



**CSA**  
**OCEANS**  
JPI Oceans support action

  
SEVENTH FRAMEWORK  
PROGRAMME

# Proposal for procedures for design and management of joint actions

WP 2 – Deliverable 2.4



Project full title: **CSA Healthy and Productive Seas and Oceans**

Grant agreement no. : SCS2-GA-2012-314194-CSA Oceans

Project start date: 1<sup>st</sup> September 2012

Duration: 36 months

Funding scheme: SP1 –Cooperation; Coordination and support action; Support actions FP7-SST-2012-RTD-1

Deliverable number: 2.4

Deliverable name: Proposal for procedures for design and management of joint actions

Contractual date: 31st December 2013

Delivery Date: 20th January 2014

WP no: 2

Lead Beneficiary: National Research Council of Italy (CNR)

Nature: R

Dissemination Level: RE

Date 31 December 2013

Referred author: Pier Francesco Moretti (email: [pierfrancesco.moretti@cnr.it](mailto:pierfrancesco.moretti@cnr.it))

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INDEX	
1. Abstract	3
2. The implementation of actions on a variable geometry: the approach	4
2.1. Introduction	4
2.2 The approach for supporting JPI (Framework Conditions)	5
<b>SECTION A: guidelines for different typologies of actions</b>	
3. Research & Innovation	9
3.1 Project/product funding	9
3.1.1 Design and management of Joint Calls	9
3.1.2 Joint Public Procurement	17
3.1.3 Structural Funds	24
3.2 Research Alliances	41
4. Connectivity	42
4.1 Knowledge Hubs	42
4.2 Networks of people	49
4.3 Network of bilateral agreements	52
4.4 Synergies between ERANETs and other initiatives	57
5. Capacity Building	59
5.1 Human Capacity Building	59
5.1.1 Scenario	59
5.1.2 Training	61
5.1.2 Mobility	62
5.2 Infrastructures	65
5.2.1 Accessing and sharing marine infrastructures	66
5.2.2 Operative procedures and agreements for TNA and infrastructures sharing	69
5.2.3 Access/sharing costs standardization and reporting procedures	70
5.2.4 Access to data	71
6. Supporting actions	76
6.1 Feasibility studies, impact assessments, workshops	76
6.2 Foresight	81
6.3 Emergency issues	84
<b>SECTION B: Common guidelines for actions</b>	
7. Common guidelines to design and management of actions	88
7.1 Criteria for selection of actions	88
7.2 Organizational form	90
7.3 Quality control & peer review	93
7.4 Peer review in joint actions	99
8. Acknowledgements	110
<b>SECTION C: supporting documents</b>	
“Neutralized” (templates) and supporting documents for the JPI Oceans toolkit	111
Annex 1: The analysis of the Set-Plan and the European Energy Research Alliance	120
Annex 2: The analysis of the JOREP results	131
Annex 3: The analysis of funding schemes	148
List of Figures and Tables	163

## 1. ABSTRACT

### Aim:

This deliverable aims to submit to the Management Board of JPI Oceans a proposal for the design, selection and management of joint actions. It aims at paving the way for supporting the JPI Oceans' Management Board, the national administrations and relevant stakeholders in the design and implementation of joint actions.

### Methodology:

JPI Oceans ([www.jpi-oceans.eu](http://www.jpi-oceans.eu)) is addressing societal challenges and therefore complex systems in terms of topics, participants and joint actions. No single set of procedures nor any single instrument can fulfill the diverse needs. Consequently, different typologies of actions can be proposed to tackle societal challenges and it is difficult to predict all combination of them for a possible large diversity of applications. For this reason, most actions will be planned and prepared on a case-by-case basis, allowing for variable geometry and promoting an inclusive and integrated approach to reach the ten objectives defined in the vision document of JPI Oceans. In this sense, the appropriateness of the instruments/procedures has to be carefully analyzed, permitting the process to reduce the complexity adopting flexible and feasible actions but maintaining coherency with the vision and guaranteeing impact.

The support for design and implementation of joint actions is mainly based on the so-called Framework Conditions which were proposed by ERAC-GPC (Groupe de haut niveau pour la Programmation Conjoint) to facilitate joint cross-border funding of research cooperative projects and on the results of the FP7 project JPI to co-Work (<http://www.jpis2cowork.eu/>). We analyzed the results of other networks, platforms, initiatives and projects (NETWATCH, ERA-LEARN, JOREP, BONUS, EUREKA, Set-Plan EERA, ESF), some ERANETs (Concert-Japan, Seasera), other JPIs (Cultural Heritage, Urban Europe, FACCE) and the "JPIs to CO-WORK" project in order to provide elements to facilitate the decisions/management on the options to implement the different typologies of actions which JPI Oceans could adopt. Experiences and best practices from research funding and performing organizations have been analyzed to support the understanding, selecting and implementing of joint actions. Pros and cons for procedures to implement different typologies of joint actions are described and many documents have been collected and adapted to facilitate the process.

### Excutive summary:

This document introduces an innovative approach to the Joint Programming Cycle, suggesting a comprehensive framework for addressing complex systems but also many operational procedures and instruments to be adopted in order to step from theory to facts. Other different typologies of actions has been also introduced, as an example the joint public procurement, the networking of bilateral agreements, the procedures for emerging issues, the sharing of infrastructures which rarely are taken into account as possible solutions to reduce the fragmentation at European level and the timescales for intervention as well increase the socio-economical impact.

This document is not covering all the aspects that will be addressed for joint actions (as an example the Intellectual Property Rights, the dissemination strategy and the evaluation system). Indeed, all the aspects will be included in a toolkit to support the JPI Oceans' process which will be provided before the end of 2015.

This document consists of different parts:

the first section describes the innovative approach to the Framework Conditions and has been tabled to the Management Board of JPI Oceans who endorsed it during its meeting in Bruxelles in November 2013; the second addresses the different typologies of actions which can be adopted. This section aims at describing the best practices, the pros and cons and appropriateness of their adoption. It aims at facilitating the governance to take the decisions and at giving the stakeholders a general vision of the JPIs for the aspects related to the actions. Some additional analysis are also provided in the annexes to this document; finally, having in mind that the implementation of the actions will require operational procedures, practical documents (as "neutralized" templates for peer review, calls, MoU etc.) are provided. They have been built using the past experience at European and national level (see the list of the supporting documents in section C) and are aimed to provide the experts/staff a base for building the most appropriate fit-to-purpose solution.

The procedures for design and management of joint actions will consist of guidelines (this deliverable) with practical tools/documents to support different typologies of joint actions (as "neutralized" templates as possible examples to be used) and additional analysis and documents to help the understanding of the process and taking the decisions (see references and annexes).

## 2. THE IMPLEMENTATION OF ACTIONS ON A VARIABLE GEOMETRY: THE APPROACH

### 2.1 INTRODUCTION

The Joint Programming Initiative Healthy and Productive Seas and Oceans (JPI Oceans) deals with a complex system in terms of topics, participants and joint actions. No single set of procedures nor any single instrument can fulfill the diverse needs. Consequently, different typologies of actions can be proposed to tackle societal challenges and it is difficult to predict all combination of them for a possible large diversity of applications. For this reason, most actions will be planned and prepared on a case-by-case basis, allowing for variable geometry and promoting an inclusive and integrated approach to reach the ten objectives defined in the vision document of JPI Oceans. Table 2.1.1 gives an example for this approach, by showing a number of steps and/or actions which could be identified to reach a certain objective.

Objective	Improve understanding of marine ecosystems and their processes with particular reference to ecosystem services and impacts of human activities
Mapping and analyzing	Result of the analysis: Existing mathematical models of marine ecosystems do not represent or evaluate changes in biodiversity
Strategic Research and Innovation Agenda	Develop mathematical models of marine ecosystems including impacts of overfishing and climate change on biodiversity
Implementation Plan	<ol style="list-style-type: none"><li>1. Identify interest of countries, and/or institutions within countries</li><li>2. Identify best researchers / research groups for collaborative projects<ol style="list-style-type: none"><li>a. sign MoU's between institutions</li><li>b. funding for travel and workshops</li></ol></li><li>3. Competition among teams: Joint funding (JPI joint call, Horizon 2020, ...)</li><li>4. Increase infrastructure sharing (e.g. computational power, data access)</li><li>5. Organize workshops (JPI secretariat)</li><li>6. Plan and fund new Phd and post-doctoral projects and/or courses (MoU between funding organizations, Horizon 2020)</li></ol>
Measurable impact	<ul style="list-style-type: none"><li>• Generate more accurate predictions</li><li>• Targeted, measurable policy advice for fisheries</li></ul>

Table 2.1.1: An example of steps and/or actions which could be identified to reach such an objective.

Warning: Having in mind that this deliverable will mostly guide the development of a toolkit to facilitate the process of JPI Oceans, some paragraphs can contain duplications in order to permit the understanding of the concepts when the text is extracted independently from the rest.

For sake of completeness, we remark that the aspects of IPR and Evaluation/Monitoring have not been included since their associate deliverables will be ready successively. Nevertheless, some aspects of the evaluation are addressed also in the paragraph on quality control.



## 2.2 THE APPROACH FOR FRAMEWORK CONDITIONS

Joint programming is addressing complex systems, also in terms of procedures and structuring of stakeholders: Framework Conditions (FC) to facilitate the process can be provided.

In the past years, joint programming has been mainly identified with joint funding (Nedeva et al., Lepori et al. 2011). In line with this approach, the European Commission recently funded a project in FP7, named JOREP, whose aim was to support the development of an infrastructure suitable for systematic and long-term data collection on open and joint programming in Europe (including definitions, typologies and classifications as well as procedures for data collection). In this project, project funding identifies resources directly allocated by a funding agency to a research group or an individual for research activities limited in time and scope (Lepori et al. 2007) and joint programmes, in the definition adopted by JOREP, are a subset of project funding. Joint programmes are indeed defined as public research funding programmes for which at least one of the key functions (mission, submission and selection, funding decisions, contracts) is shared among more than one country. Accordingly, other forms of internationalization of research funding, like joint research infrastructures and cooperation at the level of performers are not considered.

Also in 2010 the High Level Group for Joint Programming (ERAC-GPC - Groupe de haut niveau pour la Programmation Conjointe) proposed, as voluntary, six FC and most of them are inspired to facilitate joint cross-border funding of research cooperative projects. Indeed, as previously said, JPI will adopt many typologies of actions, and FC should facilitate the process in their different aspects.

The need to include many typologies of actions and not to limit the process of joint programming to some aspects has been also debated at the JPI Conference in Dublin (March, 1<sup>st</sup> 2013) and in another FP7 project, JPI to Co-Work, whose aim is to provide a forum to discuss, exchange of experiences and best practices on the FC amongst on-going and future JPIs. The six voluntary FC (foresight, peer review, IPR, cross-border funding, evaluation, dissemination) have been proposed to be enlarged, at least in number, including the “governance” and the “innovation” as important issues to be addressed when developing the process of joint programming. Governance is introduced to understand/develop the mechanisms and organizational forms of better adaptation of the decision-making process in order to tackle the societal challenges. Innovation has come up beside IPR to include technological transfer, innovation and close to market aspects which can arise from cross-border cooperation. Moreover, JPI to co-Work performed a review of the typologies of activities which JPIs intend to develop. They have been preliminarily framed in a sort of classification as in Table 2.2.1.

Actions	Instrument
Joint research actions	Joint research projects (calls)
	Foresight
	Research Alliances
Cross border mobility and training of human resources	Mobility of researchers
	PhD schools
Knowledge sharing	Sharing Knowledge platform
	Mapping activities and research needs identification
Networking activities	Knowledge hubs
	Stakeholder involvement plan
Joint research infrastructures	
Alignment of policies and programmes	
International outreach activities	

Table 2.2.1: Preliminary classification of actions and instruments adopted/planned by JPIs as reported within the FP7 project JPI to co-Work.

We do believe that the progress performed within JPI to co-Work is valuable and suggests to approach the FC issues as a complex system too.

Our aim is to step from a “logical framework approach” (usually described as a temporal sequence of actions) mainly focused on joint funding, to a “dynamic planning cycle” including many typologies of actions. We therefore expand the concepts embedded in the six voluntary FC to a set of six arguments/aspects which we list as: motivation/driver, vision/strategy, structure/system, management/implementation, outputs, adaptation. These six “arguments” are framed in a dynamic planning cycle (see figure 2.2.1), that is, each of them is linked to the others and have to be taken into account when designing, planning, adopting and implementing the actions.

The proposed “enlargement” of the concept of FC is justified by the fact that many actions could need a support and procedures which are not perfectly in line with those addressed by ERAC-GPC. As an example, dealing with emergency procedures or policy drivers, the procedures to allocate funds can be revised (that is, the calls, their evaluation and peer review aspects etc.).

### ***Dynamic planning cycle for joint programming***

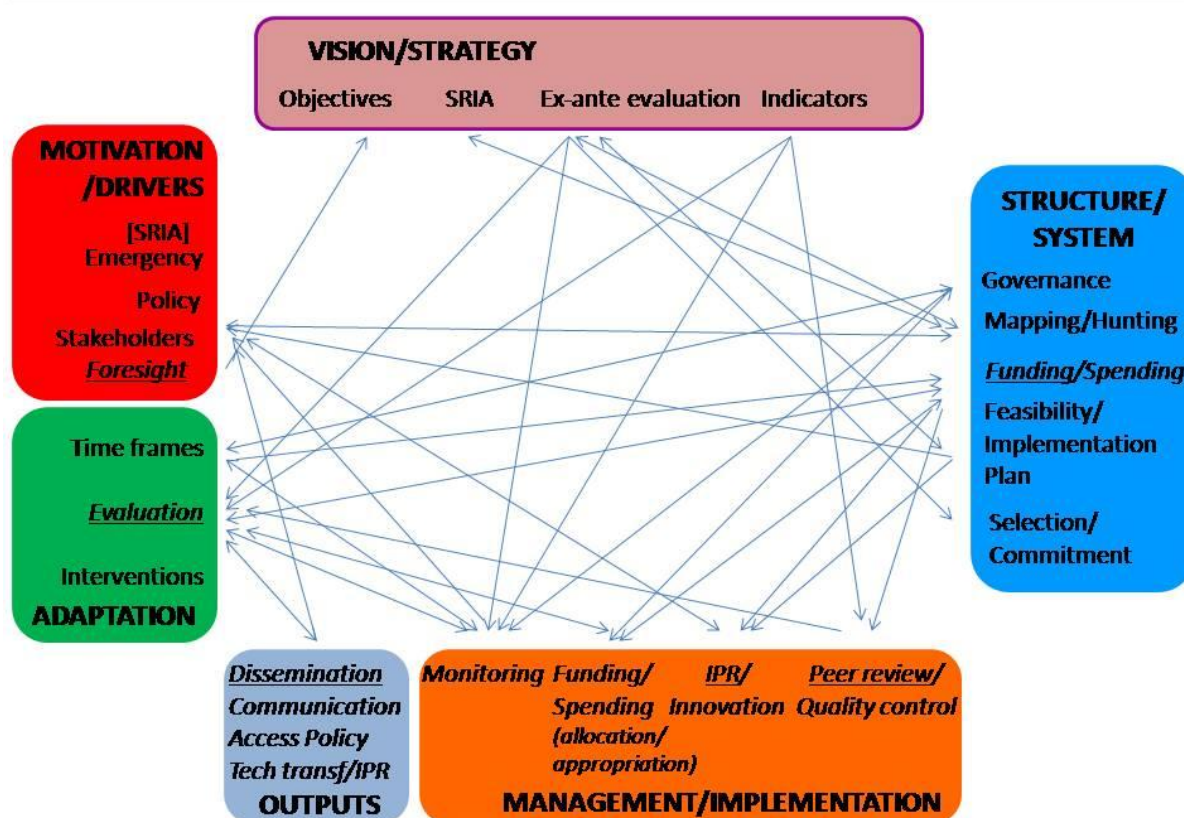


Figure 2.2.1: The dynamic planning cycle for the Joint Programming process. Framework Conditions are now framed in six “arguments” (motivation/driver, vision/strategy, structure/system, management/implementation, outputs, adaptation), where the different aspects of an action are linked each other and should be taken into account when implementing each of them. The six voluntary FC from ERAC-GPC are a sub-set of these aspects and are underlined in this scheme. The complexity of the process is in time (which is clockwise in this figure), in the essential relationships between the research organizations and the funding organizations, in the relationships between researchers and stakeholders.

FC ACTIONS		MOTIVATION /DRIVERS	VISION/ STRATEGY	STRUCTURE/ SYSTEM	MANAGEMENT	OUTPUTS	ADAPTATION
		<i>Foresight</i> Stakeholders Emergency [SRIA]	Objectives SRIA Ex-ante evaluat. Indicators	Governance Mapping/Hunting Funding/spending Feasibility Selection/commitment	<i>Peer review</i> <i>IPR/innovation</i> Funding/spending Monitoring	Communication Dissemination Access Policy Tech transfer/IPR	Time frames Evaluation Interventions
R&I	PROJECT/ PRODUCT FUNDING						
	RESEARCH ALLIANCE						
Connectivity	NoE/ HUB						
	Alignment policies & programs/ Multilaterals						
Capacity building	HCB Mobility/ Training						
	INFRA TNA/ Data sharing						
Support	Assessment Feasibility Workshops						
	Foresight						

Figure 2.2.2: A matrix describing the Framework Conditions (columns) and typologies of actions (rows). The FC from ERAC-GPC are mainly focused on the aspects of cross-border funding: other typologies of actions could need a different support and procedures to be implemented. The FC are in this approach widened and described as main arguments (motivation/driver, vision/strategy, structure/system, management/implementation, outputs, adaptation), where different aspects have to be addressed. The six voluntary FC from ERAC-GPC are a sub-set of these aspects.

This deliverable will therefore provide this new approach, which includes the voluntary six FC proposed by ERAC-GPC. It will focus on the FC specifically addressed to the tasks of WP2, including the results from D7.2 on foresight and the preliminary inputs from D4.3 on IPR. It also aims at supporting the D1.7, where a JPI Oceans operational Toolkit will be provided as a collection of operational procedures and guidelines which supplements the Terms of Reference.

It is not possible to predict all the aspects which will and can be addressed in a set of actions to achieve the goals of JPI Oceans. These will be detailed on a case by case study. The fact that a fit to purpose approach will be adopted can be anyway facilitated providing the staffs which will take care of the implementation of the process with different options (as an example, for MoU for joint calls, research alliances, sharing infrastructures, emergency issues) supported by a description of the past experiences and “hot topics” to be carefully analyzed.

These options will be adapted to the specific purposes of the adopted action.

So, we propose procedures for design and management of joint actions with guidelines with practical tools/documents to support different typologies of joint actions (see “neutralized” documents and templates) and additional analysis and documents to help understanding the process and taking the decisions (see references and annexes).



The guidelines provided in this deliverable, described in chapter 7, follow some sections (from chapter 2 to 6) where the different typologies of actions are addressed and analyzed.

The different typologies of actions are grouped as follows:

- Research and Innovation, that is, those actions aimed to fund projects or products where research activities are fundamental. They are distinguished in two categories: one where a competition is planned (that is, implying a call and money allocated to externals to the funders), another where cooperation is mainly involved (where investments from partners is mainly provided as an in-kind contribution).
- Connectivity, that is, those actions mainly increasing the communication and coordination between the stakeholders. These actions can also have a specific deliverable, but the main activities are associated to make people or organizations to cooperate.
- Capacity building, that is, those action aimed to support human resources and infrastructures.
- Supporting actions, that is, those activities meant as preliminary (or with a short duration) and whose aim is mainly to facilitate the decisions to adopt and/or to pave the way of the implementation of the actions.

### 3. RESEARCH AND INNOVATION

The JPI approach based on variable geometry includes different typologies of actions that could be adopted.

Within the perspective of introducing long term and strategic collaboration among JPI's partners, while providing flexible mechanisms, the EC is also proposing new tools: the Framework Partnership Agreement (FPA) and Specific Grant Agreement (SGA), which follow this approach. In line with the JPI rationale, these agreements can be adopted when the parties share common objectives and mutual interests, the actions are jointly defined and there is an on-going and formalised plan to implement potential actions.

The difference between the two arrangements focuses on the level of involvement and the financial commitment requirement, requiring the Specific Grant Agreement specific budget appropriations, not required in the Framework Partnership Agreement.

These kind of agreements, which cannot be associated nor to tender or to ERANET schemes, can be taken into account by JPI Oceans as examples for the simplification of the management and procedures, while allowing for long term and strategic planning. At the moment the details for FPA and SGA are not known yet.

The following paragraphs describe different typologies of actions on the basis of the two main concepts of funding and spending. Funding refers to the modalities under which the actors provide money for specific initiatives, while spending is intended as the allocation of money among different activities or tasks. In this document we focus, as funding, in joint calls, public procurement and structural funds, while in spending concept we include the research alliances.

#### 3.1 PROJECT/PRODUCT FUNDING

##### 3.1.1 DESIGN AND MANAGEMENT OF JOINT CALLS

###### INTRODUCTION

JPI Oceans covers an extraordinarily broad field in terms of candidate topics for joint calls, possible participants and types of actions. Consequently, no single set of rules will fulfil the diverse needs required by joint funding actions within JPI Oceans. Most actions will be planned and prepared on a case-by-case basis, allowing for variable geometry and procedural flexibility. Joint calls, though not the primary aim of JPI Oceans, will form one of the standard instruments for implementing aspects of the strategic research agenda of JPI Oceans.

Joint calls are procedures whereby bottom-up proposed projects are selected through competition after peer review and funded cooperatively by partners within JPI Oceans. All member countries of JPI Oceans are familiar with these procedures through national and international programmes such as ERC, ERANET, ERANET Plus and art. 185 activities. A complete toolbox for designing and implementing joint calls can be found on the web at [netwatch.jrc.ec.europa.eu/web/lp/learning-platform/toolbox](http://netwatch.jrc.ec.europa.eu/web/lp/learning-platform/toolbox).

This deliverable aims at suggesting a basic set of viable procedures for the implementation of joint calls. Figure 3.1.1.1 shows a schematic representation of the main items covered in this document. Some issues have already been discussed in D2.1, and some will be taken up and further developed

in D2.4. The Appendix contains a number of generalized templates required for implementing the proposed procedure. These templates have been tested in a transnational funding action carried out by Germany (BMBF/PTJ) and The Netherlands (NWO).

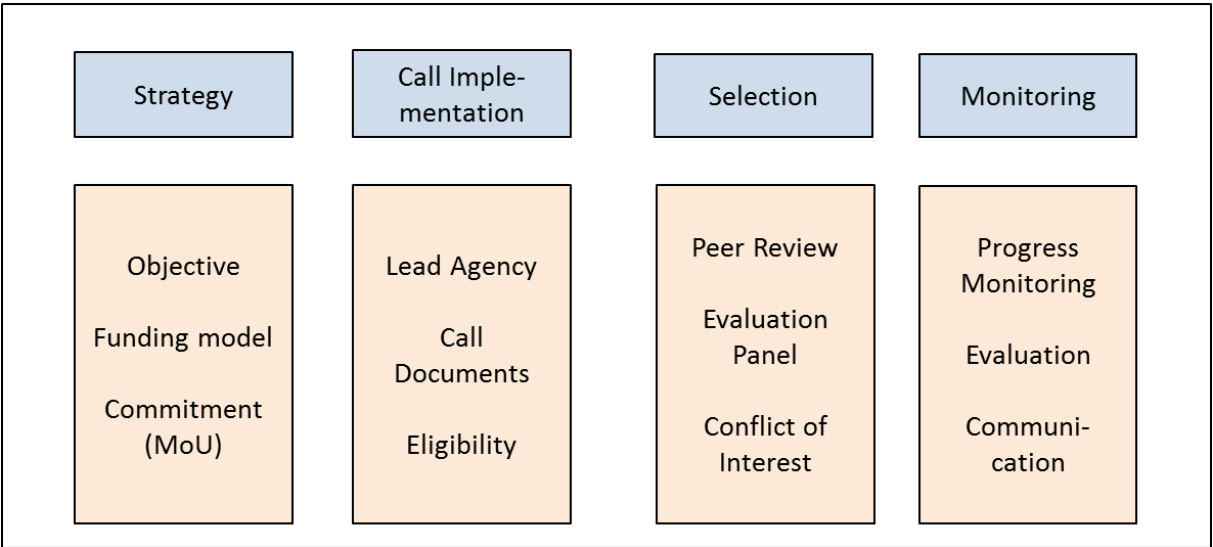


Figure 3.1.1.1: Schematic representation of a the components of D2.3.

### COLLABORATION AND GOVERNANCE

Joint calls require the participation of a minimum of two countries represented in JPI Oceans. They agree to jointly fund a call for proposals and act as funding partners. There is no upper limit to the number of countries who can act as funding partners of a joint call.

To keep overhead costs and handling time at a minimum, lead agency procedures are the preferred mode for implementing joint calls. Lead agency approaches imply that one of the national bodies (usually a funding agency or ministry) takes the responsibility for implementtting the joint call. All funding partners mandate the lead agency to carry out the joint call on behalf of themselves. The lead agency approach seems especially appropriate for joint calls within JPIs as it ensures efficiency and allows for a high degree of flexibility required by the principle of variable geometry. However, lead agency approaches require a certain degree of consistency in the procedures and funding philosophies of the funding partners and they rely on mutual trust and confidence among collaborating partners. Maximally transparent agreements between funding partners greatly facilitate the successful implementation of lead agency procedures.

The funding partners may define the principles of their collaboration by signing a memorandum of understanding (MoU) in which they specify all important issues pertaining to the joint call, including the principles of collaboration and governance, implementation and management, monitoring and evaluation, and a description of the funding model. The Appendix contains a generalized template for such a document which can be adjusted to fit specific joint calls.

To ensure an efficient governance of the joint call, the funding partners should nominate a management committee consisting of representatives of all funding partners, which acts as temporary governing body of the joint call. The management committee assumes full responsibility for the call, overseas all procedures and takes all formal decisions, including funding decisions. The funding partners delegate these tasks and responsibilities to the management committee. The management committee remains in place until the joint call has been evaluated. The call which takes place within a predefined period after the last project has ended.

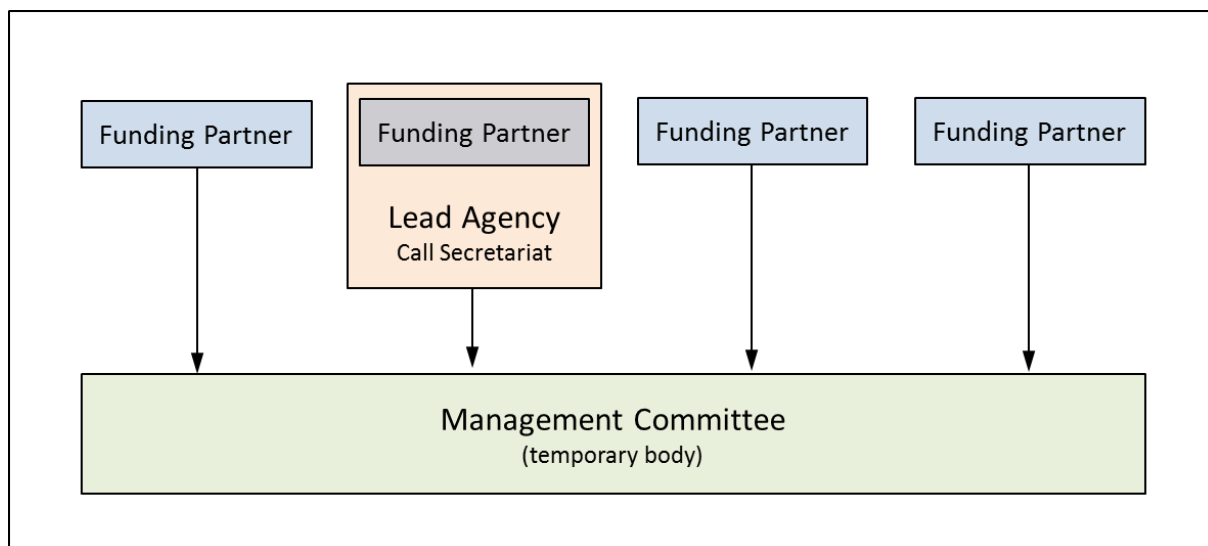


Figure 3.1.1.2: Schematic representation of a possible governance structure for the implementation of joint calls.

