although the interest of the project participants themselves may be limited, these reports may prove important for European and national stakeholders in establishing the added value of these instruments, thus helping decisions at national / regional levels on how to best allocate public research and innovation budgets. However, caution needs to be paid in the way monitoring and assessment results are presented. For instance reports should be short, reflecting a balance between text and graphs / tables. Success stories of projects are always worthwhile identifying and highlighting. Methodologies and analytic tables or figures should be annexed to the main reports. The use of (science) journalists has proven worthwhile in many cases as well as production of small briefs to feed in relevant websites and social network media.



## Concluding remarks

The present report presents a monitoring and assessment framework for P2P activities and the way this was developed based on the programme theory, intervention logic and objective hierarchy approaches. The specific framework, adjusted to the peculiarities of the ERA-NET scheme and its successors, Art. 185 and JPIs, faces all the challenges in evaluating research programmes. These were taken into consideration in the specifications made in the framework. For instance in order to deal with the timing issue it is suggested that information is gathered at specific intervals. To avoid questionnaire fatigue of project participants or network partners it is suggested that as much information as possible is recorded at the initiation phase of the projects or networks. However, it is still necessary to commit the coordinators and project participants or network partners to meet the requirements for information collection not only during the projects / networks' duration but also beyond it.

One way to do this would be as a provision in the relevant contracts. Yet a better way to get their commitment is by proving the usefulness and value of the information produced through the monitoring and assessment of their projects. The framework was developed with this as the underlying rationale.

The framework can by no means be considered final. We would suggest that two forms of pilot exercise are desirable in advance of implementing the evaluation and monitoring procedures in full. These would entail:

- A pilot of the data collection instruments and processes in order to ensure that they operate in a practical way and that the data requests are feasible and appropriate.
- A pilot analysis of the data collected in the above process, to ensure that it meets the overall requirements of the evaluation and monitoring procedure, i.e. it is able to answer questions regarding the specific as well as the broader impacts of the P2P instruments.

However, this would still be work-in-progress to be test and validated only in real-time monitoring and assessment of P2P activities.