## IMPLEMENTATION AND MANAGEMENT

Before publishing the joint call, the funding partners develop a joint vision on the topic(s) for the call and define the structure of eligible projects. The management committee may install a call preparation committee, consisting of experts in the broader field of the joint call, which advises on the content of the call. The call for proposals, specifying the content, procedures and timeline of the joint call has to be approved by the management committee before being published by JPI Oceans, the lead agency and all funding partners on their respective websites. All applications are directly submitted to the lead agency. Each of the funding partners provides information and assistance for applicants in their respective countries. Depending on the aims and main subjects of the call, the procedure may or may not include a pre-proposal stage.

Each eligible applications will be peer-reviewed by a pre-defined number of independent, international experts (peer reviewers). The lead agency carries out the review procedure and sends the anonymous referee reports to the applicants who are given the opportunity to respond to the reports by means of a brief, written rebuttal.

The proposals, referee reports and rebuttals will be evaluated, compared and ranked by an independent evaluation panel installed by the management committee. The evaluation panel assigns unique rankings to the individual proposals. This ranking is forwarded to the management committee which will take a formal funding decision on the basis of the advice from the evaluation panel and taking into account the available budget. The projects start within a predefined period after taking the funding decision.



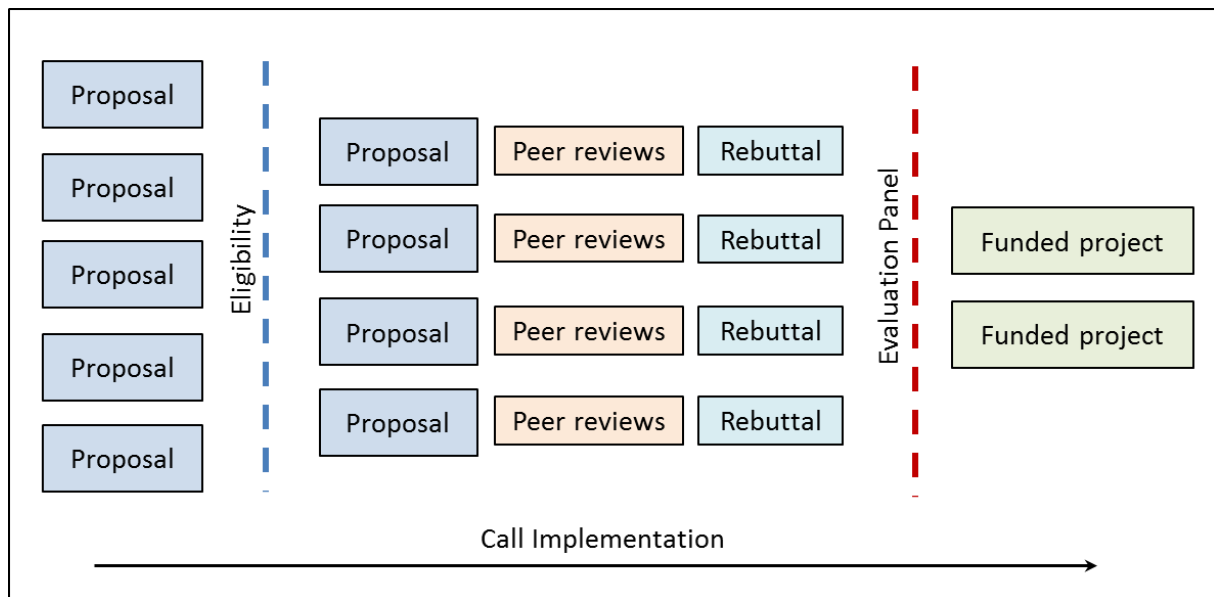


Figure 3.1.1.3: Schematic representation of the call implementation process. The submission, evaluation and selection of pre-proposals may precede the stages represented in this diagram.

A joint call can also be implemented as two-step process allowing for the submission of pre-proposals and/or letters of interest (see Figure 3.1.1.4). In this case, the evaluation process will also have two stages, one dealing with the pre-proposals and one devoted to the full proposals. A two-step procedure is recommended if (1) a large number of applications can be expected and (2) if the feasibility of projects should be demonstrated before submitting a full proposal. Complex calls, incl. calls with in-kind contributions, may be more likely to ask for two-step procedures than regular research funding calls.

In general, two-step procedures reduce the overall work-load for applicants, as fewer full proposals have to be written. On the other hand, two-step procedures can significantly prolong the time from first submission to granting decision.

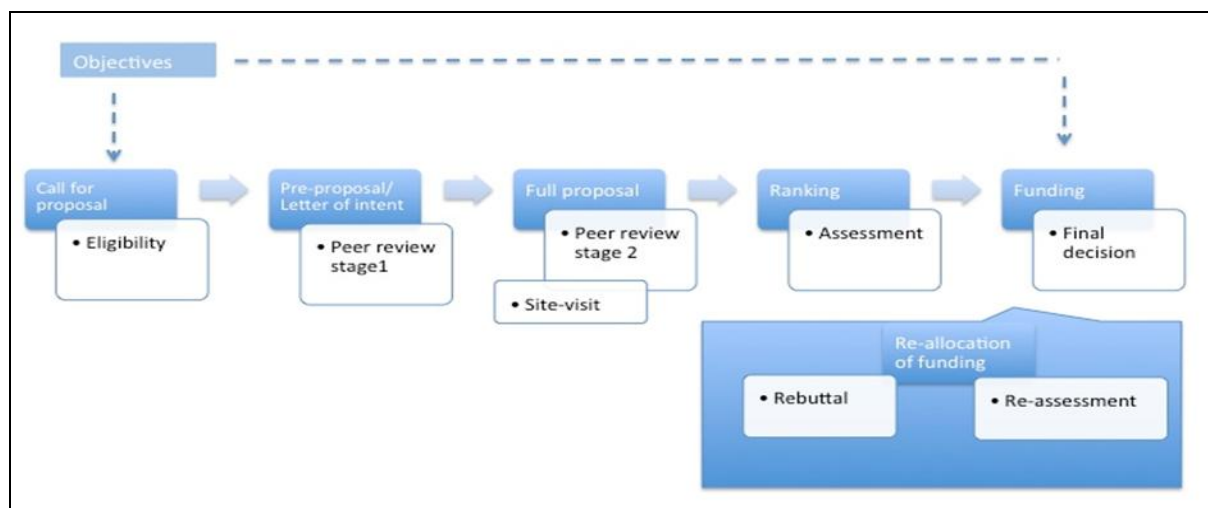


Figure 3.1.1.4: Schematic representation of the call for proposals using a two-step implementation process.

## MONITORING AND EVALUATION

Funded projects are administrated by national organizations (usually funding agencies) of the funding partners. Applicants are supposed to report yearly to their national agencies which forward the reports to the lead agency. The call procedure as well as the research projects will be evaluated. The management committee is responsible for these evaluation and can nominate an evaluation committee. The management committee may organize symposia to bring together representatives and researchers from funded projects. The funding partners jointly cover the costs of such meetings. Within the perspective of introducing flexibility while ensuring efficiency and effectiveness of results, the Parties can jointly decide to introduce an interim negotiation of the projects, in order to discuss and define budget distribution and minor activities modification. With the purpose of reaching the best results and in the more efficient ways, a re-negotiation procedure can allow JPI Parties to re-discuss and re-orient funded projects, without introducing contractual amendments. At this purpose, in the MoU, the Parties can add a specific clause introducing the above mentioned option and how to implement it. At this purpose a panel responsible for the negotiation procedure shall be established. It should include representatives of both the funding organisations and experts.

## FUNDING MODELS

Different funding models can be adopted for the implementation of joint calls. The ERA-LEARN toolbox and the JOREP report offer an overview and description of different possibilities. When barriers to cross-border funding are high, participants tend to opt for different virtual common pot models. In the absence of barriers for transnational funding, true common pot models are to be preferred above alternative models. EC rules will have to be followed if the joint call makes use of EC funding instruments. At present, virtual common pot models with common evaluation and selection procedures seem the most appropriate funding model to implement joint calls by MS/AS. This funding model is used in all templates given in the Annex.

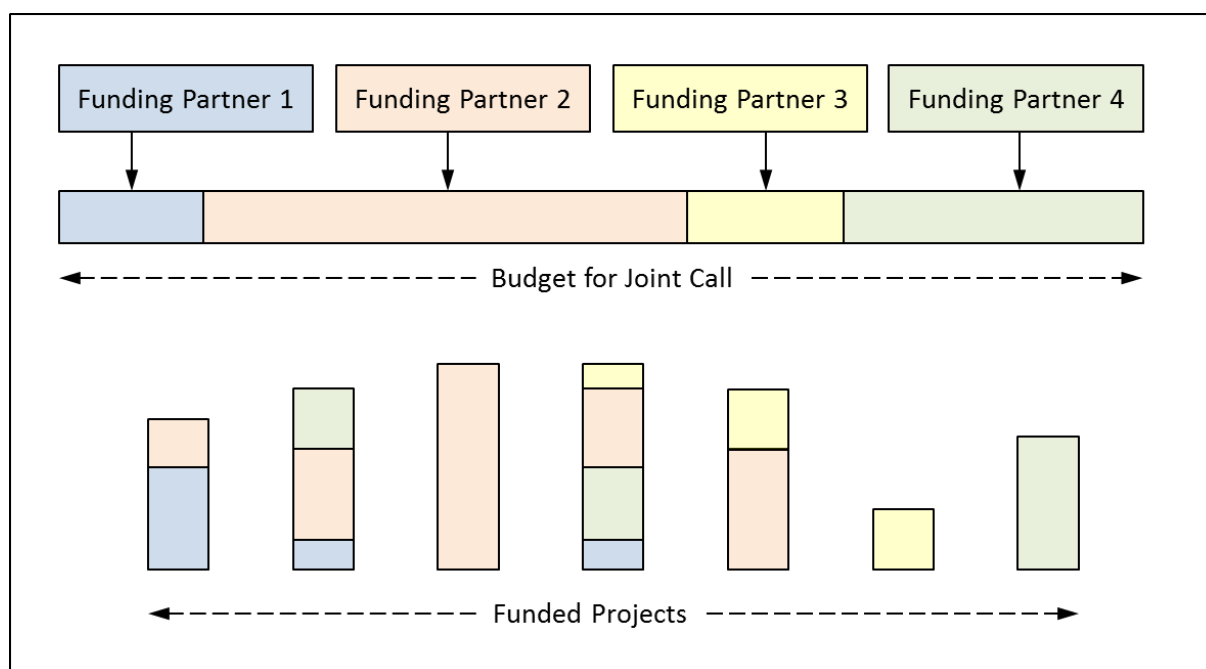


Figure 3.1.1.5: Schematic representation of a (virtual) common pot model with four funding partners.

Virtual common pot models may suffer from the fact that one or more funding partners run out of budget before all highly-ranked projects have been funded. This results in delays and an inefficient use of resources. Only real common pot models can truly overcome this problem. However, intermediate solutions to this issue may be applied to joint calls. The funding partners may jointly decide to use a certain percentage of their cash contributions for resolving such “funding imbalances”. This requires the legal possibility and the agreement of funding partners to spend a limited amount of their budget on joint research projects carried out outside their countries.

If EC-instruments with EC top-up funds are used, the above-mentioned procedure can largely overcome funding imbalances if a certain percentage of the top-up funding is used for filling up “funding gaps” caused by a lack of funds available to national funding agencies. Such a balancing pot will ensure that as many projects as possible can be funded following the ranking list resulting from the peer review process. The remaining portion of the EC funds can be distributed proportionally among the funding agencies based on the respective contributions, including in-kind contributions.

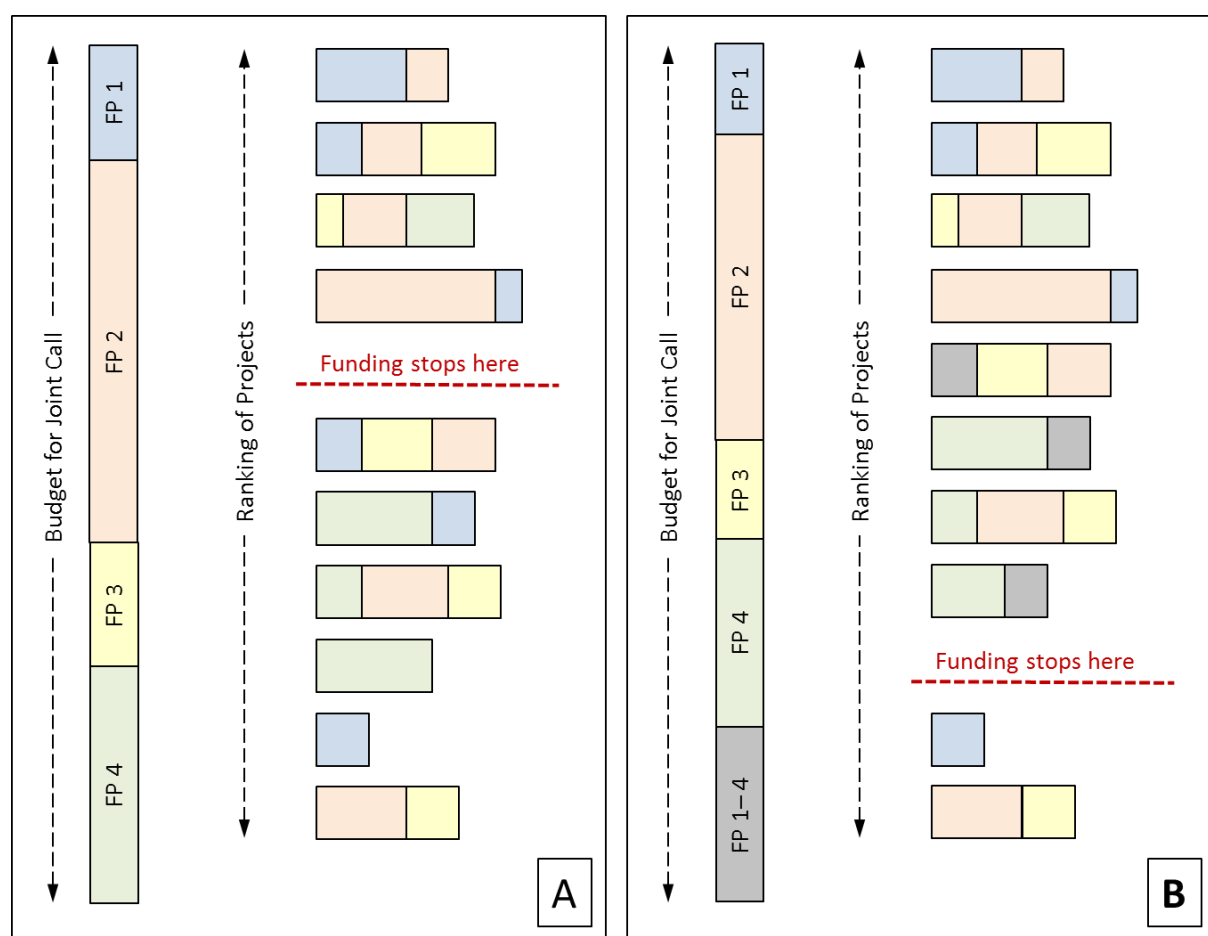


Figure 3.1.1.6: Schematic representation of funding ties in a virtual common pot model. In panel A (simple common pot model) only four projects can be funded without extra budget or negotiations. This situation can partly be avoided by dedicating parts of the common budget (grey are in panel B) for resolving funding ties.

An additional set of rules may be required if the call allows for, or requires, in-kind contributions by funding partners. In the simplest case, in-kind contributions are part of each proposal, indicating the commitment of applying institutions and countries to support to the aims of the joint call. In-kind contributions can be seen as a means to align research priorities using institutionalized budgets.

In more elaborate models, in-kind contributions are not part of proposals, but represent non-competitive contributions by funding partners. This latter option is not usually implemented in competitive calls and will therefore be treated in more detail in deliverable D2.4.

#### THE IN-KIND CONTRIBUTION AND TOP-UP DISTRIBUTION IN THE ERANET SCHEME/ART. 185

The EC funding towards joint research actions from Member States was usually channelled through the ERANET, ERANET Plus and art. 185 with the aim to create leverage effect on the national funds to be coordinated. Horizon 2020 will have a more comprehensive and flexible instrument for coordinating national programmes which will merge the ERANET, ERANET Plus in the so called “ERA-NET cofund”. The national contribution requested to access the EC contribution (the so called top-up) has been mostly committed in terms of fresh money, but there are some exceptions.

Art.185 BONUS and EMRP consider in-kind contributions eligible as national contributions and consequently they count towards the total investment required to access the EC top-up. BONUS, for example, foresees that up to 25% of the national contributions may be provided as in-kind provision (free of charge use) of infrastructure within the BONUS projects. This national provision is then matched equally with funding from the EU retroactively. However, certain reporting obligations must be met to demonstrate the correct value of the infrastructure provided, confirming its actual use within a BONUS project and provide the EU with audit rights to check that provision is administered correctly as reported. The use of infrastructure as in-kind contribution reduces the proportion of the national cash contributions in the next call accordingly. If infrastructures cannot be provided free of charge, projects have to apply for as direct costs which results in limiting the available budget for research for the whole consortium

In some MS/AC, this complicated procedure can also generate difficulties in reaching a compromise or delays in the decision process. Considering both cash and in-kind contributions for joint funding projects implies and promotes close links between research funding organizations (RFOs) and research performing organizations (RPOs). Both RFOs and RPOs can therefore have a fundamental role in supporting and realizing joint actions. A scaling ratio between the cash and in-kind contribution, that is the percentage of the value of the in-kind contribution which is considered comparable to a cash contribution, can be adopted to balance different national contributions. For example in BONUS, a maximum of 25% of in-kind contribution can be included and EC contributes up to a maximum 33% of the total budget, implying that the in-kind contribution is considered as scaled to 60% of a cash-contribution.

In view of the next ERANET scheme (ERA-NET cofund) which should allow a more flexible use of the top-up from EC, we therefore propose the following approach for the agreement between partners with EC to be adopted when dealing as an example also for Art. 185.

#### **Proposed text to be inserted in the Annexes of ERA-NET cofund or Art. 185 agreements for the in-kind contribution recognition and top-up distribution**

Most projects require the allocation of human resources, infrastructures, specific supplies and funds. In many cases funds are intended and used to integrate existing capacities and activities within projects and programmes or to directly fund research activities through the reimbursement of personnel costs and acquisition or use of equipment and infrastructure. When personnel costs or infrastructures are not directly reimbursed, these issues are usually referred to as “in-kind contributions”. The in-kind contribution is typically considered as a co-funding.

In-kind contribution can be most relevant for reaching a certain critical mass and collecting competences in order to develop efficient actions. This is, especially true for MS/AC whose



availability of funds and different types of in-kind contributions (infrastructure, data, personnel) can largely differ. In-kind contributions allow to make maximal use of complementarity and synergy between collaborating partners.

In-kind contributions should not be disregarded when designing and negotiating joint programming and actions. They may allow access to otherwise inaccessible resources consisting of infrastructure, knowledge, data and others. In-kind contributions should be valued as equally-important contribution to joint calls as monetary funds.

For these reasons, in-kind contribution and the EC top-up contribution will follow the following guidelines for their recognition and distribution:

### **In-kind contribution**

A1) Partners can be considered as funders and involved in the agreement if they commit financial resources or open access to national infrastructures.

A2) In-kind contribution as access to infrastructures or personnel is recognized when their necessity is clearly demonstrated in terms of their strategic roles in achieving the objectives. These roles and the percentage of the value of the in-kind contribution which is considered comparable to a cash contribution have to be defined in the call text (scaling ratio).

A3) The in-kind contribution has to be registered, accounted and accessible between the participants. EC rules are used for the calculation of the costs of personnel and use of infrastructures.

A4) Flexibility in the use of the scaling ratio should be adopted in case of strategic involvement of some partners (especially when dealing with geographical coverage of data and infrastructures).

A5) The maximum total in-kind contribution should not exceed totally #% of the whole budget from Member States and Associated Countries. This upper limit has to be published in the call text.

### **Top-up in case of adopting the mixed mode model as financing system**

B1) The just retour approach should be limited, whenever possible, in order to agree upon reasonable arrangements on funds and capacities to optimise the results.

B2) In principle, in case of the adopting mixed mode model as financing system, no national/regional funding will cross the borders. The mixed mode – which was the most used model for ERANET Plus calls, helps to ensure that selection decisions can follow the common ranking list of the evaluated proposals (which was an ERANET Plus requirement) and that the participating funding countries/beneficiaries maintain their initial commitments. The final decision on which projects are to be funded in joint calls will determine the amount of budgets to be spent by the funders, and this will influence also the EC contribution. The final EC contribution is open to variations and will, in principle, be determined at the end of the activities funded within the calls as the costs claimed by and granted to the projects can vary in their running time.

B3) To ensure that as many ranked projects as possible following the ranking list can be funded, up to #% of the available EC contribution will be used as a “balancing pot” for filling up the funding gaps caused by a lack of funds available to national/regional funding agencies and accordingly to the criteria for selection defined by the adopted peer review (selection) process. The remaining portion of the EC funds will be distributed proportionally among the funding agencies based on the actual respective national/regional contributions, taking into account the in-kind contribution as previously described.

To summarize the principles for distributing the funding:

1. EC and national regulations for funding are applied
2. Funding follows ranking list as defined by the adopted selection process
3. A mixed mode funding model is applied
4. No national/regional funding will cross the borders
5. Up to % of the EC top-up is used as a balancing pot and the remaining portion will be proportionally distributed based on the actual national/regional contributions.

The final distribution of the EC contribution will be defined after the ranking list has been approved and the in-kind contribution from the beneficiaries of the funded projects has been calculated.

## RECOMMENDATIONS

- JPI Oceans call for proposals may or may not use EC funding instruments. EC funding rules will apply in the latter case.
- JPI Oceans calls for proposals should make use of a lead agency procedure in order to avoid unnecessary duplication and increase efficiency.
- Funding partners of JPI Oceans calls for proposals should sign a MoU before embarking on joint calls. The MoU defines the joint call and the tasks and responsibilities of the funding partners and all call implementation bodies.
- Depending on call complexity and the envisaged time frame, JPI Oceans calls for proposals can be implemented as one-step (only full proposals) or two-step (pre- and full proposals) procedures.
- JPI Oceans calls for proposals should allow for the use of in-kind contributions, either within individual projects or as overall contribution to a call (the latter will further be detailed in D2.4).
- JPI Oceans calls for proposals (without EC participation) are most likely to use a virtual common pot model for funding. Mixed common pot models can be used if EC-instruments such as EraNet+ are used.
- JPI Oceans calls for proposals should make use of a balancing pot of pre-defined size to avoid funding imbalances which can result from mismatches between national funding possibilities and national representation in highly-ranked proposals.

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### 3.1.2 THE JOINT PUBLIC PROCUREMENT

#### THE RATIONALE

Over of the next decade EU actions will most likely be focused on delivering social progress, tackling societal challenges and boosting growth, and a global perspective and cooperation is necessary to address effectively them.

Despite the global scenario, a regional context and cooperation on issues of common interest should be an appropriate approach, having in mind that the specificities/cultures of the territories are interlinked in the evolution of the ensemble. The Smart Specialization Strategy aims, through targeted use of Structural Fund investments in R&I, to support the economic development of the territories, developing a vision, identifying competitive advantage, setting strategic priorities and making use of smart policies to maximize the knowledge-based development potential of any region. A European Common Strategic Framework promotes the synergies between research funds allocated in Horizon 2020 and those allocated in the Structural Funds in order to reach the critical mass, also in terms of financial resources, to address the challenges properly. There is therefore a definitive need for aligning regional, national and European programming to reach common visions and goals:

synergies between Structural Funds (SF), Horizon 2020 and investments at National and Regional levels are crucial to have a positive impact on socio-economic activities. JPI Oceans, as well as the other Joint Programming Initiatives, can and will participate to this process of create synergies. Nevertheless, the step from words to facts implies the design, selection, adoption of appropriate instruments to facilitate the implementation of the strategies.

Joint Public Procurement (JPP) is a financial instrument which can be considered an opportunity to be evaluated when addressing solutions for societal challenges, and not only.

We will describe the standard use and procedures of adopting JPP and analyze pros and cons in different conditions. The aim is to provide also an operational toolkit to facilitate and guide the public authorities and policy-makers in the use of JPP (see also Di Bello et al. 2013 and supporting documents in Section C).

The complexity of the process in terms of typologies of actions and stakeholders with different levels of responsibilities and competences, often reduce the motivation to adopt JPP. Nevertheless, JPP can take advantage of the experiences of trans-national cooperation in other initiatives where many instruments are provided to facilitate the process of joint programming and funding (see figure 3.1.2.1). In the case of JPP, simple and accessible guidelines supporting the process are lacking too.

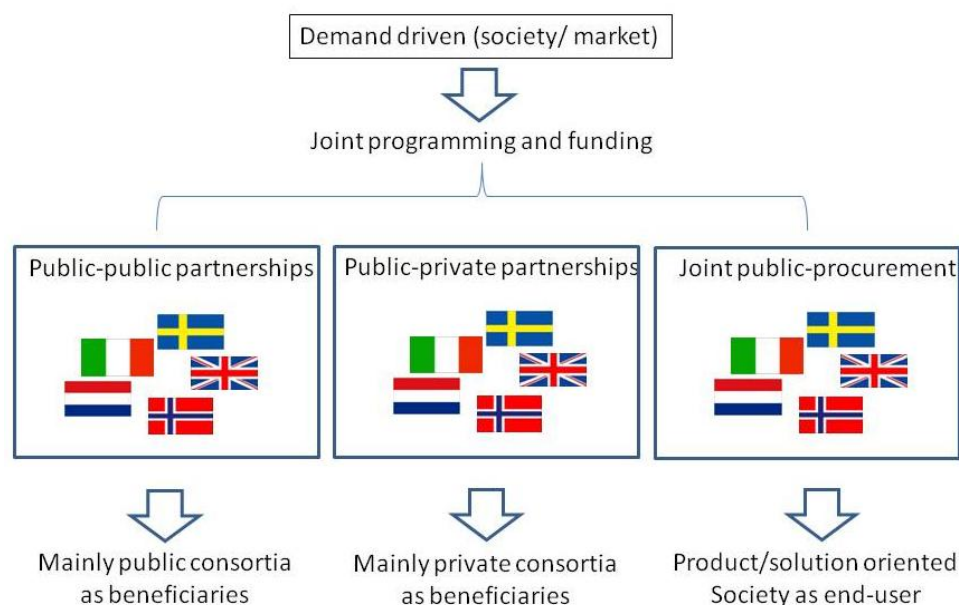


Figure 3.1.2.1: A simplified sketch describing different processes using joint programming and funding to fulfill market or society demand. Public-public and Public-private partnerships have a long european tradition also in terms of facilitating instruments (respectively, as an example through ERANETs and JTIs).

Added values of JPP can be summarized as follows:

- JPP's approach is problem oriented and solution focused.
- JPP can be a key tool to support the "Internal Market" and the free movement of services.
- JPP can be a powerful tool to achieve Europe 2020 Strategy.
- JPP can deliver tangible results so as to foster wider public-private acceptance.
- JPP can address products/services identified as impacting on tackling societal challenges.

- JPP can be an alternative approach to Public Private Partnerships.
- JPP can boost job creation.
- JPP avoids duplication and reduce fragmentation.
- JPP increases the efficiency and effectiveness of the use of resources.
- JPP increases the connectivity and facilitate the definition of common strategies.
- JPP facilitates the quick response to urgent/emergent issues.
- JPP relates to an innovative cohesion approach: it assures the impact on territory through the usability of the product/service, not excluding the involvement of other territories for the provision of the product/service.

## THE EUROPEAN LEGAL FRAMEWORK FOR JOINT PROCUREMENT

Fostering joint procurements is part of the Europe 2020 key initiatives<sup>1</sup>.

Europe 2020 objectives can be better attained if the public procurers join their efforts. By aggregating their resources, public procurers increase their buyer power and may hence obtain better contractual conditions, reach more easily important market threshold values and have at their disposal a stronger instrument for orienting the market. Therefore, joint public procurement can increase the effectiveness of the public procurement procedure and at the same time share the risk linked to the procurement notably of innovative solutions.

Innovation Union – Commitment 17<sup>2</sup>: The Commission will offer guidance on implementing joint procurements between contracting entities under the current public procurement directives and use the ongoing general evaluation of the current directives to examine the opportunity to introduce additional rules to make cross border joint procurements easier

The current European public procurement legal framework is open to joint public procurement either at national or cross-border level. However, very little detail is given concerning the application of joint public procurement in practice. Therefore the EC launched a review of the current public procurement legal framework (in particular Directives 2004/17/EC and 2004/18/EC) to provide additional rules facilitating cross-border procurements. The European Commission proposal for the revision of the Public Procurement Directives<sup>3</sup> was published in December 2011.

The proposed Directive on public procurement emphasizes the importance of public procurements as an instrument to contribute to the achievement of the Europe 2020 strategic goals by using the purchasing power of contracting authorities to procure goods and services that foster innovation. EC proposal includes specific provisions to facilitate cross-border joint procurement which is described as an important instrument for innovative purchasing.

Stakeholders responding to the EC consultation on the Green Paper on the modernization of EU public procurement policy highlighted the issue of the lack of rules concerning the application of joint public procurement in practice, and in particular, on the applicable procurement law and the court that will have jurisdiction for the performance of the contract.<sup>4</sup>

The EC acknowledges that “joint awarding of public contracts by contracting authorities from different Member States currently encounters specific legal difficulties, with special reference to

<sup>1</sup> [http://ec.europa.eu/research/innovation-union/index\\_en.cfm?pg=action-points](http://ec.europa.eu/research/innovation-union/index_en.cfm?pg=action-points).

<sup>2</sup> Europe 2020 Flagship Initiative - Innovation Union, COM(2010)546 final.

<sup>3</sup> Proposal for a Directive of the European Parliament and of the Council on Public Procurement, Brussels, COM(2011) 896 final.

<sup>4</sup> Green Paper on the modernization of EU public procurement policy, COM(2011) 15 final.



conflicts of national laws. Contracting authorities from different Member States may be interested in cooperating and in jointly awarding public contracts in order to derive maximum benefit from the potential of the internal market in terms of economies of scale and risk-benefit sharing, not least for innovative projects involving a greater amount of risk than reasonably bearable by a single contracting authority. Therefore new rules on cross-border joint procurement designating the applicable law should be established in order to facilitate cooperation between contracting authorities across the Single Market.”

The Article 38<sup>5</sup> of the directive proposal represents a first attempt to provide concrete means for contracting authorities from different Member States to develop joint procurements:

- Several contracting authorities may purchase works, supplies and/or services from or through a central purchasing body<sup>6</sup> located in another Member State. In that case, the procurement procedure shall be conducted in accordance with the national provisions of the Member State where the central purchasing body is located.
- Several contracting authorities from different Member States may jointly award a public contract. In that case, the participating contracting authorities shall conclude an agreement that determines:
  - which national provisions shall apply to the procurement procedure;
  - the internal organization of the procurement procedure.
- Where several contracting authorities from different Member States have set up a joint legal entity (e.g. European Groupings of territorial cooperation) the applicable national procurement rules may be of one of the following Member States:
  - the national provisions of the Member State where the joint legal entity has its registered office;
  - the national provisions of the Member State where the joint legal entity is carrying out its activities.

The possible changes to the legal framework for procurement are still quite distant as the first transposition of the directive in Member States legal framework is foreseen at the earliest for 2015-2016. Therefore, the EC and Member States should begin to act now to promote cross-border joint public procurements as a key tool for tackling societal challenges.

## STRATEGY, SELECTION CRITERIA AND IMPLEMENTATION

The majority of EU countries are still far to elaborate clear guidance, strategy, methodology and criteria to promote the shift from traditional procurement schemes to Joint Public Procurement strategies.

The aspects of the development of JPP strategies should proceed via a mix of hard and soft measures:

In order to adopt a JPP, JPI Oceans should preliminary:

- Identify the priority and product looking at competitive advantage.
- Identify and evaluate benefits/costs (strategy, structure, and implementation), securing stakeholder buy-in is key for the long-term success of joint procurement projects (market information included).

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<sup>5</sup> Proposal for a Directive of the European Parliament and of the Council on public procurement, COM(2011) 896 final.

<sup>6</sup> A Central Purchasing Body (CPB) is defined in the EC Public Sector Directive as a contracting authority that: acquires supplies or services intended for one or more contracting authorities; or awards public contracts for works, supplies or services intended for one or more contracting authorities; or concludes framework agreements for works, supplies or services intended for one or more contracting authorities. CPB have already been developed under the Directive 2004/18 on Public Procurements.

- Ex-ante evaluation of the feasibility, demonstrating that the proposed activity is practical and achievable.
- Define appropriate communication strategies including: existing public authorities networks, existing public authorities associations, dissemination through national/regional media channels.

The evaluation of feasibility should imply:

- the identification of the best practices of procurement across members states/participating countries to be potentially applied as jointly developed;
- the definition of the governance (single access point, centralization vs decentralization);
- the definition and identification of the supporting staff (experts/managers).

In order to set up a JP activity, in principle at least two authorities should be involved: in the case of JPI Oceans the adoption will follow the general rules for Joint Actions (at the moment requiring four participants to be involved).

Participating authorities will need to formalize their collaboration through a Partnership Agreement or MoU including:

- the reasons and objectives of the joint activity,
- the name of the participating authorities,
- the area(s), product(s), service(s) to be purchased,
- the procedure to be undertaken.

According to the definition given in Lena Tsipori 2013 (EC Policy brief n.2, Public Procurement of Innovation), we can distinguish between Public Procurement of Innovation and Pre-Commercial Procurement, the first being a demand-side policy instrument influencing innovation. They also clearly pin down the concept of “direct” procurement (i.e., where the procuring organization is also the end-user of the product) and the “catalytic” procurement (where the role of the procuring organization consists of coordinating and providing technical support while the benefit is mostly for other end-users).

A good example of process for JPP has been adopted by Trento RISE and described in Di Bello et al. 2013.

In the case of JPI Oceans, the distinction between the concept of “direct vs. catalytic” procurement is not fundamental, since the focus will be on the impact of the use of the joint public procurement on addressing societal challenges, that is, an intrinsic indirect/catalytic characteristic and can influence radical innovation not limited to regional or national contexts. Nevertheless, a “tendering” procedure and a “public-procurement” one can be useful to be explained as follows.

#### EU Tendering Procedures

The EC Directives distinguish five different procedures for public procurement.

In open procedures, any interested economic operator may submit an offer in response to the publication of the notice placed in the Official Journal of the European Union (OJEU). Contracting authorities must then provide additional information to the interested suppliers at least 6 days before the final date of receipt of offers<sup>7</sup>.

This kind of procedure best suits when Contracting authorities are expecting only a small number of suppliers to answer to the publication of the notice.

In restricted procedure there are two stages: once a notice is placed in the OJEU (TED database), in 37 days, economic operators may request to participate and then, only those selected by the Contracting authority will be invited to submit a tender. The deadline for the receipt of tenders is at least 40 days after sending the invitation. Candidate’s selection is based on objective criteria

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<sup>7</sup> Article 39, Directive 2004/18/EC 31.03.2004

(financial standing, technical capability, etc.). The time limit runs from the date on which the Contract notice was sent in open procedures (52 days), and from the date on which the invitation to offer was sent in restricted procedures (37 days). When a large number of suppliers are available on the market and the services required are very complex, Contract Authorities may prefer to privilege quality in choosing the candidates. Restricted procedure then will be preferred.

Due to urgency, a restricted procedure may be accelerated, substituting for the limit of 37 days a limit of not less than 15 days from the date of despatch of the Contract notice, and 10 days in case the Contracting authority has transmitted the Contract notice by electronic means<sup>8</sup>. Considering that this accelerated restricted procedure may limit competition between candidates, it must be interpreted restrictively, and the existence of objective circumstances must be proved<sup>9</sup>.

Both in open and restricted procedures, the award criteria for tenders are the lowest price and the economically most advantageous, (best value for money) plus several objective criteria such as quality, technical assistance and service, delivery period, etc.<sup>10</sup>

The criteria must be non-discriminatory and non-prejudicial to fair competition.

When the use of open or restricted procedure will not allow the award of the Contract, Contracting Authorities, especially in the case of particularly complex Contracts, may consider the use of the Competitive Dialogue with candidates selected, in order to identify and define the best solution or solutions able to satisfy their needs. During the dialogue, all aspects of the Contract will be discussed, and equality of treatment must be ensured among all candidates<sup>11</sup>. The procedure may take place in more stages: pre-dialogue activities (project set up, planning and preparation), dialogue and post-dialogue phase (submission of final offers and bid evaluation). In the Competitive Dialogue procedure, costs are probably higher than in other negotiated procedures, both for Contracting authorities and for candidates, as they will be asked to participate in several discussions and to submit detailed bids. On the other side, a detailed planning will ensure effective procurement of infrastructure<sup>12</sup>.

In negotiated procedure, Contracting authorities consult the economic operators of their choice and in respect of rules of good administration, negotiate with one or more of them the technical, administrative and financial conditions of the Contract.

The negotiation process is complex and Contracting authorities can use this procedure only in exceptional cases, all listed by Directive 2004/18/EC 31.03.2004, whether the prior publication of a Contract notice is required or not<sup>13</sup>.

According to the Directive 2004/18 above mentioned, Design Contest are those procedures which enable the Contracting Authority to acquire a plan or design selected by a jury after being put out to competition, with or without the award of prizes<sup>14</sup>. These procedures are used mainly in the fields of town and country planning, architecture and engineering or data processing. As expressly provided by the same Directive, the Contr

acting Authority must foresee clear non-discriminatory admission criteria (territorial limitations, limitation to natural or legal persons only). Participants submit their projects to the jury anonymously, and the jury deliberate independently, autonomously, and considering only the criteria foresee in the design contest notice.

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<sup>8</sup> EU Guide v. 2c, March 2012, "The EU Directives on Public Procurement", University of Cambridge, Finance Division Procurement Services, p. 2.

<sup>9</sup> See Articles 38 (4), Directive 2004/18/EC 31.03.2004.

<sup>10</sup> Heijboer Govert & Jan Telgen, 2002. "Choosing the open or the restricted procedure: a big deal or a big deal?" Journal of Public Procurement, vol. 2, issue 2, p. 187-216.

<sup>11</sup> Burnett Michael, EIPASCOPE 2009/2, "Using Competitive Dialogue in EU Public Procurement", ([www.eipa.eu](http://www.eipa.eu)), p. 17-23.

<sup>12</sup> See Michael Burnett, Op. cit.

<sup>13</sup> See Articles 30 and 31, Directive 2004/18/EC 31.03.2004.

<sup>14</sup> Article 1 (11 e), Directive 2004/18/EC 31.03.2004.

## Pre-Commercial Procurement

Pre-Commercial Procurement (PCP) is a particular approach of procuring Research and Development services only, in which risk benefit sharing at market condition is applied, but does not constitute State aid. The PCP process, according to EU Communication 14.12.2007<sup>15</sup> and the Commission Staff Working Document<sup>16</sup> should be organized in three phases (and eventual sub-phases): a solution exploration phase, prototyping, and the original development of a first batch of products validated through field tests.

The aim is to help public authorities to improve quality and efficiency of public services, and to use research results to obtain better value for money more quickly, by converting them into new products and jobs.

Some examples of on-going EC funded PCP projects doing joint cross-border PCP procurements are: SILVER (Robotics solutions for elderly care), CHARM (Traffic management), V-CON (Virtual Construction / Modelling of Roads), SMART@FIRE (Integrated ICTs for Smart Personal Protective Equipment for Fire Fighters and First Responders), DECIPHER (applications based on Distributed EC Individual Personal Health Records), PRACE 3IP (high energy efficient high performance computing). New PCP projects recently started in 2013: C4E (Cloud computing), ENIGMA (lighting solutions for cities), 5 more projects to start soon in e-health, e-learning and digital preservation. For more information about EU funded cross border PCP projects:

[http://cordis.europa.eu/fp7/ict/pcp/projects\\_en.html](http://cordis.europa.eu/fp7/ict/pcp/projects_en.html)

Examples of Pre-commercial Procurement done by procurers in countries around Europe without EU support: see [http://cordis.europa.eu/fp7/ict/pcp/msinitatives\\_en.html](http://cordis.europa.eu/fp7/ict/pcp/msinitatives_en.html)

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<sup>15</sup> Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, COM (2007) 799 final, "Pre-commercial Procurement: Driving innovation to ensure sustainable high quality public services in Europe".

<sup>16</sup> Commission Staff Working Document, SEC (2007) 1668, "Example of a possible approach for procuring R&D services applying risk-benefit sharing at market conditions, i.e. pre-commercial procurement".



### 3.1.3. STRUCTURAL FUNDS

#### PREAMBLE

Research activities require the involvement of researchers first but also the performing and funding organizations. This is what usually is referred as the complex interaction between research spaces and research fields (Nedeva 2013) which in turn requires a difficult matching of timescales (as an example very different for building infrastructures or running projects) and instruments for funding (to guarantee sustainable long-term objectives).

In this context, to increase the impact and efficiency of funding, synergies between different programmes and instruments is encouraged and recently a large emphasis has been devoted to a common strategic framework for structural funds to be aligned/synchronized with Horizon 2020 (see the Specific Programme and Rules of Participation, in particular the articles on Widening Participation, co-funding, Access to risk finance).

Structural Funds address a large budget in the European Union and largely not homogeneously distributed geographically. Part of this budget can be considered as focused on research. The activities for their spending differ between European regions which can have different priorities. We have indeed to distinguish between the strategic synergies and the synchronization of national, regional, European funds and the synergies or better the coordination between Member States or regions (trans-national cooperation). In fact, access to Structural Funds does not imply trans-national cooperation while most of the other EU research funding programmes require.

Regions are considered the engines of innovation and despite few examples of instruments/initiatives to coordinate the regional research funds, the prioritization and allocation of funds at regional level could not involve a European context and are mainly absent from the coordination of national research programmes (see figure 3.1.3.1). The Smart Specialization process is a huge step forward the aim of strategically frame the regional programming at EU level, but it is in a early stage of implementation and will probably need time to be developed everywhere successfully.

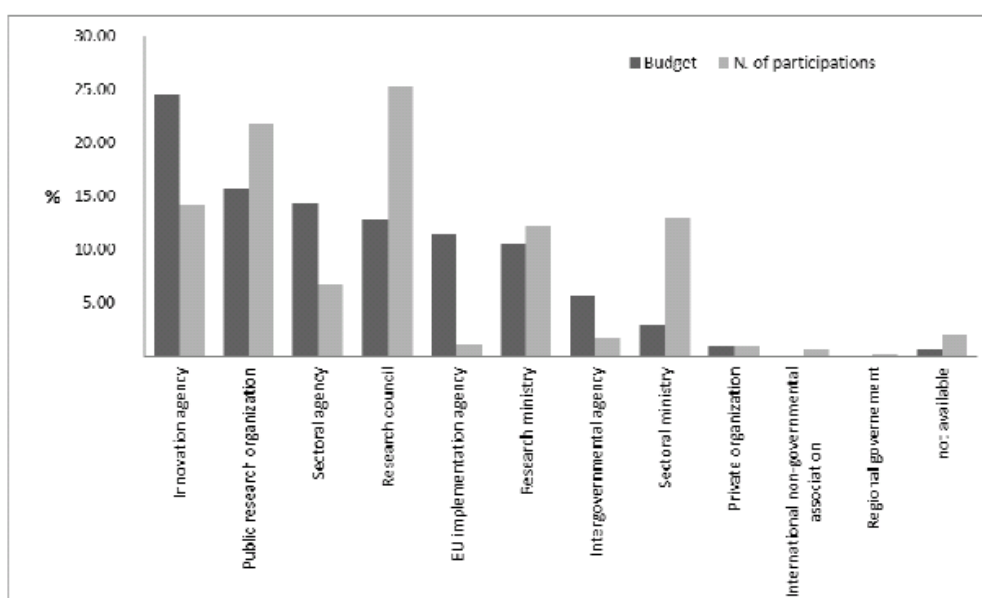


Figure 3.1.3.1: Participation to European joint programmes (from 200 to 2009) by types of agencies (number and volume of funding) indicates that regional agencies play only a marginal role. Courtesy of the JOEP project.

This section will therefore address the issue of the use of Structural Funds for synergies and strategic alignment with actions adopted by JPI Oceans, having in mind that the governance of JPI Oceans (terms of reference) does not consider Regions as representatives at the decision Boards or involve them officially in the consultation process.

## STRUCTURAL FUNDS AND R&D

JPI member states, in order to encourage research and innovation, can benefit from a plethora of national and European funds. Studies and reports underline that many key drivers of research and innovation are most effectively addressed at the regional level<sup>17</sup>, due to the geographical proximity, common cultural context that facilitate the creation of partnerships and clusters, the integration of local actors that enhances the acceptance of political strategies. Regional authorities are thus playing a substantial role in defining strategies and managing financial resources, including in R&D. In the JPI Oceans the regions are not structurally involved in terms of participation or dialogue, nor have been included in the JPI Governance structure.

Within EU funds, the Cohesion Policy Instruments represent together, in terms of available budget, the most important funding mechanism for research and innovation at regional level, with an even increasing role. It is estimated that during the financial programming period 2000-2006 around 29.5 billion Euros were spent on research, technological development and innovation, while € 86.5 allocated in the current period 2007-2013, of which € 65 billion from the European Regional Development Fund (ERDF)<sup>18</sup>. In the new financial period 2014-2020, assuming the same ratio between the funds from ERDF and the total for R&I, the amount dedicated at research and innovation is estimated to be within the range of 90-100 billion Euros. This amount is the result of an estimate based on the total allocation for the Cohesion Policy and the required allocation percentage of the European Regional Development Fund budget on measures supporting innovation and R&D, the digital agenda, the competitiveness of SMEs and the shift towards a low carbon economy. The Regulation foreseen different percentages for categories of regions, in details at least 60% of the ERDF budget for Research and Innovation and SMEs (plus at least 20% for energy) for more developed and transition regions, and at least 44% for least developed regions (plus at least 6% for energy).

### Total estimated allocations and ERDF concentration in R&I and SMEs priorities 2014-2010

	<b>Allocations<sup>19</sup> Cohesion policy in billion €</b>	<b>ERDF (max %)</b>	<b>ERDF (max in billion €)</b>	<b>% ERDF to R&amp;I &amp; SMEs</b>	<b>Amount ERDF to R&amp;I &amp; SMEs (in billion €)</b>
<b>More developed Regions</b>	49,3	48%	23,7	60%	14,2
<b>Transition regions</b>	31,5	60%	18,9	60%	11,3

<sup>17</sup> The European Commission considers that "Innovation is most effectively addressed at regional level, as physical proximity fosters the partnerships between actors in both public and private sectors". Commission of the European Communities (2007b), Competitive European Regions through Research and Innovation. A contribution to more growth and more and better jobs.

<sup>18</sup> European Commission, DG employment, social affairs and equal opportunities, DG Regional policy, Cohesion Policy 2007-2013: Research and Innovation.

<sup>19</sup> Updated data as of July 2013.

<b>Less developed regions</b>	163,7	75%	122,8	44%	54
<b>Sub-total</b>	244,5		165,4		80*

\* This amount only refers to the estimated allocations to R&I and SMEs of the ERDF. Cohesion funds dedicated at R&I and SMEs is estimated at approximately 90-100 billion euros.

Table 3.1.3.1: Total estimated allocations and ERDF concentration in R&I and SMEs for the 2014-2020 financial period.

Following the Commission “New Partnership for growth and jobs”, the promotion of research and innovation became a main priority in the Cohesion policy’s for the 2007-2013 period. This includes promoting sustainable development and strengthening competitiveness as essential to concentrate resources on research and innovation, entrepreneurship, information society and training, and focusing the scope of the European Regional Development Fund (ERDF) and of the European Social Fund (ESF) on investment directly relevant to innovation.

The Structural funds finance productive investments in European regions in order to contribute to the harmonious development of the EU by reducing disparities among regions and sustaining regional growth and competitiveness. As the Research and development investments fulfill these objectives, the Structural funds unlock growth potential investing in four key components: Research and Development and innovation; entrepreneurship; ICT take-up and human capital development.

The Structural funds contribute to promote and advance R&D supporting several measures that include: public and private research infrastructures; R&D equipment and instrumentation; establishment of public and private centres and institutions; support of public and private partnership; training of research personnel; support for technology transfer mechanisms, protection and management of intellectually property rights, exploitation and marketing; support to regional research and innovation strategies, including regional foresight and interregional cooperation; development of risk capital market.

In terms of funding instruments, the current Cohesion policy supports the regional and social policy through the European Regional Development Fund, the Cohesion Fund<sup>20</sup>, mainly devoted at financing infrastructures, but not for RTDI, and the European Social Fund, dedicated at human capital. Three are the objectives: Convergence, Regional Competitiveness and Employment, Territorial Cooperation.

<sup>20</sup> The Cohesion Fund is devoted to European countries and regions with Gross National Income (GNI) lower than 90% of the EU average. It finances actions in the field of trans-European transport networks and the environment.

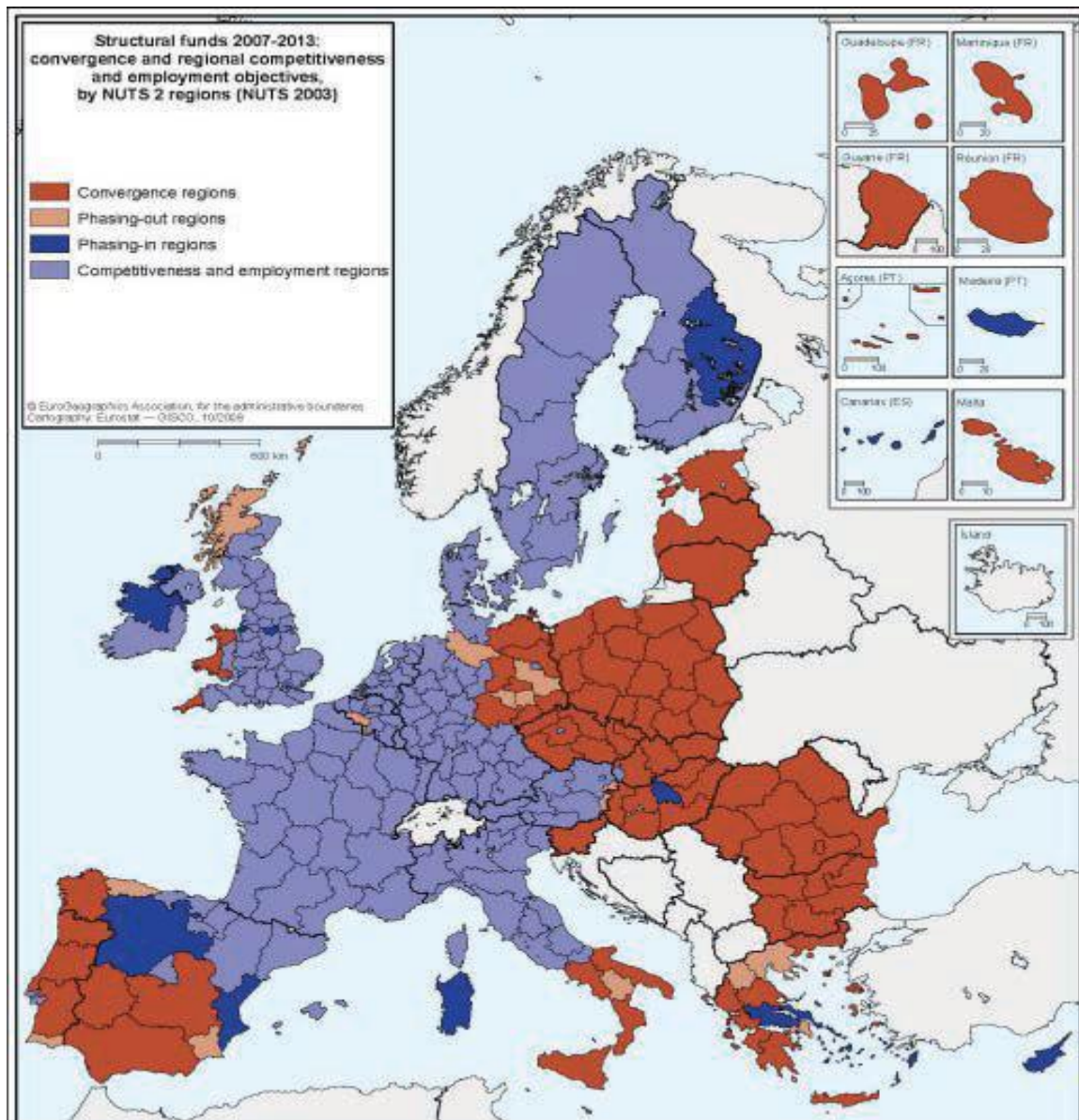


Figure 3.1.3.2: Eligible areas in the Convergence Objective and the Competitiveness and Employment Objective, under the Cohesion Policy 2007-2013. Convergence regions are those having per capita GDP that is less than 75% of the EU average. Phasing-out regions are those that while previously eligible for the Convergence objective, as a consequence of the fallen of the EU average GDP after the enlargement to 12 new member states in 2004 and 2007, were slightly above the 75% threshold. Phasing-in regions are regions formerly having the equivalent status of convergence regions and where GDP exceeds 75% of the EU-15 average.

Focusing on the different funds, the European Regional Development Fund, aiming at strengthening economic and social cohesion of EU regions by correcting imbalances between them and intervening in the three objectives of the regional policy, finances infrastructures to research and innovation as well as technical assistance measures. Going into the details of each objective, under the convergence objective the ERDF concentrates on modernizing and diversifying economic structures, safeguarding and creating sustainable jobs in the Research and technological development. Under the Regional competitiveness and employment objective the fund supports initiatives aimed at strengthening regional capacities for research and technological development. Finally, within the

European Territorial Cooperation objective the ERDF focuses on the development of economic and social cross-border activities, the establishment of transnational cooperation, including bilateral cooperation between maritime regions, and increasing the efficiency of regional policy through interregional promotion and cooperation, networking and exchange of experiences.

The European Social Fund aims at strengthening competitiveness and employment by helping countries and regions to adapt the workforce, their enterprises and entrepreneurs with a view to improving the anticipation and positive management of economic change through innovation and promotion of the knowledge society, and investing in human resources.

In order to define the expenditure and allocations to research, technological development and innovation, the DG Regio considers, for the period 2007-2013 the following expenditure categories<sup>21</sup>:

- R&TD activities in research centres
- R&TD infrastructure and centres of competence in a specific technology
- Technology transfer and improvement of cooperation networks
- Assistance to R&TD, particularly in SMEs (including access to R&TD services in research centres)
- Investment in firms directly linked to research and innovation
- Other measures to stimulate research and innovation and entrepreneurship in SMEs
- Information and communication technologies
- Information and communication technologies (TEN-ICT)
- Services and applications for citizens (e-health, e-government)
- Services and applications for SMEs (e-commerce, education and training, networking, etc.)
- Other measures for improving access to and efficient use of ICTs by SMEs
- Developing human potential in the field of research and innovation, in particular through post-graduate
- studies and training of researchers, and networking activities between universities, research centres and businesses

Plus “Support to firms and other investments not directly relating to RTDI”, following under the categories of:

- Advanced support services for firms and groups of firms
- Other investment in firms<sup>22</sup>.

The statistics on the EU Cohesion policy instruments dedicated to research and innovation projects, including the mainstreaming of innovative actions and experimentation, account a total budget of 86.5 billion Euros, corresponding to almost 25% of total EU investments in R&D. In details, 50.5 billion Euros (almost 60% of the abovementioned budget) is devoted to Research and Development and innovation in the strict sense, including € 10.2 billion to RTD infrastructures and centres of competence, € 9 billion for investments in companies directly linked to research, € 5.8 for RTD activities in research centres, € 5.7 billion for assistance in RTD, in particular in SMEs, € 5.6 billion for technology transfer and the networks cooperation, € 4.9 billion in developing human capital in the R&D field, € 2.6 billion to assist SMEs in promoting environmentally-friendly products and processes. The remaining amount is dedicated to human capital (€ 14.5 billion), including training and services,

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<sup>21</sup> The categories used in the financial period 2000-2006 were different, but comparable to the ones adopted in the current period.

<sup>22</sup> Other studies consider different categories, not including in particular categories related to the general diffusion of ICT's and other generic ICT support. See Cohesion Policy and Regional Research and Innovation Potential, An analysis of the effects of Structural Funds support for Research, Technological Development and Innovation 2000-2010.



life-long learning systems and strategies, design and dissemination of innovative and productive ways of organizing work; information and communication technologies (€ 13.2 billion), in particular to advance services and applications for citizens like e-government, e-health, e-inclusion, and for SMEs, like e-commerce, education and training, networking; to entrepreneurship (€ 8.3 billion), mainly for advanced support services for firms and self-employment and business start-ups. More than €2 billion or 27% of the total available budget for territorial cooperation go into research and innovation related activities.

Regarding the objective of the EU cohesion policy, the Convergence objective counts for the highest budget for the seven years period (€ 281.3 billion) of which 21.8% represents the innovation percentage (€ 61.4 billion); the objective Regional competitiveness and employment counts for € 55 billion with an innovation percentage of 39.6% (€ 21.8 billion); the European Territorial Cooperation objective counts € 7.8 billion with 26.5% of innovation (€ 2 billion). Considering the four spending categories (RTDI, entrepreneurship, Innovative ICT and human capital) and going into the details of each innovation percentage, RTDI represents the 20,6% of the Innovation percentage within the Regional competitiveness objective, the 52,1% compared to the total amount dedicated to innovation under this objective; the 15,9% within the Territorial cooperation, corresponding to 60.2% of the total amount under this objective; and the 13,2% within the Convergence objective, or the 60.3% of the amount devoted to innovation.

In order to analyse more specifically the available data, a distinction between R&D and innovation is reported in many studies and reports. This distinction is based on the definition adopted in the OECD Oslo Manual, that includes in innovation activities all scientific, technological, organizational, financial and commercial steps leading or intended to lead, to the implementation of innovations<sup>23</sup>. To differentiate R&D from innovation the latter comprises a number of activities not included in R&D, such as later phases of development for preproduction, production and distribution, development activities with a lesser degree of novelty, support activities such as training and market preparation, and development and implementation activities for innovation, i.e. new marketing methods or new organizational methods. As a consequence the interventions are differentiated following the concept of “core RTDI” and “business innovation”, focusing the latter on indirect support measures.

Following this classification, in the current financial period 2007-2013 “core RTDI” includes, as fields of intervention, R&TD activities in research centres; R&TD infrastructure and centres of competence in a specific technology; technology transfer and improvement of cooperation networks; assistance to R&TD, particularly in SMEs (including access to R&TD services in research centres); developing human potential in the field of research and innovation, in particular through postgraduate studies. “Business innovation” includes: advanced support services for firms and groups of firms; assistance to SMEs for the promotion of environmentally-friendly products and production processes; investment in firms directly linked to research and innovation; other investment in firms; other measures to stimulate research and innovation and entrepreneurship in SMEs; services and applications for SMEs (e-commerce, education and training, networking, etc.).

Each of the “core RTDI” categories represents about 2% of total Structural funds allocations for 2007-2013 period, with the exception of R&TD infrastructures and centres of competence in a specific technology, that accounts for 3%. Comparing the data with the financial period 2000-2006, technology transfer and improvement cooperation networks show the same percentage share of total Structural Funds but its absolute amount increased from 3.2 billion Euros to € 5.5. The relative and absolute allocations to R&TD infrastructures increased from 2% to 3% and from € 2.8 billion to € 9.6 billion in 2007-2013.

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<sup>23</sup> OECD 2005.



Considering the allocation among the thematic categories, the main category is R&TD infrastructure and centres of competence in a specific technology, with 31% of total allocations to “core RTDI”, followed by R&TD activities in research centres and assistance to R&TD particularly in SMEs (both with 18% each), technology transfer and improvement of cooperation networks (17%), and developing the human potential in the field of research and innovation in particular through post-graduate studies (16%). The allocation distributions within priorities do not differ from 2000-2006 period, with the only exception of R&TD infrastructure.

Focusing on the Structural Funds budget allocation to “business innovation”, in the 2007-2013 it has doubled compared to the 2000-2006 period, to reach the 11% of the total Structural Funds budget in the current period<sup>24</sup>. The leading priorities are other investments in firms, with 36% of all allocations; investment in firms directly linked to research and innovation with 23%, and other measure to stimulate research and innovation and entrepreneurship in SMEs with 16%. These data represent the increasing attention of EU funding to support SMEs, their competitiveness and innovation.

Since the financial period 2000-2006 Structural Funds, notably the European Regional Development Fund, have become a key instrument for fostering and supporting research, technological development and innovation in Europe. This is confirmed by the considerable growth of Structural Funds spending between the current and previous period. As already reported, in the period 2000-2006 5% of total Structural funds expenditures were invested for research, technological development and innovation, of which one third was put in the “core RTDI” measures, mainly technology transfer, RTDI infrastructures and research projects, while two thirds were invested in initiatives supporting business innovation. In the current financial period 2007-2013 the percentage of Structural funds expenditures dedicated to RTDI measures consistently increased, with most significant shift between the previous period occurred in terms of allocation in RTD infrastructures.

A key difference in terms of strategic orientations in the allocations for the 2007-2013 period, compared to the 2000-2006 period, is the greater thematic differentiation. Indeed reports show a more balanced distribution between different fields of expenditures in the 2007-2013 period. The analysis of regional Structural funds expenditures and allocations at the level of individual fields of expenditures reveals differing importance given to categories of expenditures by different regions. For instance in the current period regions in France, Finland, Belgium, Luxembourg, Poland, Slovakia, the Czech Republic and Lithuania focus mainly on the R&TD infrastructures, while regions in the Netherlands and Portugal focused on technology transfer. Regions in Romania, Hungary and Greece focused the most on human potential in the field of research and innovation, whereas assistance to R&TD for SMEs was the main priority for regions in Spain, Bulgaria and Austria. Similarly different approaches exist in various areas of business innovation funding. In general, the evidence suggests that while Convergence regions<sup>25</sup> tend to use Structural funds support as a comprehensive funding source encompassing research, innovation and entrepreneurship policies, the Competitiveness regions tend to focus relatively more on targeted support to business innovation.

Such trends in addressing and devoting Structural funds for research and technological development reflect an increasing differentiation in strategies and approaches to the use of Cohesion Policy Instruments by regions. In adopting distinct paths in spending the Cohesion policy financial resources, regions adapt the available instruments and their thematic scope to their specific need and existing regional and national policy combination. As a decentralized EU instrument, the Cohesion policy mechanisms allow countries and regions to direct the financial support according to

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<sup>24</sup> OECD data. DG Region official statistics uses a broader concept of RTDI activities.

<sup>25</sup> Convergence regions are the regions having per capita gross domestic product (GDP) less than 75% of the average GDP of the EU. For a detailed list of regions eligible for funding from the Structural Funds under the Convergence objective see [ec.europa.eu/regional\\_policy](http://ec.europa.eu/regional_policy).

their political and strategic objectives. Focusing on the macro level, the Cohesion policy mechanisms are fundamental instrument to foster competitiveness, cohesion and research excellence. A significant share of structural funds spending has increasingly been devoted to research policies and initiatives, notably research infrastructures and funding research projects.

The effects of the Cohesion policy instruments on improving research and innovation performance go beyond the question of the patterns of direct expenditure on research and development and innovation projects, implying an analysis of the connections between RTDI expenditure and regional socio-economic performance. Oughton, Landabaso and Morgan analysed the so called “regional innovation paradox”, namely the “apparent contradiction between the comparatively greater need to spend on innovation in lagging regions and their relatively lower capacity to absorb public funds earmarked for the promotion of innovation and to invest in innovation relative activities, compared to more advanced regions”<sup>26</sup>. The authors based their conclusions on an empirical analysis revealing strong complementarities among business, education and government spending on research and development, and technology/innovation policy and industrial policies tending to move in opposite directions. In order to solve this paradox they suggest in particular to adopt: policies able to increase the innovation capacity of regions by working both on the demand and the supply side of the system to increase private and public sectors investments in innovation; policies that integrate technology and industrial policies by fostering expenditure on innovation activity within mainstream industrial policy programmes.

Regarding the innovation, the Barca Report<sup>27</sup> considers that innovation is a core priority within “a place-based” approach to EU cohesion. The report indeed advocates for “a place-based” interventions, as complementary measures to develop the European Research Area, by selecting in each region a limited number of sectors in which innovation can most readily occur and a knowledge base built up, in line with the “smart specialization” concept.

## **INTERREG IVC**

Within the territorial cooperation objective, the INTERREG IVC programme pays particular attention to research and innovation<sup>28</sup>. Financed through the European Regional Development Fund, it aims at improving the effectiveness of regional policies and instruments while contributing to competitiveness and economic growth and modernisation. With an ERDF budget of 321 million Euros for the whole period 2007-2013, 55% of it is allocated to “innovation and knowledge economy”<sup>29</sup>, being one of the two priorities of the programme<sup>30</sup>. The programme focuses in particular on fostering innovation, research and technological development by supporting research and innovation infrastructures, supporting activities and actors involved in the abovementioned fields, increasing the proactive interaction in the knowledge-businesses-public sector triangle, boost eco-innovation and the use and uptake of environmental friendly technologies and approaches, in particular the green public procurement, improving the capacity of regions in terms of research and innovation, helping to promptly bringing innovative ideas to the market, helping to restructure

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<sup>26</sup> C. Oughton, M. Landabaso, K. Morgan, The Regional Innovation Paradox: Innovation Policy and Industrial Policy, in The Journal of Technology Transfer, January 2002, Volume 27, Number 1.

<sup>27</sup> The European Commission invited the Italian economist Fabrizio Barca to realise, in collaboration with academic professors and experts, an independent analysis of the European Cohesion policy. The Barca report was published on April 2009. The public consultation started in 2007 after the publication of the Fourth report on social, economic and territorial cohesion, represent the starting point for discussing the future of the Cohesion policy. See also European Commission, Fifth Report on Social, Economic and Territorial Cohesion,

<sup>28</sup> The programme follows the INTERREG IIC programme that ran for the period 2002-2006.

<sup>29</sup> 39% are allocated to the second priority, environment and risk prevention, while 6% are devoted to technical assistance.

<sup>30</sup> The second priority focuses on environment and risk prevention.

regions highly dependent on traditional industries. Furthermore the programme supports information society initiatives, entrepreneurship and SMEs, employment and human capital, including the improvement of qualifications for innovation, capacity building and knowledge transfer. With the overall goal of supporting regional and local authorities to improve their policies, methods and capacities in terms of innovation and knowledge economy, the programme finances exchange of experiences projects. The INTERREG IVC finances two types projects: Regional Initiative Projects, where partners collaborate and jointly work to exchange experiences in policies fields of interest; Capitalisation Projects in which partners transfer good practices into mainstream programmes, this requiring the development of action plans and the involvement of relevant policy makers.

During the current financial period four call for proposals have been organised. Of 204 projects, 119 fell in the priority innovation and knowledge economy, representing the 58% of the total projects. Concerning the sub-themes, more than 37% focused on innovation, research and technological development, more than 44% to entrepreneurship and SMEs, 20% to information society and around 18% to employment, human capital and education.

## THE COHESION POLICY AND STRUCTURAL FUNDS FOR THE 2014-2020 PERIOD

The DG Region statistics relating to the current financial period (2007-2013), show that the whole amount provided by the EU Cohesion policy instruments to Research and Development and Innovation, tripled compared to the previous period, represents the major EU financial contribution to this area, exceeding the budget of the 7<sup>th</sup> Framework Programme and of the Competitiveness and Innovation Programme (CIP). In the forthcoming financial period this amount will be further increased and “rationalized” under the general perspective of delivering the Europe 2020 strategy objective of smart, sustainable and inclusive growth.

In the Multiannual Financial Framework 2014-2020 a total budget of more than € 322 billion<sup>31</sup> will be devoted to Structural funds instruments, with around 254 concentrated in the ERDF. The allocation for research and technological development is required to be in more developed regions and transition regions at least 60% for the priorities Research and Innovation and SMEs, while in less developed regions at least 44%.

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<sup>31</sup> The Total Cohesion policy counts for 376 billion Euros, including the European Territorial Cooperation (€ 11.7 billion), the Cohesion Fund (€ 68 billion), Connecting EU Facility (€ 40 billion), the European Social Fund (€ 84 billion).

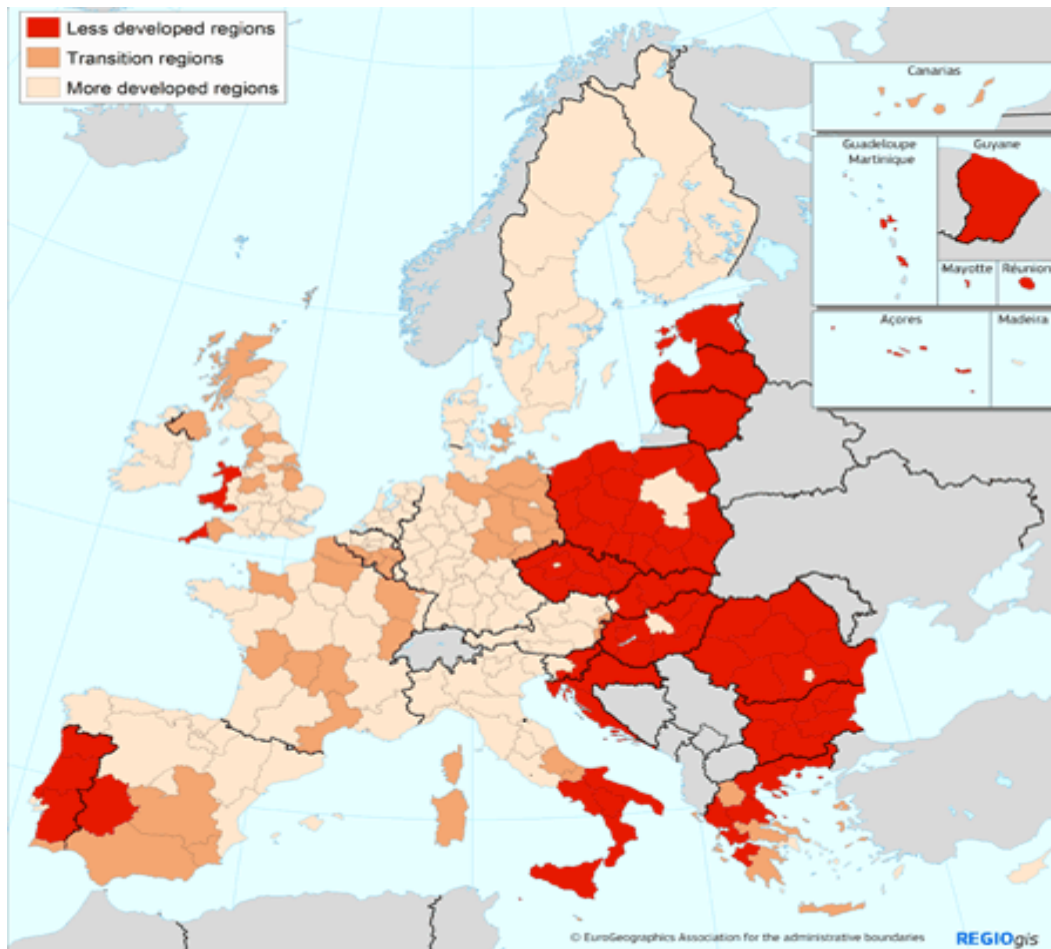


Figure 3.1.3.3: Classification of regions for the ERDF and the ESF for the period 2014-2020. The regions are classified in three categories: Less developed regions, with GDP per capita less than 75% of the EU average; Transition regions, with GDP per capita between 75% and 90% of the EU average; More developed regions with GDP per capita above 90% of the EU average.

On the basis of the European Commission proposal for the Multiannual Financial Framework 2014-2020<sup>32</sup>, the new Cohesion policy and structural instruments focused on the concepts of simplification of policy delivery, maximisation of results and synergies, and increased use of conditionality<sup>33</sup>. The Commission focuses on linking allocation of funds to the Europe 2020 objectives, concentrating resources from the structural funds and national budgets on a small number of thematic priorities and moving to a more results-oriented approach. In particular, the ERDF investments will concentrate on research and innovation, energy efficiency and renewable energy, competitiveness of SMEs.

In the definition of the common provisions regulating the Structural funds (ERDF, ESF, the Cohesion Fund, the European Agricultural Fund for Rural Development EAFRD and the European Maritime and Fisheries Fund EMFF<sup>34</sup>) and of the thematic objectives to be supported by each Fund<sup>35</sup>, the

<sup>32</sup> COM(2011)500 final, 29 June 2011.

<sup>33</sup> The European Commission adopted the legislative proposals for cohesion policy for 2014-2020 in October 2011. COM(2011)615 final.

<sup>34</sup> Together referred as "CSF Funds".

<sup>35</sup> The Commission foreseen that the thematic objectives be translated into priorities specific to each CSF Fund and set out in the Fund-specific rules.

Commission identity “strengthening research, technological development and innovation”. This objective has been closely linked to the Europe 2020 target of “improving the conditions for research and development, in particular with the aim of bringing combined public and private investments levels in this sector to 3% of GDP”<sup>36</sup>. In the Innovation Union document of 2010, the Commission recommended a comprehensive European innovation strategy based on the ability to drive innovation in products, services, business and social processes and models, to recover from the economic downturn<sup>37</sup>. In the European Commission proposal the new Cohesion policy will strictly depend on the capability of Member States national and regional authorities to draw up research and innovation strategies for smart specialisation, in order to make Structural Funds more efficient. The smart specialisation strategies, based on “a more effective spending of public resources, concentrated on certain domains of knowledge and expertise”<sup>38</sup>, have been adopted at European level as a mean for increasing the efficiency in research and innovation investments, by integrating at the same time policy and geographic areas. The concept implies the identification of unique characteristics and assets of each country and region, highlighting each region’s competitive advantages, as well as strengthening regional innovation systems, maximising knowledge flows and spreading the benefits of innovation through the region.

The Cohesion policy for the 2014-2020 financial period while strongly focusing on research and innovation as driving force for keeping the EU competitive, chose the Smart specialisation as a pre-condition, also called ex-ante evaluation, for using the European Regional Development Fund to support the innovation investments and activities. This approach reflects the increasing attention on the diversification of the regions, on regional policy as “place-based”, where regional strategies are distinctive and should be founded on exploiting local assets and existing strengths.

This implies that Member States and regions develop strategy “in place”, and in particular identify the knowledge specialisations that best fit their innovation potential, based on their assets and capabilities.

The Commission identifies as key actions for the European Regional Development Fund:

- enhancing capacity-building for research and innovation excellence and technological change, by investing in innovative solutions and research infrastructures and equipment, including supporting for national/regional research facilities and technology centres, through reinforced cooperation with industry to leverage private R&I investments;
- promoting business R&I investments, including the adoption and diffusion of new technologies, through the collaboration with actors in the field of research, education, technology transfer, to help companies develop innovative products, processes and services and diversify the national/regional economy through new high-growth activities;
- supporting capacity building for the swift economic exploitation of new ideas stemming from research and innovation, including support for clusters, cooperative partnership between research, education and innovation actors, business R&I infrastructures, promotion of R&I advisory services.

The major focus on the new Cohesion policy and Structural Funds instruments is therefore to address bottlenecks to innovation and increase investment in research and development, through close collaboration between public and private actors.

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<sup>36</sup> COM(2011) 615 final/2 and SWD(2012) 61 final.

<sup>37</sup> COM(2010) 564 final, Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of Regions, “Europe 2020 Flagship Initiative – Innovation Union”.

<sup>38</sup> OECD.

In line with the principles of simplification and more efficient organisation of funding mechanisms, the new Cohesion policy recommends to strengthen synergies and complementarities with Horizon 2020, avoiding at the same time overlapping between the two instruments. The Common Strategic Framework underline that “In order to strengthen these synergies in practice, it is essential that the smart specialisation strategies be elaborated by national and/or regional managing authorities for Cohesion Policy funds in close collaboration with the authorities responsible for research and innovation most directly concerned by Horizon 2020 and involving stakeholders such as universities and higher education institutions, local industry and social partners”<sup>39</sup>. Following this approach, upstream actions to prepare regional research and innovation actors to participate in Horizon 2020 projects should be developed through capacity building under the CSF Funds, namely the ERDF, while Horizon 2020 is not intended to sustain capacity-building and taking into account the geographic specificities in financing projects. The upstream measures can entail enhancing research and innovation infrastructures and equipment of EU scope but even smaller research facilities of regional interest upgrading into research excellence, the modernisation of universities and research organisations. Downstream actions should offer the necessary means to exploit and promptly diffuse research and innovation results stemming from Horizon 2020 into the market. The CSF Funds can then be used to deploy business services, finance incubators, dedicated networks, and develop projects in universities to support regional SMEs to accede for the first time to EU programmes. At the same time the measure proposed by the Commission under the Horizon 2020 societal challenge “Inclusive Innovative and secure societies”, in particular under the “Closing the innovation divide” are considered to be instrumental in creating synergies with the new Cohesion policy. In the following years the issue of coordinating and introducing effective synergies among different funding sources managed at EU level and at national/regional level will require innovative answers and concrete and effective implementation.

#### JPI OCEANS ROADMAP FOR THE USE OF STRUCTURAL FUNDS FOR MARINE-MARITIME INFRASTRUCTURES

In the Management Board Meeting, held on 20th March in Copenhagen, the goal of combining funds in the next financial period (2014-2020) was discussed. Members were urged to look into the issue at national level, keeping in mind that the regions are preparing the Smart Specialisation Strategies and the negotiation of the programming documents between Member States and DG Regio is now close to be concluded and at the period of the meeting, in progress. Finland agreed with the secretariat to work on preparing suggestions for actions.

#### **Synergies between Structural Funds, Horizon 2020 and Joint Programming Initiatives**

There is definitive need for aligning national and European programming to reach common visions and goals: synergies between Structural Funds (SF), Horizon 2020 and investments at National and Regional levels are crucial to have a positive impact on socio-economic activities. Differences in timing, time scales and planning cycles between the funding Programmes cause non synchronized and vulnerable actions, especially for large scale actions which need a complex business plan.

Human Capacity Building and Infrastructures are fundamental aspects to build the European Research Area and to support the territorial development. Often these two aspects are strongly linked together but suffer different funding challenges. Infrastructures are costly not only in terms of

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<sup>39</sup> The Commission further suggest to use the Smart Specialisation Platform, established by the Commission itself, to support the development of these synergies.



construction but also for maintenance, updating of technologies and refresher courses for personnel. Mobility, training and education for a new generation of operators, researchers and technicians probably cost less than large infrastructure but are necessary for a long-term efficient and innovative use of infrastructures.

Developing the regional Smart Specialization as well as supporting the European dimension of the territories should become mandatory to solve the Grand Challenges. However, many strategies (at project, regional, national, macro-regional and EU level) are proposed but the implementation is not matching the expectations through the different levels.

More coordination and integration is needed at all geographical levels of planning, as also well described in the Ostende Declaration. This way we will be able to avoid overlapping activities (including stakeholder events) and allocate sufficient amount of resources on focused actions and infrastructures, which are in line with the existing strategies.

The vision of JPI Oceans can provide the guidelines toward integration at EU level and the variable geometry approach facilitate cooperation at macro-regional and regional level, especially concerning the development of infrastructures to support an integrated data and information base enabling industrial development and supporting maritime governance.

### **The role of JPI Oceans**

JPI Oceans will define its Strategic Research and Innovation Agenda and will implement actions on a variable geometry. Indeed, it is important to define as soon the strategy to coordinate spending SF and national investments to increase the impact.

To facilitate the coordination and integration, different types of intervention can be developed:

- 1) **dissemination/promotion** to national authorities/regions of the marine&maritime issues and opportunities in order to enhance their knowledge and increase the impact on territory; authorities which are responsible for implementation of Integrated Maritime Policy and Marine Strategy Framework Directive should be also contacted.
- 2) **support/lobby the coordination** of use of structural funds (through the national managing authorities, or to DG Regio for INTERREG programme, or to ERANETs consortia), where the outcome of the projects contributes to the region's individual strategy.
- 3) design dedicated **long-term proposals** to submit to EC/regions to promote coordination, identifying the European added-value and the evident territorial socio-economic impact. The evaluation of the socio-economic impact is a challenge and should be considered carefully to streamline the structural funds to other funding programmes. To date, the only instrument to facilitate the cross-border coordination of spending SF is the INTERREG, which despite funding activities usually not covered by SF, has a defined list of themes for the 7 years period.

If we want to pursue the types of intervention described above, each will require the following actions to support them:

- a) Selection of those infrastructures/actions which show gaps and can take advantage by using SF. Evaluate their feasibility and appealing for regions (gliders could not be so 'visible and appealing' for local authorities in comparison to radars for wave-forecasting, rescue etc.)
- b) Collection and dissemination of best practices and lessons learned related to structural funds, either in terms of their use for marine&maritime issues either in terms of administrative procedures.
- c) Analysis of the indirect socio-economic impact and benefit of relevant infrastructures (i.e. tourism industry, fishery etc.).
- d) Monitoring of information to identify Regions' specialisation in those issues considered close to JPI Oceans objectives.

e) Interacting with the S3 Platform to disseminate proposals from regions or JPIs for commitments to coordinated projects, where Structural Funds can be considered a tile of a coherent mosaic of funding instruments. A sort of “Synergy Grant for Regions” could be launched for proposals to S3+JPI Oceans which take care of dissemination, collection of expression of interests, organizing brokerage events in order to plan, synchronize and monitor the different actions from different regions which can also use SF to support marine infrastructures and activities for those purposes in line with the cohesion policy.

## STRUCTURAL FUNDS AND MARITIME RESEARCH

Focusing on maritime research, the report of the Policy Research Corporation, gives a detailed overview of EU budget spent on maritime-related projects. This analysis is based on the database on EU funded projects in Maritime regions in the financial period 2000-2006 and in the first years of the current programming 2007-2013<sup>40</sup>. Even if the available data are not updated, they can be useful for analyzing the trends in funding the maritime sector and make some conclusions.

The study analyses information on almost 74.000 projects, corresponding to an EU budget of almost 15 billion Euros. In order to classify and monitor the projects it took into consideration the following maritime sectors: Inland navigation, Marine equipment, Maritime services, Maritime works, Navy and coastguard, Offshore supply, Recreational boating, Seaports, Shipbuilding, Shipping, Marine aggregates, Quality of life, Coastal tourism, Cruise tourism, Coastal protection and Fisheries, Inland logistics, Inland waterway tourism, Oceanography. The analysis mapped all funding instrument for the financial period 2000-2006 and the first year of the current period, including EU funds directly managed by the European Commission, and the EU funds managed through national/regional authorities. Relevant for maritime-related project result the following funds: a) Programs directly managed by the EC, namely the Framework Programme for Research, LIFE and LIFE+, TEN-E and TEN-T, Marco Polo, EUSF, Leonardo da Vinci II and Leonardo da Vinci within the Lifelong Learning Programme, CIP-IEE, CIP-ICT-PSP; Grants provided by the DG/JRC/EUROSTAT; b) Funds managed through national or regional authorities, like EBF, ERF, Structural Funds including the Community Initiatives, the Cohesion Fund, ISPA, SAPARD, EARDF and EFF.

The budget spent during the period 2000-2006 on maritime-related projects through the different available funding instruments was 13.1 billion Euros, while in the first year (2007-2008) of the current period the amount was 1.7 billion Euros. A first remark concerns the funds mainly providing resources for maritime-related projects, that are for the main part the funding instruments managed through national or regional authorities. In the financial period 2000-2006 maritime-related project were mainly funded by the Structural Funds (€ 9.054,6 Mil totally), primarily the European Regional Development Fund (4.160,9 Mil Euros), the Financial Instrument for Fisheries Guidance (FIFG) (€ 3.534,8 Mil), followed by the European Social Fund (€ 176 Mil) and the European Agricultural Guidance and Guarantee Fund (EAGGF) (€ 84,6 Mil), with the remaining amount coming from unknown fund (€ 1.098,3 Mil). The abovementioned amount include the budget managed through national/regional authorities as well as Community initiatives, namely Interreg and Urban programmes (amount included in the ERDF), Equal (within the ESF), and Leader + (within the EAGGF). The Cohesion Fund devoted to maritime related projects € 1.903 Mil, while community programmes directly managed by the European Commission provided a total amount of 1.925,4 Mil Euros. In details, the highest amount was financed through the Framework Programmes on Research, mainly

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<sup>40</sup> The study executed by Policy Research Corporation, was conducted on behalf of the European Commission, Directorate General for Maritime Affairs and Fisheries. Policy research Corporation, Final Report “Database on EU funded projects in maritime regions”, Framework contract FISH/2004/04, Specific Contract N.4, December 2009.

the Sixth Framework Programme (€ 953,8 Mil), plus the FP5 (€ 204 Mil), followed by the TEN-T (€ 380,5 Mil), LIFE III programme (€ 280,2 Mil) and TEN-E (54,5 Mil Euros). Regarding the Grants provided by a specific Directorate General of the European Commission, the former Directorate for transport and Energy (DG TREN) acted as a leader, with 106,8 Mil Euros devoted on a total amount of € 128,9 Mil.

The first year (2007-2008) of the current period reveals a similar trend on the distribution among different EU funding instruments of the resources provided to maritime-related projects. Within a total funding of € 1.815,7 billion for maritime-related projects, the Structural Funds and Cohesion Fund provide the greatest amount (€ 1.205,9 Mil). Also in this case the ERDF (including Interreg IV and the Cohesion Fund) plays the leading role, devoting € 910,2 mil, while the ESF accounts for more than 50 mil Euros. The European Fisheries Fund (EFF), replacing in the current period the FIFG and included in the Agricultural, Rural Development and Fisheries policy, devoted € 153 Mil. The Seventh framework programme provided € 162,6 Mil, more than 53% of the total budget of Community programmes addressed to maritime projects. Marco Polo II incremented the budget dedicated to maritime-related projects, providing in one year more than the whole previous period budget (€ 54,4 Mil, compared to 37 Mil of the 2000-2006 period), while the TEN-T still provide a significant amount (€ 53,2 Mil), followed by the Competitiveness and Innovation Programme, Intelligent Energy Europe CIP-IEE with 22 Mil Euros. The other Community programmes dedicating resources to maritime-related project are the TEN-E (€ 7,1 Mil), LIFE+ (€ 3 Mil) and the Lifelong Learning Programme (€ 2,6 Mil). Finally, the DG TREN grants the great majority of the funding (€ 49,6 Mil on a total DG's grants of 74,7 Mil Euros) showing a decreasing role compared to the total DG's contributions (66% instead of the previous 83%), followed by the DG Mare, that by contrast assumes a more relevant role comparing to the previous period (€ 11,6 Mil compared to € 2,3 Mil of 2000-2006 period).

Within the JPI approach of defining, on a variable geometry, the more effective initiatives and interventions, an overview of funding instruments allocation per maritime sector can offer further input for driving JPI decisions. The Structural Funds, including Community Initiatives, as major funding source for maritime-related projects, mainly focus on the sectors of Maritime works, Maritime services, Shipbuilding, Fisheries, Coastal tourism, Inland navigation, Inland logistics, Quality of life and Seaports; while the Cohesion Fund focused on Maritime works, Inland logistics & Seaports (infrastructural works associated with maritime affairs). As far as Community Programmes are concerned, the Framework Programmes on Research address projects on Maritime services, Quality of life & Fisheries; while LIFE III and LIFE+ address environmental projects with a marine component in the Quality of life area. The grants coming directly to the DGs relate, for the DG TREN to transport projects associated with maritime affairs, for the DG ENV to Quality of Life.

At the aggregate level of the total EU budget spent on maritime-related projects in the whole analysed period 2000-2008 of 15 billion Euros, the 62% of it relates to five sectors: Maritime works, Maritime services, Fisheries, Shipbuilding and Quality of Life. In terms of EU budget contribution, Maritime works is the sector receiving 20% of the whole amount (3 billion Euros), followed by Maritime services, Fisheries and Shipbuilding, receiving from 2 to 1.5 billion Euros. But looking at the number of projects the bulk of EU budget goes to Maritime services sector, with more than 25.000 projects, followed by Shipbuilding sector with more than 20.000 projects, Fisheries with around 15.000 projects and Maritime works, with around 4.000 projects, rather small but costly due to the high proportion of infrastructure works.

Considering just the sea basins, the analysis shows that 25% of the budget of almost 10 billion Euros is allocated to Maritime works sector, with a significant part of the budget spent in Coastal tourism, Seaports, Inland logistics, Fisheries, Maritime services, Shipbuilding and Quality of life.

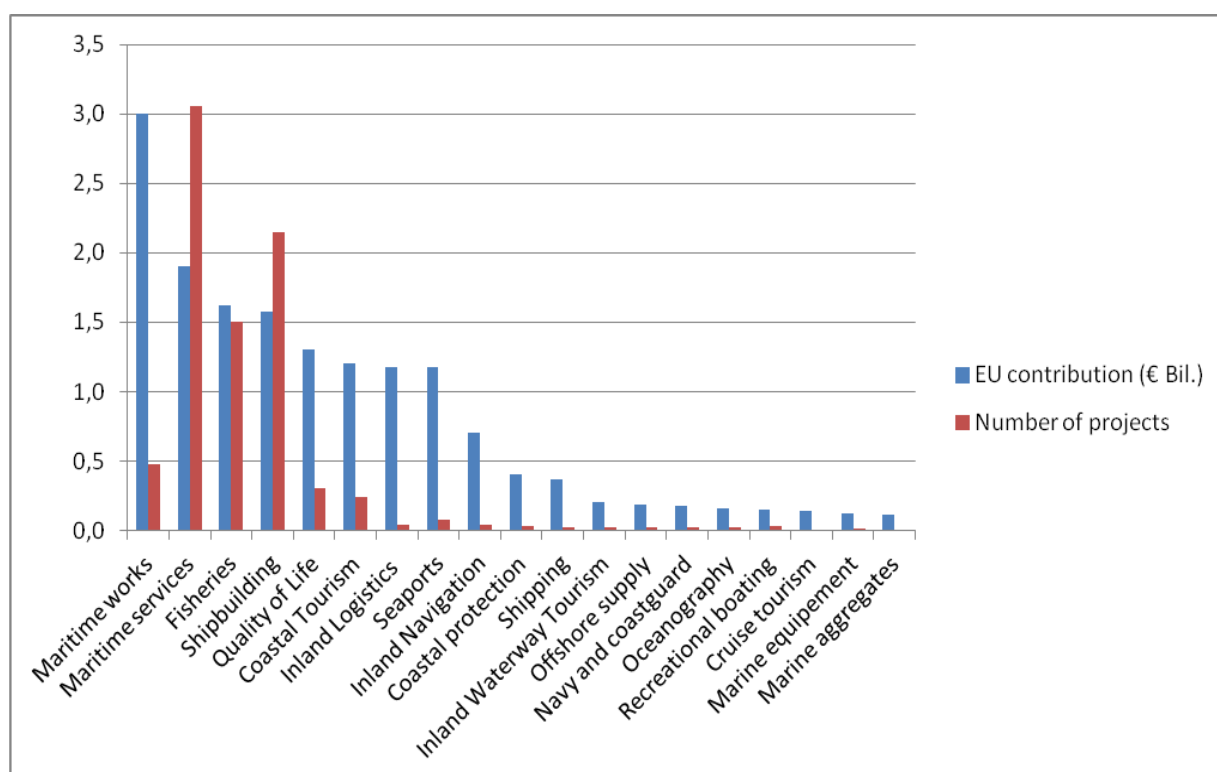


Figure 3.1.1.4: EU budget spent on maritime-related projects by maritime sector in the period 2000-2006 and 2007-2013, considering in the latter the projects approved until the 31<sup>st</sup> December 2008. The graphic includes the scaled number of projects. Source Policy Research Corporation based on database on EU funded projects in maritime regions.

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## 3.2 RESEARCH ALLIANCES

Research Alliances have been often adopted in the past as a framework for cooperation between research performing organizations with common objectives or thematic areas. These forms of cooperation have been mainly developed at bilateral level and usually consist of a general agreement followed by specific operational plans.

In a period of scarcity of resources but also when dealing with actions whose main actors are the performing organization (as an example when sharing or access to infrastructures, staff exchanging, technology transferring), alliances can increase the impact of actions, reduce costs avoiding unnecessary duplications and create critical mass.

In general, a research alliance is a programmatic agreement, that is, a stable process to share and integrate activities to achieve common goals which are, case by case, addressed through specific actions. The activities can require funding but it is usually dedicated to support researchers or managers for their travel costs, meetings and limited research equipment. That is, any larger investment is mainly referred to external funding agencies, using the alliance itself as a added value to build a competitive consortium to participate to open calls for proposals. Many alliances are present in the European scenario and mostly based at bilateral level.

One of the well organized and functioning multilateral European Research Alliances can be identified in the European Energy Research Alliance (see annex 1): we address its Joint Programmes as templates for multi-lateral operative actions tailored to tackle the JPI Oceans objectives. A structuring of the interaction between the JPI Oceans and the Research Alliance could be adopted as described in figure 3.2.1.

The ultimate goal is to build a stable, strategic and programmatic process within RPOs, involving also their high level decision makers, for a continuous “structured” link with JPI Oceans Management board and fast response for the adoption of specific actions. This process implies that the activities are not limited to the collaboration between researchers for specific deliverables but to an alignment of RPO’s programmes and a multi-national knowledge-based support to policy.

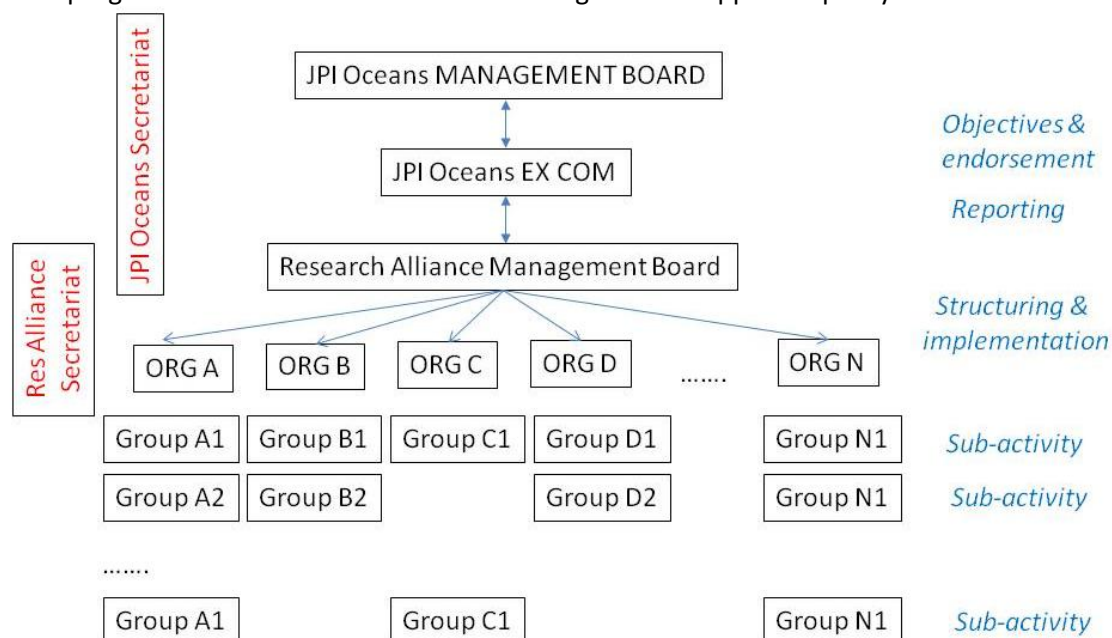


Figure 3.2.1: A sketch of the interaction within the Research Alliance and with JPI Oceans’ Boards. Objectives and endorsement for the Alliance are provided and suggested by JPI Oceans. The Parties of the Alliance organize and implement joint activities. Support, reporting and discussion with JPI Oceans are facilitated through the Secretariats.



## 4. CONNECTIVITY

This section analyses the types of actions having as an underlying screenplay that of creating connectivity: Networks of Excellence, Knowledge Hubs and bilateral agreements. At the level of their governance and structuring, they mainly involve researchers, researchers and funding organizations, decision-makers (at level of research or policy) respectively.

The main characteristic of these actions is indeed the underneath principle of increasing relations and creating networks among the actors. While adopting different procedures for their implementation, they are driven by the common purpose of bringing together the excellence, and create connections among stakeholders. They can have a long-term objective of, for instance, developing a common research or common solutions on a specific issue, but in some cases they are not specifically intended to directly generate projects or products. Having different procedures and goals, they aim at combining and integrating research capacities of participants, achieving a critical mass of resources and expertise, reducing the fragmentation of research and moving towards consistency between research activities.

As instruments for improving collaboration and setting up relations, the bilateral agreements at first, and then the network of excellence, are those practices and schemes of collaboration that are traditionally and commonly adopted. The former at the level of research funding or performing organizations, the latter more often at the level of research groups. The Network of Excellence, mainly characterised by a bottom-up approach, seems to be less effective in creating durable integration and institutionalised partnership.

Moreover, since bilateral agreements are mostly independent each other but often similar in their objectives or activities, the lack of coordination among countries and research organisations does not allow to harmonize the activities themselves, eventually resulting in their duplication.

The Knowledge Hub is a new mechanism, recently introduced by JPIs, with a procedure which mix a bottom-up and top-down approach: they definitely permit the self-organization of researchers to build a network of excellence but selected and focused to address objectives defined by policy needs. For this characteristic of integrated approach, it is first described in this section.

### 4.1 KNOWLEDGE HUBS

#### INTRODUCTION

This analysis is based on Knowledge Hubs (KH) developed in the framework of two Joint Programming Initiatives, Agriculture, Food Security and Climate Change (FACCE) and A Healthy Diet for a Healthy Life (HDHL). FACCE<sup>41</sup> set up the Knowledge Hub MACSUR, Modelling European Agriculture with Climate Change for Food Security, by launching a pilot call on “A detailed climate change risk assessment for European agriculture and food security, in collaboration with international projects”<sup>42</sup>, while HDHL<sup>43</sup> - adopted the Knowledge Hub on the Determinants of Diet

<sup>41</sup> The Joint Programming Initiative on Agriculture, Food Security and Climate Change was launched on October 2010 by the European Council. The FACCE JPI brings together 21 countries. See [www.faccejpi.com](http://www.faccejpi.com).

<sup>42</sup> The call opened on July 2011. The text of the call is available at [www.faccejpi.com](http://www.faccejpi.com).

<sup>43</sup> Council of the European Union, 8 June 2010, 10795/10, Draft Council Conclusions on the launching of joint programming initiatives on “Agriculture, food security and climate change”, “Cultural Heritage and Global

and Physical Activity – DEDIPAC. From a purely quantitative perspective, Macsur KH consists of 73 research groups from 17 JPI partners, with a total estimated cost of 15 million euros for 3 years, while DEDIPAC selected 56 applications, involving 160 researchers from 12 participating countries. On the basis of the survey carried out by the JPI to CO WORK<sup>44</sup>, other JPIs have been evaluating and planning knowledge sharing and network activities, including the knowledge hub instrument. Both abovementioned experiences are pretty recent (the FACCE KH call opening on July 2011 and the HDHL KH opening on November 2012) but they represent a preliminary understanding of the Knowledge Hub as a new instrument for improving connectivity and networking.

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## MOTIVATION AND OBJECTIVES

On the basis of the JPI decision flow, the definition of the Strategic Research and Innovation Agenda delineates research priorities and identifies potential joint actions to be implemented on short, medium and long term perspective, including the decision to adopt the knowledge hub among the instruments necessary to attain the JPI's goals.

Following a mix between top down and bottom-up approach, the initiative of setting up a knowledge hubs is based, on the above mentioned experiences, on the idea of defining innovative and best ways to collaborate, in order to boost research excellence to work together, going beyond the competition among teams.

In this context, the knowledge hub is described as an early instrument for the alignment of the national research initiatives, aiming at fostering and increasing the international cooperation, collaboration and communication among excellent researchers and research institutions. The strategic objective is to create a coordinated and visible European network bringing together the major European research groups to join forces and ultimately, to respond in a concerted way to scientific questions defined in the Strategic Research Agenda in order to tackle the challenges addressed by the Joint Programme Initiative and to increase its visibility and impact.

In a wider perspective, the added value of the knowledge hub instrument and its expected impacts can be summarized as follows:

- Increase the scientific and technological excellence;
- Facilitate integrating and transfer of knowledge;
- Establish a critical mass in a given thematic area via networking of excellent researchers with complementary expertise, research facilities sharing, capacity building and training of new researchers as well as novel professional profiles development;
- Make common research efforts and provide financial support over a longer period of time, allowing for more significant results;
- Facilitate data access and data sharing;
- Facilitate proactive studies, sharing standardized and innovative measures in specific disciplines;
- Allowing long lasting and large base research, tools and methods for capitalizing results;
- Enhance communication and visibility at European and international level;
- Deliver knowledge for policy making, anticipate scientific and technological needs and provide efficient scientific support for strategic and political decision-making in the specific field.

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Change: a new challenge for Europe” and “A Healthy Diet for a Healthy Life”. Available at [www.healthydietforhealthylife.eu](http://www.healthydietforhealthylife.eu).

<sup>44</sup> Susanne Meyer, Michael Dinges, Summary Paper for the Workshop on Funding Modalities and Peer Review for Joint Programming Initiatives, Vienna, 14-15 March 2013.

This last aspect is the “product” of the HB, that is, they usually have a specific deliverable to provide.

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## STRUCTURE AND SELECTION PROCEDURE

### PARTICIPANTS

The knowledge hub is a network consisting of selected research groups and their scientists from JPI member countries within a defined area of research. This instrument is developed to contribute to optimizing research outcomes by facilitating the exchange of information among the actors, creating critical mass and avoiding duplications. Each participating country is responsible for deciding which of its national scientists are eligible to join the knowledge hub and the funding it makes available to its selected members. Based on a selection process, the knowledge hub instrument aim at producing a well-balanced network of members providing all the expertise required to reach the defined goals.

Participants in the Knowledge Hub are research groups, represented by their respective organizations. Within the Knowledge Hub, one or several research organizations form each country participating in the KH call may join, while from each research organization one or more research groups may participate in the KH. Each research group is subjected to the rules and regulations of its respective national funding organization.

Key elements the research groups shall meet are the “excellence” and “capacity building” criteria. In details, it is required that research groups represent the very best expertise in the thematic area in question (“excellence”) and have full institutional support by their organizations to enter in the thematic field, in order to develop skills and participate in an international cooperation (“capacity building”).

The peculiarity of the knowledge hub instrument is the association of three complementary dimensions: research, networking and capacity building. For participating research groups, the hub in particular supports:

- **research:** to perform excellent joint research in order to respond to questions arising from the JPI Strategic Research Agenda;
- **networking:** to build a progressive long-lasting network in order to increase and facilitate transnational cooperation and coordination between excellent researcher, researchers’ groups and research organisations;
- **capacity building:** to prove the opportunity to develop research capacity, to join learning and training activities (e.g. mobility) and share research infrastructures.

The hub allows in particular researcher to join forces, to collaborate and to share expertise, results and data, infrastructures and develop research capacity. The network of researcher groups, once selected, is entitled to develop a joint research plan and to carry out joint integrating and multilateral activities. An initial pivotal task for the KH members is indeed to develop a programme of activities, including educational, training, research and integrating activities.

### GOVERNANCE AND MANAGEMENT STRUCTURE

The procedure for establishing a Knowledge Hub is based on the call for proposals formula. The bodies usually involved in this process are the following:

**a) Secretariat/Call Office<sup>45</sup>**

Responsible for the implementation of the call/invitation to participate, is in charge of managing and administrating the call procedure (proposal submission, delivery call documents, evaluation, selection, etc.) under the supervision of the Steering Committee and the support of the National Contact Points at national level. It also acts as primary contact point for interested research groups for general information on the call.

**b) Steering Committee**

Composed of representatives of funding organisations<sup>46</sup>, is responsible for making the final funding recommendation to the national/regional funding organisations on the full proposal and participating research groups to be funded (on the basis of the assessment and final conclusions of the Evaluation Panel/Evaluation Committee); making all decisions concerning the call procedures and their implementation.

**c) Evaluation Committee/Evaluation Panel**

Consisting of internationally recognized experts in the thematic area of the call<sup>47</sup>, as well as in networking and/or management issues, it is in charge of the evaluation process, with the support of the Secretariat/Call Office and under the supervision of the Steering Committee.

## SUBMISSION AND SELECTION PROCEDURE

Based on the topic and/or core themes identified in the Strategic Research Agenda, research groups are invited to participate in the Knowledge Hub through a specific call for proposal, published on the web-site of the JPI. The procedure foreseen two stages: at first, submission of letter of Intent/Expression of Interest by research groups; secondly, submission of one Knowledge Hub full proposal by eligible research groups selected and invited to participate and to work together to submit one proposal.

In the **first stage**, research groups are asked to express their interest in joining the Knowledge Hub by submitting a Letter of Intent (LoI) or an Expression of Interest (EoI)<sup>48</sup> to the call office or secretariat, via an online submission system. In this documents, research groups shall underline their competence, their contribution to JPI goals and their potential activities in the hub in terms of research excellence and capacity building, but also their potential readiness to take the responsibility as coordinator of the Hub or of specific sub-themes or thematic areas, when foreseen.

The selection of research groups and their appointment to become member of the Knowledge hub is based on a national selection process and should comply with general common selection criteria defined in the call. The national selection process is performed by the respective national funding organisations, while the final list of eligible research groups is then approved and validated by a Steering Committee, composed of representatives of funding organisations, on the basis on national

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<sup>45</sup> The partners of the call agree on the organization acting as secretariat. In the FACCE KH the Call Office was set up at the Research Centre Juelich/Project Management Group (JULICH), Germany, while in the HDHL KH Joint Action Secretariat was set up at the Project Management Agency in the German Aerospace Centre (PT-DLR).

<sup>46</sup> In the two experiences analyzed the number of representatives of funding organizations foreseen is maximum 2 per country.

<sup>47</sup> Under the DEDIPAC KH the members of the Evaluation Panel are at first proposed by the funding organizations of each member state of the KH, (maximum 3 experts per member state) then voted and nominated by the Steering Committee (5 or 7). Funding organizations are entitled to send representatives to panel meetings as observers of the evaluation process.

<sup>48</sup> Examples of Letter of Intent and Expression of Interest are available at [www.submission-faccejpi.com](http://www.submission-faccejpi.com) and [www.healthydietforhealthylife.eu/JointAction1](http://www.healthydietforhealthylife.eu/JointAction1).

evaluation results. The content and the overall quality of the Lol/Eol is checked for the coherence with both the general Knowledge Hub criteria and the specific national eligibility rules.

In the **second stage**, the representatives of eligible research groups are brought together in a “networking meeting”, in order to work on the preparation of the Knowledge Hub full proposal. At this stage, only selected research groups are allowed to apply, by a pre-defined timeline and re-opening of the on-line submission system. Depending on national/regional rules, some applicants can be asked to submit a copy of the proposal and additional information directly to their national funding organization.

The assessment of the full proposal is made on the basis of a peer review process. The full proposal is evaluated by a panel of expert (Evaluation Committee or Evaluation Panel) and selected for funding by the Steering Committee. On the basis of the panel of experts evaluation, the Steering Committee can decide to finance the Knowledge Hub, not finance it or negotiate for changes.

In line with the knowledge hubs approach, in both stages of the evaluation the main selection criteria is the excellence of the research. Criteria for selecting the full proposal are defined in the Call for proposal text or in the annex, while the national rules shall in general comply with excellence and high quality criteria (of planned activities, of running and funded research projects of applicants, etc.), driving the Knowledge Hub approach.

All selected research groups and their corresponding organizations are supposed to finally sign a consortium agreement, regulating at least the governance structure, the decision making processes, duties and responsibilities, intellectual property rights, scientific reporting and monitoring<sup>49</sup>.

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<sup>49</sup> See FACCE Macsur Consortium Agreement, available on web [www.macsur.eu/index.php/downloads](http://www.macsur.eu/index.php/downloads).

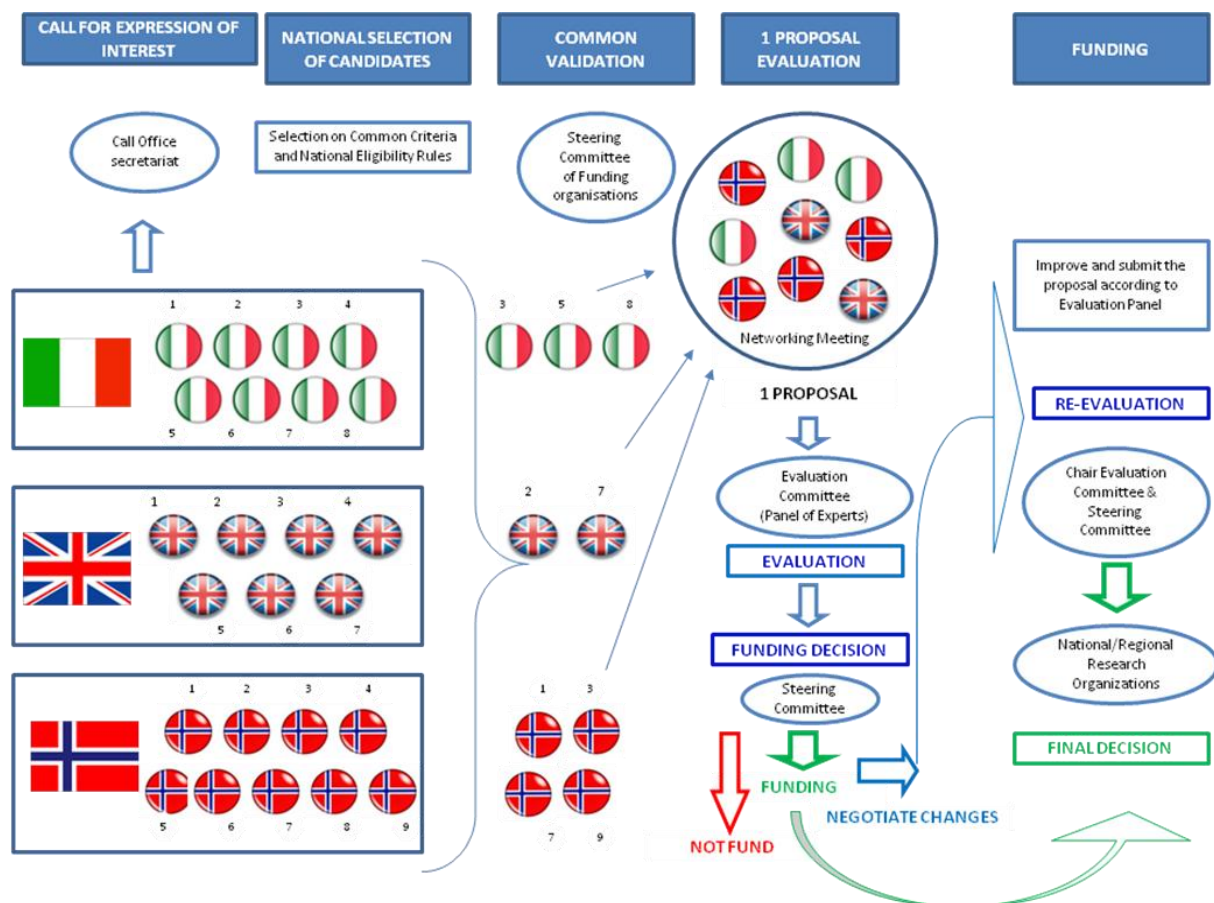


Figure 4.1.1: Sketch of the procedure for the implementation of Knowledge Hubs (as developed by JPI FACCE and JPI HDHL).

## KNOWLEDGE HUB STRUCTURE

The Knowledge Hub governance structure includes:

### a) **Coordinator**<sup>50</sup>

Based in one of the countries participating in the call, it is appointed by Knowledge Hub members<sup>51</sup>, following the criteria identified in the call Annex<sup>52</sup>. It has the overall responsibility and accountability for the knowledge hub general affairs and for providing its scientific and strategic leadership.

### b) **Thematic Areas Coordinators/Leaders**<sup>53</sup>

Organized on the basis of defined sub-themes or work packages, they are responsible for coordinating the activities in each sub-theme/work package, providing inputs and reports to the Coordinator in these areas.

<sup>50</sup> Main Coordinator (MC) in the FACCE KH, Hub Coordinator (HC) in the DEDIPAC KH.

<sup>51</sup> In the DEDIPACH KH the coordinator, to be elected, have to receive more than 50% of all votes, and the results of the election has to be confirmed by the Steering Committee. Annex A JPI HDHL Knowledge Hub call.

<sup>52</sup> Annex A of FACCE KH call and of JPI HDHL Knowledge Hub call.

<sup>53</sup> Theme Coordinators (TC) in the FACCE KH, Thematic Area/Work Package Leaders (TAL/WPLs) in the DEDIPAC KH.



Following this structure, the participants in the Knowledge Hub call are then expected to formulate the overall structure within the Knowledge Hub and between the Coordinator and the Thematic Areas Coordinators/Leaders in their proposal.

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## FUNDING

The commitment of funding is done before the launch of the call.

While the Knowledge Hub proposal is submitted jointly by research groups from different countries, individual research groups and the scheduled research activities of each group are funded by their national funding organizations, according to their own national rules and eligibility criteria, and upfront an initial binding funding commitment. Funding organizations can finance new research activities and/or redirect existing funding/capacities, for instance an in-kind contribution, towards the need of the Knowledge Hub. Each participating country is responsible for defining the nature of funding (in cash funding” or in-kind funding) and the level of funding available to its selected members. Additionally, partners funding organizations taking part in the Knowledge Hub can agree to contribute via virtual common pot model to common “coordination costs”<sup>54</sup>. The nature of funding provided by each funding organization is explained in the “National Requirement” document, attached to KH call<sup>55</sup>.

As national rules apply, eligible costs may vary from country to country, according to the corresponding funding organization’s rules. These costs can include personnel costs, travel expenses, consumables, coordination costs, training and capacity building (seminars, workshops, summer schools, etc.), communication and dissemination costs, indirect costs.

National regulations specifying eligibility and funding rules are included, as annex<sup>56</sup>, in the Knowledge Hub call, together with the details of National Contact Points.

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## CHALLENGES

When comparing Knowledge Hubs with network of excellences or research alliances, they can be particular effective when the topics or objectives are limited and precisely defined in their scope so that the countries and participants is restricted to a small number. In practice, the complexity of the process has to be reduced in order to guarantee efficiency and quality. A high number of possible involved research groups which can be reduced during the national selection will not ensure the level of “excellence” of the consortium achieved at the final stage, reducing the level of possible combinations and undoing the benefits of the competition. The flexibility of KH and the feasibility of the proposal could be improved if in the networking meeting also the funding organizations could participate to the debate, permitting the commitment of funding to be adapted on purpose.

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FACCE JPI Pilot action call for the “FACCE Knowledge Hub” on “A detailed climate change risk assessment for European agriculture and food security, in collaboration with international projects”,

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<sup>54</sup> Both Knowledge hubs, Macsur and DEDIPACH, include this option.

<sup>55</sup> National Requirements, Annex B of FACCE and HDHL KH calls.

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## 4.2 NETWORKS OF PEOPLE

### A “VIRTUAL CENTRE OF EXCELLENCE”

Connectivity and strong relations among research institutes can be sustained by a Network of Excellence. Introduced with the Sixth Framework Programme and currently one of the funding schemes of the Seventh Framework Programme, a Network of Excellence (NoE) is defined as “an instrument for strengthening excellence by tackling the fragmentation of European research”.

The Network of Excellence is intended to build up scientific excellence on a specific research topic through a progressive and durable structuring and integration of the research capacities of participants. Participants are research entities aiming at combining and functionally integrating a considerable part of their activities and capacities in a given field, with a view to creating in this field a European “**virtual centre of research**”. It is required that the Network of Excellence involves research managers at the higher level of responsibility, in order to make the necessary decisions in terms of staff, research policies, equipment to implement the planned activities. Regarding the participants in the Network, “research entities” are intended to include research centres, research and technology organisations, universities, but also enterprises. Other organisations, representing potential users and other stakeholders in the field of research, or organisations having specific competence can also join the Network when their involvement is relevant to achieve the NoE goals.

The suggested means for overcoming the fragmentation of European research are integrating the critical mass of resources and gathering the expertise needed to provide European leadership. The setting up of a virtual centre of excellence is a first answer to the scattering of research capacities and a way for ensuring consistency between research programs and optimisation of human resources.

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## OBJECTIVES AND ACTIVITIES

The goals of the Network of Excellence should be achieved through the adoption and implementation of a Joint Programme of Activities (JPA), consisting of a coherent set of activities that participants jointly undertake, going beyond the cooperation in single projects in terms of range of objectives and of activities, number of researchers involved, intensity and duration of the cooperation. Aiming at combining and integrating the research capacities of NoE participants, the JPA usually contains a variety of integrating activities and how to carry out research on the considered topic; a programme of jointly executed research to support the objectives of the network; a set of activities designed to spread excellence, including training for researchers and key staff. These activities may include exchange of researcher, managers and technicians, opening of positions to researchers from other members of the network and staff mobility; joint use and mutual access to research infrastructures, equipments, materials and data; sharing common research tools and platforms; integrated management of knowledge and intellectual property; coordinated programming and adaptation of participants' activities in research to strengthen their complementarity and develop mutual specialisation; reinforcement of electronic information and communication networks to support interactive working between the teams.

In terms of number of participants and volume of resources, the NoE are expected to have ambitious objectives, especially in providing European leadership, and they should assemble the critical mass of resources and expertise necessary to reach these goals. Nevertheless, this strongly depends on a case by case. As an example, in FP7 the number of participants (research organizations) is suggested to range between three to seven<sup>57</sup>. The enlargement of the initial partnership is usually foreseen and the experience shows the effectiveness of broad Networks<sup>58</sup>. Also in the perspective of achieving a long lasting integration, the duration of a Network of Excellence must be long enough for its Joint Programme of Activities to be significantly advanced, usually up to five-seven years. As a matter of fact, NoE are a sort of what recently is addressed as Research Alliances where research organizations are cooperating to address common objectives and whose researchers work together to develop joint activities.

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## FUNDING

Concerning the financial regime of the Network of Excellence, European Commission financial contribution is based on eligible costs, following maximum rates of reimbursement for different types of activities within the Joint Programme of Activities, and paid according to an assessment of the progressive implementation of the JPA<sup>59</sup>.

Starting from the idea of supporting integration by overcoming organizational and human barriers, the 6<sup>th</sup> Framework Programme introduced a regime for financial support based on three principles:

- fixed amount of grant for integration, to support the joint programme of activities;
- grant to be calculated taking into account the degree of integration proposed in the consortium, the number of researchers to be integrated; the specific characteristics of the research field and the joint programme of activities;
- reimbursement in annual installments, on the basis of the network progress<sup>60</sup>.

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<sup>57</sup> FP7, Guide for Applicants funding scheme Network of Excellence.

<sup>58</sup> See The European Rail Network of Excellence EURNEX.

<sup>59</sup> Maximum 100% of total eligible costs for management of other activities, reimbursement of indirect costs based on a flat rate.

<sup>60</sup> Provisions for Implementing Network of Excellence, background document, available at [http://europa.eu.int/comm/research/fp6/instruments\\_en.html](http://europa.eu.int/comm/research/fp6/instruments_en.html)

Furthermore, the driving principle was to limit the EC support to the starting phase of the NoE while giving the participants the responsibility for their long term management and implementation of activities.

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## NETWORK OF EXCELLENCE IMPACT ASSESSMENT

A study conducted by the Court of Auditors<sup>61</sup>, on the basis of interviews carried out through Network of Excellence participants, shows that NoE were found to be particularly successful by public research centres and universities, while private actors, including small and medium enterprises (SME) considered the collaboration less fruitful<sup>62</sup>. The survey while assessing the extent to which the Networks of Excellence achieved their specific aim of promoting durable integration of research activities among the partners, reports a good success in promoting research collaboration and projects reasonable quality, but a poor achievement of the abovementioned specific objective. A large number of NoE achieved a lasting integration among partners and almost two thirds achieved full restructuring of activities. Nevertheless, the Court considers that most participants allocated a relatively small proportion of their research capacities to the network and only a minority of NoE have moved convincingly towards self sustained integration with prospects for longer-term survival beyond the ending of EU funding. The NoE hardly succeeded in reaching control over resources made available and in ensuring the adequate coordination of project activities. The interviews showed in particular that participants organisations did not accept that the NoE structures decide how networked resources should be used. Furthermore, NoE seem to often put in place traditional forms of research collaboration on individual actions, instead of coherent and long-term joint activities and partnership. The experts finally underline two aspects: the need to introduce a new approach to research collaboration, in order to setting up a new kind of intra-European network; the problem encountered by many actors, in particular Public Research Centres, in integrating among each other due to their institutional structure and budgetary constraints.

As previously mentioned, Network of Excellence can be compared to Research Alliances. Research Alliances introduce a well structured governance involving different levels of responsibilities and competences. This governance, based on voluntary commitment and while maintaining flexibility, allows to create a more complex system which can indeed develop long term strategic interventions and actions and let members rely on a stable partnership.

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<sup>61</sup> European Court of Auditors, “Networks of Excellence” and “Integrated Projects” in Community Research Policy: did they achieve their objectives?, Special Report n. 8, 2009.

<sup>62</sup> Survey conducted by the Court of Auditor. The interviews were conducted on Coordinators and participants of NoE on their perception of project effectiveness in terms of: promotion of high-quality research collaboration between project participants; network of participants; coordinating the strategic planning of the participants’ research activities; transfer of knowledge between participants; promotion of the mobility of research staff between participants.

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Eurnex, European Rail Research Network of Excellence, [www.eurnex.net/](http://www.eurnex.net/)

Nearctis NoE, [www.nearctis.org/](http://www.nearctis.org/)

#### Websites

[http://cordis.europa.eu/fp6/instr\\_noe.htm](http://cordis.europa.eu/fp6/instr_noe.htm)

### 4.3 NETWORK OF BILATERAL AGREEMENTS

#### APPROACH

Member States have long experience in cooperation. This cooperation is related to historical, geographical and economic reasons and has been mainly developed on a bilateral approach. Tackling societal challenges implies a regional/multilateral approach. In defining the geographic scope or operational area, the best approach should be to define the objectives and gals to be achieved jointly with the area to be addressed for the implementation of the activities.

The bilateral approach as developed within the Scientific and Technology (S&T) Agreements is also typically and mainly adopted by the research funding/performing organizations (RFO/RPO).

We mention, just as an example, that Spanish CSIC, German DFG and Italian CNR have S&T Bilateral Agreements which refer to the same 10 organizations from non-EU countries (CONICET-Argentina, CNPq-Brasil, CAS-China, ASRT-Egypt, JSPS-Japan, CNRST-Morocco, CONACYT-Mexico, CONCYTEC-Peru, RAS-Russia, NSC-Taiwan). Many others between organizations from EU Countries.

Though most of the objectives of the agreements can be considered of common interest for more than two partners, the actions related to these S&T Bilateral Agreements are not synchronized and systematically interlinked.

When the implementation of some actions of JPI Oceans requires the involvement of the RPO/RFO, as highly probable, a multi-lateral and integrated approach is largely required. The networking between the bilateral agreements, decided at the highest level, can therefore largely increase the efficiency and avoid unnecessary duplications. The bilateral agreements are often very vague in the definition of the topics to be addressed. These are indeed defined successively and on a temporally cadence during the implementation phase. In practice, bilateral agreements can be considered as “limited” Research Alliances without a specific product to be delivered.

A possible intervention by JPI Oceans can be to start a dialogue within the bilateral agreements for common issues and promote the synchronization and coordination of their activities.

The idea is not to burden with additional load for changing text or practice in existing bilateral agreements but to bring the actors involved in their implementation phase to define and manage the activities in order to create a virtual multi-lateral programme (see figure 4.3.1). The networking between the bilateral agreements can be considered as a first action towards the alignment of policies and programmes at the level of RFO/RPO. A proposal for the procedure to act in described in Table 4.3.1.1.

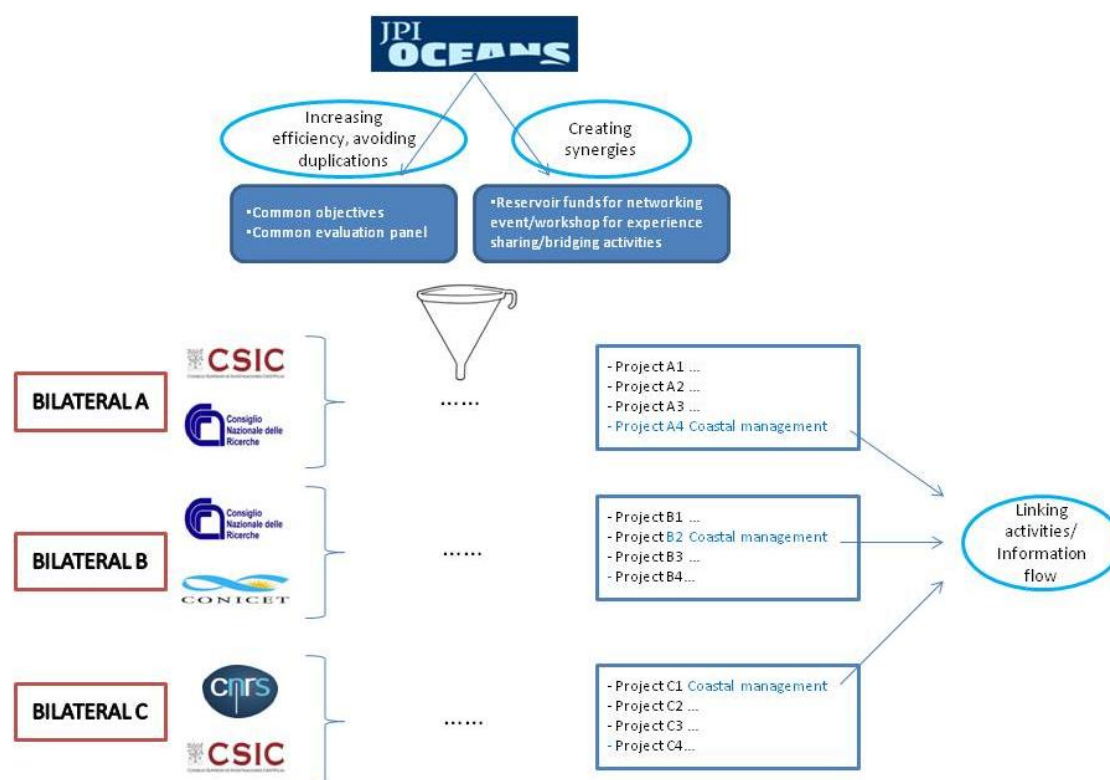


Figure 4.3.1: Sketch of a procedure for JPI Oceans to support the networking between the bilateral agreements in order to avoid duplications and create synergies through the adoption of common objectives, evaluation panels and supporting bridging activities between projects and participants independently funded at national level.

As an example, starting from the fact that different RFO/RPO signed different agreements, the JPI Oceans shall map the relevant organizations, the bilateral agreements concluded and their possible links with the JPI's goals, as well as the availability to collaborate of these organizations. The parties of each agreement, following the usual practice, bilaterally define the type of cooperation and the activities they agree to implement. The JPI Oceans, after analyzing procedures of the agreement, can intervene in encouraging the exchange of information among different RFO/RPO, fostering the adoption of common or complementary issues, a common evaluation panel for the projects to be. If a common evaluation is agreed among the RFO/RPO, the risk of duplication of activities will be reduced.

JPI Oceans, with the purpose of creating synergies, can also recommend to add "reservoir" funds devoted to participating in networking events, workshops or meetings for sharing experiences and practices, and for connecting the activities the parties have planned to implement. On the basis of the procedure commonly agreed by the parties of each bilateral agreement, a number of projects is selected and funded by each RFO/RPO. In this case, the JPI Oceans' approach is to create connections among the projects on the same issue or topic, for instance in the figure, on "Coastal management".



The JPI Oceans can act to encourage the flow and management of information among these projects and JPI Oceans itself, in order to capitalize the results of the projects themselves and the people involved.

<b>What</b>	<b>Who</b>
Mapping the relevant organizations.	Secretariat/MB/CSA
Mapping the bilateral agreements and their possible link with JPI Oceans' objectives.	Secretariat/MB/CSA
Contacting the responsible persons for the implementation of the bilateral agreements for information gathering and availability of cooperation.	Secretariat
Analyzing the activities and procedures for the implementation (for feasibility of common or complementary issues and synchronized evaluation).	Secretariat
Defining specific topics to be proposed to bilateral agreements, the impacts and indicators for the process.	StAB/MB
Sending a proposal for networking on specific topics to the legal responsible persons of the bilateral agreements, including the financial aspects for funding the bridging of activities and for the flowchart of information.	ExCom
Management of information from the implementation of the activities.	Secretariat
If agreed, selection of panel of experts (accordingly to a standard procedure as in deliverable D2.3 or to be negotiated with the partners of the bilateral agreements)	Secretariat/MB/StAB
If necessary, commitment of funds for bridging activities.	MB
If agreed, common evaluation of projects	Secretariat/panel of experts
If agreed, workshop for networking activities.	Secretariat
Evaluation of results and process	MB/StAB

Table 4.3.1.1: procedure for supporting the networking of bilateral agreements in order to avoid duplications and to create synergies through the adoption of common objectives, evaluation panels and supporting bridging activities between projects and participants independently funded at national level. The same procedure could be adopted to promote networking between ERANETS.

## MOTIVATION AND INITIATION

European funding/performing organizations have so far set up numerous bilateral agreements, with other European RFO/RPO and non-EU countries. Despite in many EU countries bilateral cooperation represents a long lasting practice, its initiation and implementation rarely follow institutionalized and common procedures. Especially in terms of motivation for formalizing a new agreement and of circumstances driving for its stepping up. In terms of motivation, examples put into practice include common challenges, common vision and interests, political and strategic objectives, as well as the "collaborative" attitude of researchers, while in terms of circumstances examples are the stable and "historical" collaborations among countries and institutions, official and unofficial meetings between RFO/RPO representatives, conferences and seminars. The signature of the agreement is made by the presidents of both organizations, and it is made in both official languages of the organizations and in English.

Despite the lack of institutionalized procedures for initiating a bilateral agreement, each research funding/performing organization usually follow a standardized internal procedure for concluding

bilateral agreements and managing the foreseen actions. Some common features can be observed in many experiences.

Each RFO/RPO includes in its organizational structure a specific office in charge of international relations and/or cooperation, responsible for starting, formalizing and managing agreements with European and Non-European RFO/RPO, with a Director and several officers responsible for the agreements management.

The first contact or the initiative to start a collaboration is often made at the top level, with the RFO/RPO President encouraging new alliances or new fields of cooperation, usually following pre-defined interests and priorities. The priorities and the issues asking for a collaboration are defined at strategic level and at departments/units' level. The collaborations initiatives and the actions both parties agree to develop are frequently thematically restricted to research fields and issues of importance to both countries involved.

The following steps of the procedure are directly managed by the Office, communicating with the corresponding RFO/RPO by telephone, videoconference, email or during meeting organized in one of the Countries involved.

At first, the RFO/RPO taking the initiative and calling for a collaboration, usually submit a draft agreement (based on its own "format") to the other organization, as a basis for further discussions and adjustments. The definition of the means for collaborating, the actions to be implemented, the financial aspects, the timetable, etc. and the final draft of the agreement are jointly discussed and defined. In some cases, one organization acts as a leader in submitting the draft and the final proposal. The actions to be included are then defined on the basis of the available funding.

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## BILATERAL AGREEMENTS' STRUCTURE

A sort of "common structure" is usually followed by each organization. It is possible to underline some common aspects that many bilateral agreements include.

A first distinction could be made on the basis of the "level" of collaboration defined in the agreement. Sometimes the collaboration itself foresees different steps, starting from a lighter kind of cooperation to a deeper one.

The agreement starts with a preamble, introducing the parties involved and a general statement on the motivations for collaborating. This could be more detailed indicating previous agreements signed by the parties or a "long tradition of collaboration", and/or the common vision and interests.

This introduction is followed by the definition of the purpose of the agreement and of the specific actions and initiatives the parties agree to develop. Concerning the purpose, in general it focuses on the establishment, or in case of long standing collaboration, the development and strengthening of the existing collaboration by extending areas and forms of cooperation. In specifying the initiatives and the actions the parties agree to implement, the document can be more or less detailed. These can include: develop mutual understanding of projects in which the parties are involved; exchange information on scientific policies, strategies and activities; define projects on topic of common interest; promote joint cooperative actions; promote the scientific collaboration among researchers and their mobility; organize joint seminars, workshops and meetings; support joint scientific projects. New or recent agreements can foreseen to implement the actions following different levels of cooperation, starting from a general exchange of information on the scientific policy and activities of the parties, to move in a second phase to common research projects and exchange of researchers.

The agreement can specify the terms and modalities of collaboration, including the setting up of a specific bodies and committees. A recent agreement between the Italian CNR and French CNRS<sup>63</sup> introduced the establishment, by exchange of letters, of a Steering Committee, consisting of an equal number of members of each party. The joint body is in particular in charge of reviewing the ongoing

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<sup>63</sup> The bilateral agreement, replacing the previous agreements, was signed on March 2013.

cooperative actions, setting up the priority scientific fields of cooperation, setting the principles, rules and guidelines for the joint call for proposals, facilitating and monitoring the implementation of the Agreement and review the Intellectual Property issues.

In case of joint cooperation projects, the procedure includes the publication of a call by each party (usually through electronic system), by a jointly defined deadline, and the submission by partner research teams from both countries of joint research proposals, to their respective organization. The rule of independent evaluation by each party, followed by a joint decision applies.

The agreement specifies, in general terms or in details, the funding provisions, in some cases indicating in the agreement the total amount of funds provided by each party. As general statement, in bilateral agreements each party covers the costs of the participants from its own country and laboratories, while in joint research activities research expenses (excluding the mobility of researchers) are paid by the organization where the research is carried out. The expenses usually covered for mobility of researchers are the travel costs, daily allowance and accommodation, while are typically up to the hosting Country the logistic expenses for organizing seminars and workshops.

The financial contribution of each party is defined and agreed usually on a yearly or bi-annual base, while the details of reimbursement can be further specified in the agreement or in its addendum, when foreseen.

Rules for regulating Intellectual Property Rights, when applicable, and confidentiality are usually included.

Finally, provisions regulating the agreement validity, amendment and duration terminates the agreement. Bilateral agreement foresees a limited duration, usually of two, three years, and are open to further renewal, tacit or explicit.

As previously mentioned some agreements are more concise while others define in much more details the specific aspects of the collaboration, the procedures for implementing it and the financial rules. Among the latter, some bilateral agreements are complemented by an **addendum**. This document can include information on the timetable of the announcements for joint research projects, the criteria for selecting the projects, the procedure of scientists' exchange and the definition of the financial treatment of researchers.

This is defining the "operational level" which should be synchronized and aligned with those of other agreements.

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## AGREEMENTS' IMPLEMENTATION

The implementation of the actions included in the agreement is defined in general terms in the agreement and can be further detailed in the addendum, in particular regarding the financial aspects, the publication of the call for proposals and its timetable, the procedure for evaluating and funding research projects.

Joint research projects and the exchange of researchers are implemented through the publication of specific call for proposals. The timing and the amount of funding dedicated to each call depend on the content of the collaboration agreement.

The publication and the management of the call is handled by the Office responsible for the bilateral agreements. The period and the date of the call publication is jointly defined and agreed by the parties, and is usually simultaneous, especially for the deadline for submitting the candidatures. Some addendums indicate the maximum number of projects to be supported, the month/months during which the call has to be published by the parties, how often (every year, every two/three years etc.), the starting date for financed projects.

The procedure for receiving and managing the proposals normally foresees that each party is responsible for announcing and publishing the call for proposals and for gathering all the applications from their respective sides. Researchers from both countries must submit simultaneously joint research proposals to their respective organization. The proposals are evaluated separately by the

respective scientific committees, one per country, which members are defined on a case by case depending on internal rules and the specific issues covered in the proposals submitted. Following the ranking list formed by each scientific committee and by exchanging these prioritized lists of projects, both countries jointly decide and agree on which proposals are to be funded. Each party communicate the results to respective researcher independently, while the complete list of joint research projects mutually approved become then an annex to the cooperation agreement. Each organization defines its own evaluation scores (numerical, alphabetic, etc.) and thresholds. The criteria for selecting the proposals can be in general defined in the agreement or in the addendum and follow the principle of scientific quality of the research. Additional criteria are the intensity of mobility of researchers, the added value of the cooperation, the expected results and impacts. As previously mentioned, for successful projects, each country is responsible for funding its own researchers.

The abovementioned Office is finally in charge for transfer of the agreed funds to the researchers, and for receiving and checking the researchers financial reporting and relations.

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[www.snf.ch/E/international/worldwide/bilateral-programmes-brics-countries/Pages/default.aspx](http://www.snf.ch/E/international/worldwide/bilateral-programmes-brics-countries/Pages/default.aspx)

Research Council of Norway, [www.forskningsradet.no/en](http://www.forskningsradet.no/en)

## 4.4 SYNERGIES BETWEEN ERANETS AND OTHER INITIATIVES

Joint Programming Initiatives are aimed to align national research programmes.

The alignment of national research programmes are mainly framed in the art. 185 of the Treaty of Functioning of the European Union.

The European Commission (EC) facilitated this process through ERANETs since the Sixth Framework Programme (in Horizon 2020 evolved in the ERANET co-fund).

Though joint calls are not the only way to align research programmes and ERANETs mainly involve this aspect as a priority in their activities, they could be a very useful instrument.

In the Communication of EC "Partnering in Research and Innovation" COM(2011) 572 final, it is clearly mentioned that where the areas being addressed by JPIs fit with the priorities of EC framework programmes, EC instruments may be used to support JPIs. In general, JPI joint actions will be evaluated by EC on a case-by-case basis to assess whether the EU value-added justifies funding via the

ERA-NET scheme or co-funding via thematic research calls. Moreover, in the same Communication, it is reported that the EC will only consider making a proposal for an Article 185 Initiative where a JPI has demonstrated in its Strategic Research Agenda that it has the capacity for significant collaboration and the necessary scale and scope to support full integration of national programmes.

Many ERANETs in marine and maritime issues have been implemented, others are running and others will be launched, probably also not in the framework of JPI Oceans.

Moreover, not all the EU Member States and Associated Countries participate JPI Oceans, while some could be involved in ERANETs. Vice versa some stakeholders which are eligible as partners in

ERANETs consortia are not directly involved in the JPI Oceans process (regions, programme owners etc.).

The experience of ERANETs' consortia in managing and implementing joint calls has also to be considered an added value. Furthermore it is important to align the use of the budgets of funding organizations, recalling that in certain cases they JPI and the ERANETs are funded through the same institutions, budgets and programs. Thus cooperation rather than competition should be stimulated. For these reasons, the interaction with ERANETs and other initiatives to promote coordination and synergies is crucial to increase impact and efficiency, also for funding joint calls

In this context, JPI Oceans already started a process of periodic meetings and discussion with ERANETs (MARTEC, Seasera, COFASP) and Art. 185 BONUS.

A structured dialogue between JPI Oceans (Ex Com plus secretariat) with the EC and funding organizations is scheduled, in order to provide a platform for cross cutting dialog across ERANETs and jointly conduct foresighting.

## 5. CAPACITY BUILDING

### 5.1 HUMAN CAPACITY BUILDING

#### INTRODUCTION

Human Capacity Building (HCB) feeds the complex web where education, innovation, growth and employment are closely interlinked. In a knowledge-based economy, increasing people's knowledge in relation with the surrounding environment not only brings to the achievement of new research results but also to the enhancement of innovation potential and creation of new jobs. This makes HCB a standing aspect of cohesion and cooperation policy, as exemplified by the strict link between the development of human capital through transnational access to Research Infrastructures (RI) and international cooperation policy.

The capacity building circuit entails 'new knowledge arising from research to be fed back into appropriate levels of the education, training and human resource development' (Hopkins et al., 2006) as required by the rapidly evolving science role in respect to society. Education and training system is not only a science support mechanism, as it guarantees the fulfilment of new jobs needs to address incoming societal challenges. Research and technology play the fundamental role of bridging this system with the economic one. Strong implications result at territory level, in line with Smart Specialisation Strategies.

Education has a long tradition in schemes, careers, responsibilities and communities. Nevertheless, the different aspects of HCB but customary education mission of Universities and Schools can rarely be associated to specific and well recognized paths and instruments. The multi-disciplinary and cross-sectorial aspects of the marine and maritime issues often require an integrated approach and this implies a difficulty in getting a comprehensive and easy-to-access scenario. Indeed, HCB has been often associated to a side activity of others (accessing infrastructures, developing projects) and rarely addressed as a priority to be strategically interlinked to joint programming. HCB is in fact a pillar for the realization of the European Research Area and many aspects deserve specific attention.

To contribute to the establishment of the educational landscape of marine science, reinforcing the peculiarities of the marine and maritime sectors in relation to more general EU education schemes, a preliminary awareness about the HCB context is essential. A brief overview of this scenario is therefore provided, before presenting two practical HCB actions: training and mobility.

#### 5.1.1 SCENARIO

The EU education and research context focused many schemes for funding the enhancement of human potential, like Marie Skłodowska-Curie Actions (MSCAs) and ERASMUS +, supporting higher education also in collaboration with industry.

Also the Knowledge and Innovation Communities (KICs) of the European Institute of Innovation and Technology (EIT) develop their own education programmes, that fully integrate higher education, research and business with the specific aim of tailoring the needs of the European innovation system. In addition to these general HCB schemes, single EC research projects/joint programmes use to carry on many HCB initiatives, according to their scientific objectives and recognized capacity needs. The survey carried out by SEAS-ERA project and presented in the report Capacity Building: Identifying needs, specificities, and imbalances highlighted that HCB actions are often embedded in FP7 RTD projects. Besides the usually provided per-se training to junior researchers through contracts and scholarships, different approaches are adopted:



- summer schools and training actions involving stakeholders and researchers who are not partner of the project;
- development of PhD and recruitment of young researchers;
- specific work packages of projects dedicated to HCB or to training and dissemination;
- open access to laboratories and marine infrastructures.

At international level, consortia and international organizations (e.g. IOC, ICES, BONUS, EuroMarine) also contribute with their experience to the scenario, pursuing high impact HCB actions according to their core business, as outlined in the table below.

Organization Name	Scientific Themes	Methodology	Action[s]
<b>IOC - Intergovernmental Oceanic Commission</b>	Understanding the Ocean; Climate change and the Marine Environment; Policy Support	Long term perspective; empowering network of directors with leadership skills; supporting network of scientists with proposal-writing skills; building scientific teams to collaborate on funded projects; training in decision support systems.	HCB as part of thematic programs
<b>ICES - International Council for the Exploration of the Sea</b>	Understanding the Ocean; Safe and sustainable use of marine and coastal spaces; Maritime Transport; Policy Support	Quality assurance in the advisory process; focus on high-profile scientists and instructors.	Training courses
<b>BONUS for the Baltic Sea Science</b>	Understanding the Ocean; Climate change and the Marine Environment; Policy Support + Dissemination	Integration between natural and socio-economical sciences; linking between physical and biological science; focus on early career scientists	Training courses
<b>EuroMarine</b>	Understanding the Ocean; Climate change and the Marine Environment	Interdisciplinary, competency training and capacity building	Mobility Fellowships Programme

Table 5.1.1.1: Review of actions by international Organizations. Source: SEAS-ERA report D5.2.1 [11]

The European framework is complemented by regional and national initiatives addressing different themes in relation with the specificities of the area. Many efforts are directed at Basin level towards the inclusion of HCB as part of neighbourhood cooperation and interregional cohesion policy. With some differences among countries, the attention in tackling HCB is rising also at national level, with increased specific programmes dedicated to building capacities in the marine sector, as part of main research funding schemes or specific strategy for HCB.

Last but not least, the demand of skilled capacities for territory development encourages local stakeholders, like technology districts, to actively participate to the HCB. Often in collaboration with the research system, specialized educational paths are created to match the continuously updates of the Blue economy, addressing also non-academic training for the needs of industrial sector (e.g. maritime transportation, tourism, ...).

The alignment of these perspectives is needed for consolidating a strong HCB strategy for reaching JPI Oceans objectives. To this end, an opportunity, but not exclusively, can definitely be taken advantage of EU instruments, like for example the COFUND scheme that ‘offers additional funding to existing or new regional and national fellowship programmes for research training and career development and can also support and strengthen existing and new international programmes’<sup>64</sup>. Nevertheless the way is long towards the creation of an effective integrated marine HCB platform as ideal framework for intersecting the outputs of different initiatives, in order to address a comprehensive policy in marine HCB interlinked with joint programming, through the design of new actions.

The following paragraphs illustrate two main typologies of HCB action, training and mobility, and related instruments to implement them. Some indications on management practices are finally provided, to be possibly followed as appropriate terms of reference for the implementation.

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### 5.1.2 TRAINING

Training is about learning and gaining new expertise and skills. Different schedules and processes can bring to different level of know-how achievements. According to the previously depicted scenario, main instruments available for implementing training activities and related level of qualification obtained are listed.

- **Master/PhD courses:** complete education actions usually (co-)organized with Universities. Released title: Master/Doctoral degree.
- **Internships:** on-field extended experience usually (co-)organized with a private company/ association/ NGO. It can foresee access to research infrastructures, or practice in a job of the sea. Released title: technical license.
- **Short training courses:** highly focused summer schools, workshops, webinars, e-learning module... Released title: certificate of attendance.
- **Mobility grants:** see dedicated paragraph 5.3.

General objectives and technical features of each instrument depend on the implementation framework of reference. Training actions can indeed be a segment of a program entirely dedicated to HCB or the capacity building counterpart, generally implemented during its lifetime, of a scientific project or a joint programme.

For example, at EU level Marie Curie Actions foster, through a bottom up approach, excellent and innovative research training networks, and Joint and Industrial doctorates, enhancing business-academia collaboration and staff exchange; while EIT identifies ‘a robust entrepreneurship education and an highly integrated, innovative learning-by-doing curricula’ as degree quality criteria.

Besides the scientific driven training actions carried out by RTD projects, the EU research framework programme Horizon2020 strongly supports as part of RI/e-I projects the training of staff managing and operating RIs, the exchange of personnel and best practices between facilities, the adequate supply of skilled human resources in key disciplines, engaging academia to prepare curricula and courses to address RIs intercultural and interdisciplinary nature as vehicle of international cooperation, e.g. north towards south and west towards east. This is a clear opportunity for Ocean facilities to augment their impact role also as place for training activities.

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<sup>64</sup> [http://ec.europa.eu/research/mariecurieactions/about-mca/actions/cofund/index\\_en.htm](http://ec.europa.eu/research/mariecurieactions/about-mca/actions/cofund/index_en.htm)

At the interface between science and policy, training courses can be the adequate response to the capacity demand addressed by the implementation of EU directives and strategies, e.g. the Marine Strategy Framework Directive<sup>65</sup>, the Integrated Maritime Policy, or the Blue growth.

When looking at the purpose of creating new jobs of the sea, training is also a fundamental cohesion instrument. In this case, specialist job oriented non-educational training courses like internships usually combine structured educational programmes with on-the-job experience. The lacking of an EU structured scheme addressing these courses has to be noticed.

The portfolio of training instruments and related frameworks of implementation is definitely rich. But as outlined in the chapter Training and careers for the next generation of marine experts of the Marine Board Position Paper 20 Navigating the Future IV, too few doctoral programs are 'marine science' specifically labelled; moreover EU schemes have been so far too limited in scope and duration; and the involvement of maritime industry in promoting courses to train skilled workers requested by emerging sectors is not structured enough. As prominent actor of marine and maritime international joint initiatives, JPI Oceans can raise the volume of voices asking for an integrated marine and maritime training strategy clustering and blueprinting different education levels.

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### 5.1.3 MOBILITY

Mobility is more about expertise sharing and networking.

Within the five ERA (European Research Area) priorities identified in 2012 (European Commission, 2012), an open labour market for researchers is considered fundamental and barriers to mobility, training and attractive careers for researchers should be removed. Researcher mobility may indeed strongly contribute to the circulation of excellence but, in a context of considering the research also as a support to boost competitiveness and knowledge-based policy decisions, the concept of mobility has to be enlarged to include the opportunities for all the stakeholders. In some way, it can be considered an instrument of training and learning where the building of capacities specifically occur through the movement of people.

For its specificity and undeniable role as capacity building tool, though mobility is usually embedded as a support for the development of projects and activities, it deserves a dedicated focus as a strategic 'action'.

In 2012, the Informal Group of Research and Technological Development Liaison Offices (IGLO) has carried out a survey on research stakeholders' views on mobility and collected data from individual experts from national funding agencies, research performing organizations, universities and public authorities across Europe. Twenty experts from twelve EU Member States and associated countries reported on the situation with regards to mobility in their organization. The results were presented during the ERA in Action event 2012 of IGLO.

Without entering into the details of the findings of this survey and discussion, it has to be distinguished between the aspects of mobility which can be addressed at governmental political level and those at funding and performing organizations, that is, closer to the capacity and responsibility of JPI Oceans.

Having in mind that policies and instruments should be strategically interlinked, some of the recommendations which JPI Oceans can endorse are therefore summarized:

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<sup>65</sup> See ICES courses on MSFD: <http://www.ices.dk/news-and-events/Training/Pages/default.aspx>.

- ❏ Foster **structured mobility**, especially in times of economic crisis. The European Commission already has instruments to do so, but the support could be strengthened, also at national and regional level, and also to increase communication on bilateral or multilateral successful initiatives. In particular, an integrated strategy to support mobility, taking into account both **bottom-up and top-down approaches**, should be mandatorily adopted to strengthen the truly multinational dimension and to efficiently solve the major societal challenges.
- ❏ Harmonize **short-term and long-term mobility**, usually identified as **individual and institution mobility**.
- ❏ Better **articulate EU, national and regional levels**. For example, alignment and rationalization of national tools, coordination between national calls and EU calls for proposals could be implemented to facilitate researcher mobility. Dedicated R&I strategies encompassing mobility at regional level are needed. The information role of the EURAXESS network could be strengthened to provide a more visible resource for advertising vacancies. The COFUND instrument has proved efficient to foster this articulation and could be further developed, e.g. by using Structural Funds.
- ❏ valorise **scientific careers**: experience from abroad is not enough valued in researcher careers; increase visibility for activities of researchers not only limited to publications or excellence but also to the support to policy and technology transfer.
- ❏ increase transparency **recruitment-related issues**: a lack of information and transparency of recruitment procedures makes research careers less attractive and hampers mobility.
- ❏ increase the **dialogue** between researchers, funders and end-users of the products of research.

Short and long term mobility actions can be developed in the framework of dedicated programs at international/national level or be part of a research Institute own policy. According to the objective targeted by the action, mobility can stand for: capacity transfer of single persons working or visiting a place different from the one they belong to (foreign Institutes, other sectors); or even the exchange of entire staff, e.g. between research infrastructures. General instruments (set of rules) that suit for these actions are:

- consolidated formal schemes, e.g. the FP7 International Research Staff Exchange Scheme among the Marie Curie Actions;
- fellowships/grants, e.g. MCAs COFUND, dedicated programme at national, regional or research Institute level;

ad hoc Memorandum of Understandings: short term actions set in the framework of for example Bilateral/Cooperation Agreements; requirement of specific HCB action within a Joint Call for projects/Joint Programmes.

## SUPPORT TO IMPLEMENTATION

Some terms of reference to implement HCB actions are provided here below. Templates like formal agreements or applications forms to be used as tools for HCB calls, are also provided.

**Landscape analysis.** On the basis of preliminary needs and gaps evaluation, outline how the action can contribute to the establishment of the educational landscape at international/national level. Database<sup>66</sup> check on available actions in the same field is recommended in order to avoid duplications.

<sup>66</sup> Examples of HCB actions database: Euromarine training survey:

<http://www.euromarineconsortium.eu/content-education/overview-trainings/>; Aquat-net Education gate: <http://aquatnet.djangofoo.com/>; ICES Courses and reports: <http://www.ices.dk/news-and-events/Training/Pages/Previous-reports.aspx>.

**Objectives.** Identification of the planned action aims in relation to the implementation framework: a single project, an extended programme, ... A diversification between specific (e.g. new resources in a high specialized field are needed) and more general (e.g. reinforce transnational cooperation) objectives is desirable.

**Specific targets** identification, linked to the objectives: profile (e.g. researchers, technologists, technicians, operators, managers), sector, discipline, thematic.

**Expected impacts** are to be qualitatively identified. If possible predictable outputs are to be quantified.

**General questions to be possibly answered** before implementing the action can help avoiding unexpected delays as well as develop it in a more structured way. Few examples, including technical and theoretical arguments, are reported.

- Is the action feasible within the lifetime of a project/programme?
- Are there any framework barriers that could delay the starting or slow down the implementation of the action? e.g. administrative, legal, ...
- At which level is the released title/certificate recognized in different participating countries?
- How can the outputs of the HCB action be fed back into the marine education landscape?

**Action design** in terms of topics selection and logistics aspects: advertisement and dissemination of the call, eligibility criteria including necessary pre-requisites, number of awards, grants availability, ranking criteria, involved parties and related contact point, data policy, management issues, time schedule, budget plan, visa, insurance, access conditions to facilities...

**Procedure guidelines.** The choice of the procedure to be followed is another fundamental step of the HCB action implementation process. A linear-few steps mechanism is to be preferred. For example:

1. Before starting: agree on the most suitable HCB action and the related instrument;
2. Starting: launch the call for training/mobility action or sign the agreement on the action;
3. Throughout: execution of the action & monitoring by measuring it through for example a mid-term evaluation, number of publications, discussion workshops;
4. Closing: presentation of outcomes.

**Funding mechanisms:** Direct application of EU schemes (e.g. MCAs); agreements at EU level for supporting HCB in the framework of marine Programs (e.g. MCA-COFUND, see the attached example of template); staff exchange; dedicated lines of project funded through structural funds (at regional level); agreements with other stakeholder, e.g. technology districts, to train capacities in specific fields (e.g. jobs of the sea); public-private collaboration; individual fees.

**Checklist of helpful tools:** proper channels for disseminating training opportunities; experts (teachers, evaluators) lists repository; database of training initiatives; repository of the outcomes of HCB actions; forum to collect feedbacks (e.g. BONUS Young Scientists Club).

**Examples of templates:** (i) COFUND & RITMARE Italian Flagship Programme Call for applications for 6 fellowships; (ii) EUROFLEETS training course application form; (iii) a Memorandum of Understanding linked to a Bilateral Agreement in the framework of which building mobility actions between two Research Institutes; (iii) ECORD-IODP summer school announcement: <http://www.urbinossp.it/registration.aspx>; (iv) ICES course registration form: <http://info.ices.dk/iceswork/training/registration/>.

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## 5.2 INFRASTRUCTURES

### INTRODUCTION

Research infrastructures (RIs) play an increasingly important role in the advancement of knowledge and technology. They are a key instrument in bringing together a wide diversity of stakeholders to look for solutions to many of the problems society is facing today, offering unique research services to users from different countries, also attracting young people to science and helping to shape scientific communities.

In the field of marine sciences they include **research vessels and their underwater equipment** (e.g. ROV, AUV, manned submersible, USV, towed devices, sea-floor drilling and coring equipment), **fixed coastal and open sea observatories** (e.g. buoys, ballast and other type of platforms, anchored or fixed in the sea bottom, moorings, sea-floor stations, landers, etc.), **mobile observatories** (e.g. oceanic profilers, gliders, drifters, ferrybox), **relocatable observatories** (coastal HF radars), **marine land-based facilities and in situ testing sites for ocean engineering** (e.g. deep wave basins, water circulation canals, hyperbaric tanks, material behavior in sea water testing laboratories, marine sensors calibration laboratories, in situ test sites for marine renewable devices), **experimental facilities for marine biology, biodiversity and ecosystem studies** (e.g. marine genomics facilities, aquaculture experimental facilities, mesocosm facilities, ecosystems and biodiversity observatories). Besides the infrastructures above, intended as major scientific marine equipment or set of instruments and knowledge-based resources such as collections, archives or structured scientific



information, we should consider also **ICT-based e-infrastructures** (networks, computing resources, software and data repositories, such as satellite data processing centers and generally marine data centers, for data validation, storage and dissemination through web portals, including access to high computing facilities & generic modeling).

**Each class of facility above is peculiar for the services and access offered, and this should be taken into account when defining integrated rules for transnational access, sharing, management and costs reporting.**

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### 5.2.1 ACCESSING AND SHARING MARINE INFRASTRUCTURES

RI are often the key to enable excellent researchers to tackle effectively complex or very fundamental questions, to gain new knowledge, to create innovation or to play an important role in education e.g. in training of young scientists and technological personnel. These tasks could not be fulfilled without access to these RI.

Moreover, sharing of infrastructures among their operators, for common programs or projects, is becoming a requirement in order to lower/optimize their costs. The degree and method of infrastructure sharing can vary in each country depending on regulatory and competitive climate.

A summary overview of European projects/initiatives proposing Trans National Access is provided by Seasera (Masset, 2013), including experiences matured in providing access.

In the domain of marine sciences, 12 research infrastructure projects are being or have been funded under FP6 and FP7 (Figure 5.2.1), promoting Trans National Access, and data and knowledge sharing. The EU will continue to support research infrastructures under Horizon 2020 ensuring Europe has world-class research infrastructures (including e-infrastructures) accessible to all researchers in Europe and beyond. The activities will also contribute to fostering the innovation potential of RIs with a focus on instrumentation and the participation of industry, and on reinforcing international cooperation with strategic third country partners.

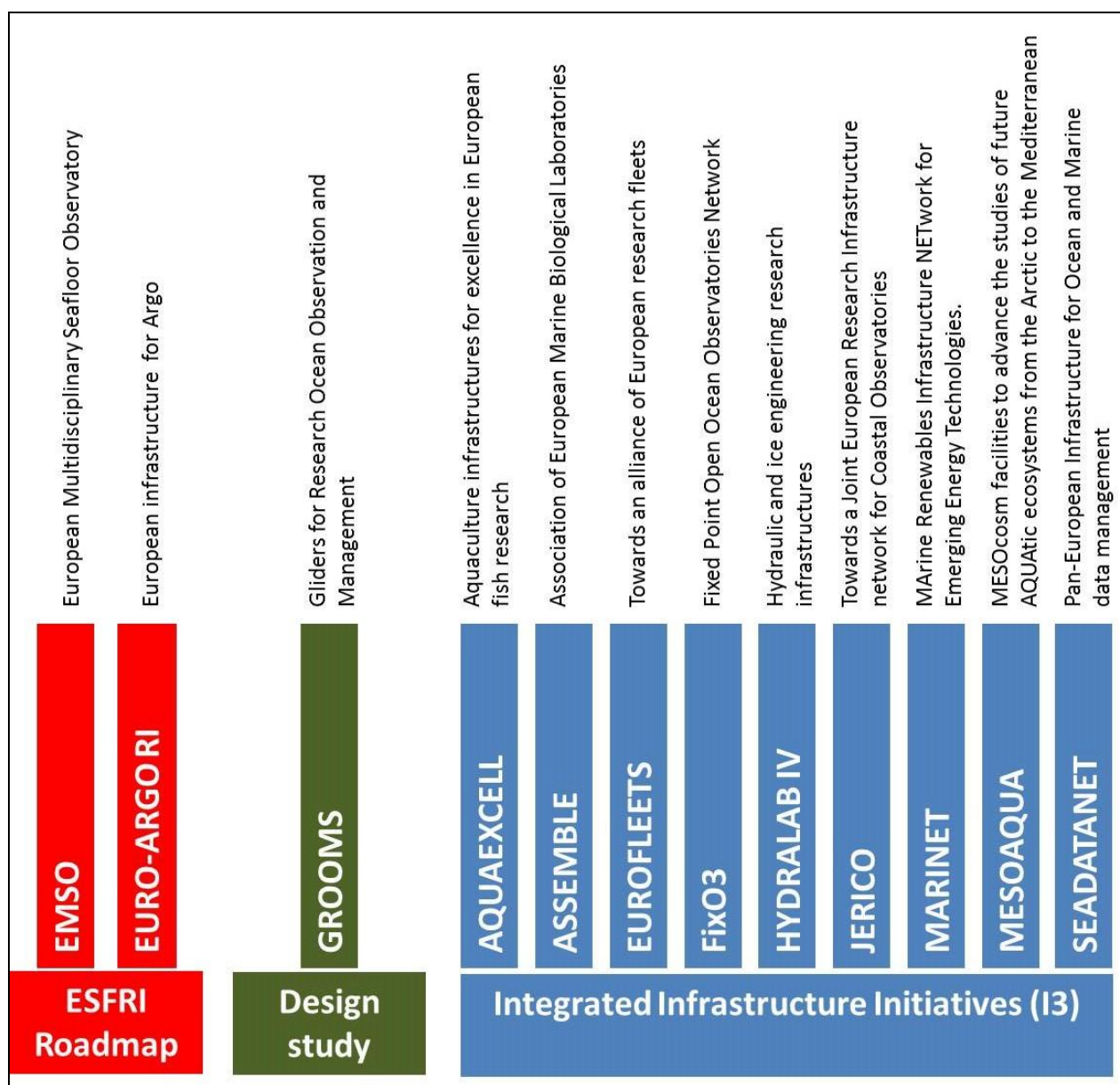


Figure 5.2.1: Projects supported under FP6 and FP7 in the field of marine sciences.

## TRANSNATIONAL ACCESS

The so far used terms “transnational access” (TNA) usually means supporting new opportunities for research teams or individual researchers to obtain access to specific pan-European, national or regional RI they require for their work.

Masset (2013) recognizes several types of TNA formulas: in the frame of FP7 projects, within thematic joint calls between Member States, within the framework of “pure” common program.

For FP7 funded projects, RI transnational access is one of the three mandatory components of the Integrating Activities (IAs). Such infrastructures must be rare in Europe, must provide a world-class service essential for the conduct of top quality research, and must typically have investment or operating costs that are relatively high in relation to those costs in their particular field. The infrastructures must also be able to provide adequate scientific, technical and logistic support to external, particularly first-time, users.

In these projects, provisions for TNA activities are defined in Annex III to the Grant Agreement, which sets performance obligations and commitments of the infrastructure provider as well as eligibility and selection of the user group:

- Leader + majority of users must work in a Member State or Associated State
- Leader + majority of users must work in country other than that of infrastructure (if several installations, conditions apply to each installation except where remote access to distributed set of RIs)

The opening is offered to any kind of scientific themes, excellence being the main mandatory criteria for the evaluation/selection of the applicants. The only inconvenient of this formula are the budgetary constraints, which limit its scope to only few % of the available resources and moreover within the framework of fixed term projects.

As regards ESFRI projects, currently there is no EU-wide policy for access to RIs since this is often dependent on specific negotiations for their funding and development.

In the case of TNA as implemented within thematic joint calls between Member States, with or without the pop up support of the EC, the access times pooling comes as “In Kind contribution”, in addition to the cash of a common pot. When EC also participates, within an Eranet+ or an Article 185 (for examples Bonus), it contributes to the access costs with dedicated funds up to 30 % to 50. Except for certain administrative red tapes which could be revised and relieved, this formula is potentially flexible: in particular, we can mix a common pot with “juste retour” for the cash part of the scientific projects with a common real pot for the In Kind part related to the MRI access. Furthermore, for the selected applicants, this avoids the project double evaluation (and its hazards) usually necessary to have successively the budget and the MRI access.

TNA can also be implemented within the framework of “pure” common program, i.e. with only the existing resources of the research performing organisations. In this case, there is an agreement on a multi annual program of common actions, involving a pool of pre identified MRI to aim their use in a optimized way. As typical examples, the recurrent at-sea campaign in a regional sea basin for the needs of oceanography (physics, ocean circulation knowledge) and/or for sea monitoring (parameters contributing to the good environmental status assessment) and/or the DCF (data Collection Fisheries, commercial species stocks assessment).

## INFRASTRUCTURES SHARING

A particular form of TNA is in the form of sharing under specific agreements. Sharing an infrastructure among bodies means to put at mutual disposal a platform to perform research and development activities, that hopefully should be of common interest of the involved parties. Since it is estimated that 50% of national budgets for marine science is required for operating and replacing marine infrastructures assets, cost-sharing and widening access are necessary steps towards integration reflecting national needs.

OFEG (<http://www.ofeg.org/>), the Ocean Facilities Exchange Group is an example of a well established barter system, dating 1996, providing a forum to consider exchange of ship time or equipment or instruments and co-operation opportunities among parties, at present six European institutions and ministries (Ifremer/France, NERC/UK, BMBF/Germany, NIOZ/Netherlands, IMR/Norway, CSIC-UTM/ Spain). In a long term perspective, OFEG aims at the logistic optimization of at-sea campaigns of several countries

Other examples of European activities aiming at fostering a more synergetic use of marine research infrastructures are the barter system of the Marine Facilities Tripartite Group (MFTG) that facilitates the sharing of Dutch, French, German, Spanish and UK marine facilities (established 1996) and

EuroGOOS, established to further the development of Operational Oceanography in the European Sea areas and adjacent oceans (funded in 1994)<sup>67</sup>.

As marine research infrastructure are nationally owned, in order to foster the infrastructures sharing, some conditions should be established and encouraged.

The table below summarizes the main conditions for the shared use of research infrastructures:

#### **Conditions for shared use of European infrastructures (research vessels)**

The main conditions for the shared use of facilities include:

- Mutual exchange agreements for the barter and/or charter of marine facilities must be set up on a global and on a regional scale (e.g. covering the Mediterranean Sea and the Baltic Sea);
- Mutual exchange agreements must be arranged so that they do not financially disadvantage any of the member organizations;
- Requests for marine facilities must be submitted 12-18 months in advance of when they are required due to the long-term planning requirements of marine facilities programmes. Requests at short notice will only ever be accommodated on an opportunistic basis;
- The programming of marine facilities will remain the sole responsibility of the owner;
- The cost of the loss replacement, and/or damage repair, of exchanged marine facilities (for which no operational support is provided) is the responsibility of the user. The main problems to be resolved include:
  - Programming timetables for marine facilities will need to be aligned if there is to be effective co-ordination of facilities;
  - A system that assures equivalent values when exchanging facilities will need to be developed;
  - Legal and administrative issues regarding trans-boundary mobility of ships and scientists will need to be solved;
  - Member organizations will have to establish a mechanism that provides the internal financial flexibility to deal with the exchange of their marine facilities in return for access to another organization's facilities.

Table 5.2.1.1: A sketch of the conditions for shared use of European research vessels (from Academy of Finland, European Strategy on Marine Research Infrastructure, 2003).

#### **5.2.2 OPERATIVE PROCEDURES AND AGREEMENTS FOR TNA AND INFRASTRUCTURES SHARING**

The provision of access to or a sharing of a research infrastructure should be ruled by a Memorandum of Understanding between involved parties (user and infrastructure provider). This

<sup>67</sup> Academy of Finland, European Strategy on Marine Research Infrastructure, Publication of the Academy of Finland 6/03. Available at [www.aka.fi/Tiedostot/Tiedostot/Julkaisut/6\\_03%20European%20Strategy%20on%20Marine%20Research%20Infrastructure.pdf](http://www.aka.fi/Tiedostot/Tiedostot/Julkaisut/6_03%20European%20Strategy%20on%20Marine%20Research%20Infrastructure.pdf).

agreement defines the terms whereby the infrastructure provider will put at disposal to the user partner a facility as a platform to carry out an experiment detailing:

- The access/sharing conditions, including timing, location, quantity and restrictions of the use of the infrastructure.
- The user commitments regarding any obligation in using the infrastructure, including commitments regarding safety rules.
- The infrastructure provider commitments regarding any obligation towards the user partner (e.g. technical support and training to be provided, applicable safety rules on-site, requested insurance policy, etc.).
- Commitments related to costs sharing (e.g. user access costs, infrastructure provider operating costs of the facilities in the period of access/sharing).
- The reporting requirements, including evidence of the use.
- Obligation for data delivery.
- Obligations and rights of the involved parties for what concerns: intellectual property rights, confidentiality, liability and other legal issues regarding the signed agreement.

A detailed working plan should be part of the agreement presenting the scope of the work and its schedule.

The MOU can therefore include options for both TNA and infrastructure sharing.

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### 5.2.3 ACCESS/SHARING COSTS STANDARDIZATION AND REPORTING PROCEDURES

in order to standardize and reduce the complexity of adopting different procedures for recognizing and accounting costs of infrastructures and their access, and taking into account the experience established within FP7 projects, the proposed approach is mainly in tune with the EC one. This does not prevent to introduce changes when the EC contribution is not involved and more flexibility and feasibility is requested by partners.

Access costs definition in FP7 projects is based upon a unit cost and the quantity of access provided to the specific activity:

$$\text{Access costs} = \text{unit cost} \times \text{quantity of access provided}$$

as a rule, the EC financial contribution will not exceed 20% of costs of providing total access to the installation over the duration of the project.

The unit costs is the costs of providing access to the installation during the FP7 project life-time divided the total quantity of access provided during the same period. In the Grant Agreement it is provided as an estimate, but it is finally reported as the real one in the final financial statement (Form C).

This approach of calculation of the access costs, even if suitable for large scale single site infrastructures, can present some problem for distributed infrastructure, where some of the costs can change significantly with respect to an averaged reference depending to the specific use. As an example, we refer the case of gliders, small autonomous vehicles used for data acquisition at sea. This is a “mobile” infrastructures, that is deployed in a geographical location or another depending on the needs of the user. Some issues could arise concerning the transport of the glider and the transfer of the supporting staff to and from its base to the effective area/s of operation/s (Sparnocchia, 2013). This often involves high costs that cannot be directly reimbursed and can result underestimated by the project life-time average reference. Moreover, in case of a mixed form of access to the infrastructure, which alternated between “in person” and “remote” modalities (defined “partially remote” in JERICO and FixO3, for instance), defining a unit cost can be tricky because of different references to define the total quantity of access provided over the duration of the project in the two access modalities. For such applications, a reimbursement based on real cost borne by the facility provider for granting the access is probably preferred.

A standard costs definition was reported as a problem also in the last analysis of ESFRI project implementation made by the ESFRI Implementation Group (2012) that reports criticalities in fields such as social sciences and humanities (SSH). Access to digital data and services itself is not the problem but data processing in many cases needs additional extra expert support which is often not found in RI centres themselves (as they just take care of the technical operation). The conclusion of the IG is that establishing appropriate costing for all RIs which covers the running costs to guarantee access to their services for the scientific community is a challenge and that the priority of defining common standards and harmonized access rules and conditions for the use of RI and for continued EU support to transnational access activities stressed by the Competitiveness Council Conclusions from 11 December 2012 seems not being the right way to proceed.

An example of reporting on in kind, free of charge infrastructure contributions is provided in a Guide of BONUS (2012). Categories of national infrastructure addressed by this guide include research ships, field stations with major experimental facilities therein and advanced computing facilities. The value of infrastructure provided by national authorities as in kind, free of charge contributions to BONUS projects is calculated on the basis of the actual costs incurred during the project. This may include capital costs and indirect costs related to the use of the infrastructure. The usual accounting practices are applied, with the exclusion of provisions and profit on the basis of detailed accounts that are open for inspection and audit. The value and nature of the in kind, free of charge infrastructure provided to the BONUS projects is reported annually by the national infrastructure provider to the BONUS EEIG. Due to national differences concerning organization of access to large infrastructures, the 'infrastructure provider' may in this context be the owner of the infrastructure, or the body administering or granting the right to use a large infrastructure free of charge for the benefit of the BONUS projects.

We can try to establish a "dynamic standardization", allowing the facility provider to adopt the calculation scheme that best adapt to its specific infrastructure.

This is based on three options, that could be used as a reference for both calculating the reimbursement for access or sharing activities, as well as when infrastructures costs are calculated as in-kind resources within a project:

- a) Calculation based on a "unit access cost", as in the FP7 I3 projects.
- b) Calculation based on real costs, as for instance in BONUS.
- c) Calculation based on a fraction of the total costs in a given period related to the period of use in the specific project.

A Guide to reporting on in kind, free of charge infrastructure contributions is provided in Appendix 2, including schemes for infrastructure's costs reporting.

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#### 5.2.4 ACCESS TO DATA

Open Access to Data and Data Sharing is one of the big open issues when dealing with Research Projects and environmental research.

Recent technological development greatly lowered the cost of data acquisition, and the growing availability of fast internet connection enables several different ways of data sharing and integration. As a consequence, state of the art science today - especially when considering support to policy at a national and pan-European level - often needs data series that span time and space lengths that are not achievable in single research campaigns, but need integration of different datasets. On the other hand, the cost in term of man days of translating and merging data from different sources, when feasible, is still high, being this often a time-consuming task. Open and interoperable access to data has therefore become, in the past 10 to 15 years, one of the key objectives especially for environmental data, and is considered the easiest and most powerful way to achieve the mentioned integration.



The basic and most general principles of the Open Access concept have been posed in several statements, and one worth considering for its wide consideration and acceptance is the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities (Max Planck Society, 2003).

This declaration, stated on the 22nd of October 2003, has since been signed by 460 different research organizations and Universities from all the world, and among them are listed the Max Planck Society for the Advancement of Science (signed on 2003), the National Research Council of Italy (signed on 2012), the Smithsonian Institution (signed in 2011) and the Centre National de la Recherche Scientifique (signed on 2007).

The Berlin Declaration states that Open Access contributions must satisfy two conditions:

1. The author(s) and right holder(s) of such contributions grant(s) to all users a free, irrevocable, worldwide, right of access to, and a license to copy, use, distribute, transmit and display the work publicly and to make and distribute derivative works, in any digital medium for any responsible purpose, subject to proper attribution of authorship (community standards, will continue to provide the mechanism for enforcement of proper attribution and responsible use of the published work, as they do now), as well as the right to make small numbers of printed copies for their personal use.
2. A complete version of the work and all supplemental materials, including a copy of the permission as stated above, in an appropriate standard electronic format is deposited (and thus published) in at least one online repository using suitable technical standards (such as the Open Archive definitions) that is supported and maintained by an academic institution, scholarly society, government agency, or other well-established organization that seeks to enable open access, unrestricted distribution, interoperability, and long-term archiving.

In this first approach the stress is mostly on the Open Access of scientific publications, mostly because it was the easy part, the texts do not need any further modification to be shared effectively. The work that followed considered two, mostly separate, issues to achieve a better Open Access to Data: property rights and interoperability.

## INTEROPERABILITY OF DATA, OR HOW TO PUBLISH DATA

When dealing with Open Data Access the first issue is the realm of different data formats, databases, web services and more, that can be summarized roughly into three categories: how to catalog data; how to format data; how to process and display data.

Each one of these three categories has its own peculiar issues, with a strong common need: standards.

Cataloguing data is solved with standard metadata. For geographic information in general, the current best practice standard for geospatial metadata is the ISO 19115 "Geographic Information - Metadata" from ISO/TC 211 and following specifications, used by the INSPIRE directive, among others. The INSPIRE directive "aims to create a European Union (EU) spatial data infrastructure. This will enable the sharing of environmental spatial information among public sector organizations and better facilitate public access to spatial information across Europe".

The basic common principles of INSPIRE are:

- Data should be collected only once and kept where it can be maintained most effectively.
- It should be possible to combine seamless spatial information from different sources across Europe and share it with many users and applications.
- It should be possible for information collected at one level/scale to be shared with all levels/scales; detailed for thorough investigations, general for strategic purposes.
- Geographic information needed for good governance at all levels should be readily and transparently available.

- Easy to find what geographic information is available, how it can be used to meet a particular need, and under which conditions it can be acquired and used.

The ISO 19115 and the subsequent ISO 19135 (“Geographic information - Procedures for item registration”) enforced by INSPIRE are aimed at spatial data “needed for good governance”, extremely general and cannot grasp the detail needed in all scientific sectors.

In fact most scientific communities have their own sets of metadata, often extending the ISO 19115 set, with more detailed and organized information on the metadata. One good example of this mechanism is the SeaDataNet metadata system, born as main output of the SeaDataNet and SeaDataNet2 projects. These projects that aims to establish a pan-European infrastructure for ocean & marine data management started in the oceanographic research. The metadata used in this infrastructure became first the de-facto standard for oceanographic metadata, and has been recently upgraded to ISO 19139 XML formats and have become INSPIRE compliant.

Once data is properly metadated, it can be catalogued, looked-up and retrieved without the need of knowing the particular kind of data described.

The same standardization process is being carried out for data services (like visualization of raster data), and the standard of reference is the “ISO 19119:2005 - Geographic information -- Services”. There is an extensive work on different kinds of services, to summarize in a few words the most advanced in terms of standardization are the Web Map Service (WMS, service that output images), the Web Feature Service (WFS, service that outputs discrete geospatial information). Both services are standards defined by the Open Geospatial Consortium, and their implementation are constantly updated to be more functional and inclusive.

## PROPERTY RIGHT AND DATA POLICY

The possibility to give access (free or paid) and license to copy/use/transmit/display the Research outputs in the Actions or in Research Projects is a legal issue, and depends on the initial agreement between the funding party and the research institution.

Most Research funding comes from industrial research and development or from governmental funding, and it is then crucial to understand how and to what extent the property rights policy of the funding entity is compatible with the diffusion at large of projects results.

It is easy to affirm that Research Data coming from projects funded by public money should be public, but it is non-trivial to apply this when activities are carried out by private-public partnership, when dealing with technology development that might arise in new patents, or when the Research Data is sensible, for instance for public safety.

To understand the state of the art is worth to have a look at how some broad actions in the EU address this issue.

For instance, in the next Work Programme of ERC, there is a mandatory clause regarding the deposit of an electronic copy of the final manuscript. It is stated that “the beneficiary is required to make its best efforts to ensure that this electronic copy becomes freely and electronically available to anyone through this repository”, immediately if an electronic version is also available free of charge via the publisher, or within 6 months of publication otherwise; no mandatory actions are required on the data part, only guidelines to be followed on a voluntary basis.

They also ask the beneficiary to deposit primary data and data-related products within six months after the publication of the research paper, with no further specifications than the strong encouraging of the use of discipline-specific repositories or, alternatively, institutional repositories or even web pages.

To bring forth an example of how an European initiative approached the property rights matter, we report an excerpt from the MOON (Mediterranean Operational Oceanography Network) Data Exchange Agreement (the mentioned Annex B below refers to the MOON document):

Each Partner shall provide access to its Data upon request, at the specifications and frequency listed in Annex B hereto, provided they are used for **internal purposes only by the receiving Partner**.

The Partners shall endeavour to provide the Data in accordance with the specifications laid out in Annex B hereto (i.e. the Annex B to the MOON Data Exchange Agreement). If, for any reason, any Data become unavailable or do not meet such specifications, the Partner(s) concerned shall use best efforts to restore service promptly and shall keep the Board informed of the status thereof.

Each Partner shall bear its own costs incurred in the production and dissemination of the Data.

Derived Products. Any product derived from the Data of two or more Partners shall be exploited under a separate written agreement among the Partners

Derived Services. The Partners shall endeavour to create a common Data exploitation policy as soon as is practicable.

## RECOMMENDATIONS

JPI Oceans Actions should provide Data with standard metadata, and it will be useful to look at the different de-facto standards used and developed by specific communities to better describe and find relevant Data.

JPI Oceans Actions should carefully define each kind of user in the Actions agreements, and link this user typologies to their access possibilities and permitted use of the Data produced in the projects. A useful concept - only briefly reported in the lines from the MOON Agreement - is the “quality of service”, that is the Action Agreement or one of its Annex should state the specifications of Data-related services in terms of availability and frequency of release.

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## 6. SUPPORTING ACTIONS

### INTRODUCTION

In the description of the “dynamic planning cycle”, including the framework conditions and many typologies of actions that the JPI Oceans can adopt to reach its goals, the section A of this document analyses the different procedures regulating each type of action. These actions are part of a long-time process oriented at reaching the goals and long-term objective identified by the JPI Oceans. The whole process and the single typologies of actions are backed up by some specific actions. In this section we focus on the exam of three main categories of supporting actions, a sort of preliminary and continuous initiatives required for the assessment of the single types of actions and to orient the decision making process. In particular in order to define an action to be implemented, such as a human capacity building action or a pilot action, an ex-ante evaluation, monitoring and ex-post evaluation are the necessary means required to assess the opportunity of an action, its feasibility and its short-term and long-term impact. The Foresight exercise, analysed in both its role of Framework condition and specific action, support and orient further decisions. Finally, emergency procedures introduced a sort of “standardize” practice that will be activated just in case an emergency occurs.

### 6.1 FEASIBILITY STUDIES, IMPACT ASSESSMENT, WORKSHOPS

In the analysis and definition of the possible actions to be undertaken by the JPI Oceans, some preliminary actions like feasibility studies, impact assessment and workshops are intended to help evaluating and orienting the decisions.

The Voluntary Guidelines on Framework Conditions for Joint Programming in Research of the European Research Area Committee, Groupe de Programmation Conjointe (ERAC-GPC) consider the ex-ante impact assessment as part of the “Evaluation of Joint Programme”. Dealing with the judgment of interventions according to the expected results, impacts and needs to be satisfied, the evaluation of a Programme is defined as a means for an effective evidence-based policymaking<sup>68</sup>. The evaluation in general terms is usually one of the phases of the programming cycle, both in terms of ex-ante evaluation to define the vision and interventions, both in terms of final review at the end of the cycle to assess the results and plan future initiatives. Concerning the Joint Programming, the Framework Conditions distinguish among different levels of evaluation, relating to assessing the validity of the general policy concept; its implementation within single JPIs; the individual projects conducted within a JPI. The document points out some aspects of the evaluation process:

- have a clear, logical and well-laid-out hierarchy of the objectives to be achieved, as well as a standardised approach to presenting the rationale and motivations for each of the foreseen interventions. In this case the ex-ante impact assessment will help to define the objectives chain and assess their effectiveness, as well as evaluate the relevance, efficiency and sustainability of an intervention;

<sup>68</sup> European Research Area Committee, Groupe de Programmation Conjointe (ERAC-GPC), Voluntary Guidelines on Framework Conditions for Joint Programming in Research 2010.

- identify meaningful parameters and outputs indicators to be monitored and evaluation methodologies, taking into account the level of risks and uncertainties intrinsic in research activities;
- define the management of the programme and of the information flow;
- define an ex-post evaluation based on criteria, key performance indicators and synergies between the different levels, to assess the results of individual research projects, the success of a specific Joint Programming Initiative in addressing its target challenge, the Joint Programming concept, as an effective way for cross-border collaboration.

The Voluntary Guidelines does not go further in analysing the ex-ante impact assessment.

The JPI to CO-WORK organised a specific workshop aimed at discussing JPIs current practices and options relating to the impact assessment and ex-ante evaluation. JPI to CO-WORK starts taking into consideration the definition of the terms “impact assessment” and “ex-ante evaluation” adopted by the Commission. Following the Commission practice, “impact assessment” is intended as a legal requirement for any new legislation or initiative proposed by the Commission itself, focusing on the goals and their likely economic, environmental and social impacts. The “ex-ante evaluation” is a requirement for new and renewed programmes and actions with budgetary implications. The Commission considers the impact assessment an instrument to support the political decision-making and to ensure that the initiatives are prepared on the basis of transparent, comprehensive and balanced evidence. It is based on the following principles: make the people responsible for policy development also responsible for assessing the impact of what they propose, in order to improve the quality of the proposals themselves; an integrated approach which analyses benefits and costs, and addresses possible economic, social and environmental impacts of the initiatives; coherence of initiatives across policy areas, guaranteed by the inclusion of relevant expertise within the Commission and inputs from the stakeholders; accountability and transparency of the system, including the active involvement of the stakeholders; explanation of the necessity to adopt or not adopt an action, and its appropriateness.

The Commission impact assessment procedure identifies a number of main questions, that can be transposed in different context:

- “What is the nature and scale of the problem, how is it evolving and who is most affected by it?
- What are the views of the stakeholders concerned?
- Should the Union be involved?
- If so, what objectives should it set to address the problem?
- What are the main policy options for reaching these objectives?
- What are likely economic, social and environmental impacts of those options?
- How do the main options compare in terms of effectiveness and coherence in solving the problems?
- How could future monitoring and evaluation be organised?”.<sup>69</sup>

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<sup>69</sup> European Commission Impact Assessment Guidelines, 2009. Available at [ec.europa.eu/governance/impact/commission\\_guidelines/docs/iag\\_2009\\_en.pdf](http://ec.europa.eu/governance/impact/commission_guidelines/docs/iag_2009_en.pdf)



KEY ANALYSTICAL STEPS IMPACT ASSESSMENT <sup>70</sup>	
<b>1</b>	<b>Identifying the problem</b>
	○ Describe the nature and extent of the problem
	○ Identify the key players/affected populations
	○ Establish the drivers and underlying causes
	○ Is the problem in the Union's remit to act? Does it pass the necessity and value added test?
<b>2</b>	○ Develop a clear baseline scenario, including, where necessary, sensitivity analysis and risk assessment
	<b>Define the objectives</b>
	○ Set objectives that correspond to the problem and its root causes
	○ Establish objectives at a number of levels, going from general to specific/operational
<b>3</b>	○ Ensure that the objectives are coherent with existing EU policies and strategies, such as the Lisbon and Sustainable Development Strategies, respect for Fundamental Rights as well as the Commission's main priorities and proposals
	<b>Develop main policy options</b>
	○ Identify policy options, where appropriate distinguishing between options for content and options for delivery mechanisms (regulatory/non-regulatory approaches)
	○ Check the proportionality principle
	○ Begin to narrow the range through screening for technical and other constraints, and measuring against criteria of effectiveness, efficiency and coherence
<b>4</b>	○ Draw-up a shortlist of potentially valid options for further analysis
	<b>Analyse the impacts of the options</b>
	○ Identify (direct and indirect) economic, social and environmental impacts and how they occur (causality)
	○ Identify who is affected (including those outside the EU) and in what way
	○ Assess the impacts against the baseline in qualitative, quantitative and monetary terms. If quantification is not possible explain why
<b>5</b>	○ Identify and assess administrative burden/simplification benefits (or provide a justification if this is not done)
	○ Consider the risks and uncertainties in the policy choices, including obstacles to transposition/compliance
	<b>Compare the options</b>
	○ Weigh-up the positive and negative impacts for <u>each</u> option on the basis of criteria clearly linked to the objectives
	○ Where feasible, display aggregated and disaggregated results
<b>6</b>	○ Present comparisons between options by categories of impacts or affected stakeholder
	○ Identify, where possible and appropriate, a preferred option
	<b>Outline policy monitoring and evaluation</b>
	○ Identify core progress indicators for the key objectives of the possible intervention
	○ Provide a broad outline of possible monitoring and evaluation arrangements

Table 6.1.1: Key analytical steps of the impact assessment. Source: European Commission, Impact Assessment Guideline, 2009.

<sup>70</sup> European Commission, Impact Assessment Guidelines, 2009.

The ex-ante evaluation is also a method for supporting the preparation of proposals for new actions. In the Commission perspective it is a process aimed at gathering information and carrying out analyses that allow to better define objectives and to ensure their feasibility, to use cost-effective instruments and reliable evaluation mechanisms. Following the Commission rules, the ex- ante evaluation is mandatory for new and renewed programmes or actions having resource implications, while in a wider approach is commonly used to address a project, a programme or a policy<sup>71</sup>. In the new programme or actions programming, the ex-ante evaluation should in particular identify: the need to be met in the short or long term; the objectives to be realized; the expected results and the indicators needed to measure them; the added value of Community involvement; the risks linked with the proposals and the alternative options available; the lessons learned from similar experiences in the past; the volume of appropriations, human resources and other administrative expenditures to be allocated with regard to the cost-effectiveness principle; the monitoring system to be set up<sup>72</sup>.

In details the key elements of an ex-ante evaluation are summarized as follows:

1. Problem analysis and needs assessment
  - Explaining how the specific problems relate to the overall political goals or principles, and how problems and factors relate to each others;
  - Analysing the situation, motivations and interests of the key actors;
2. Objective setting and related indicators
  - Translating the high-level policy goals into tangible, quantified and measurable objectives;
  - Defining the qualitative/quantitative indicators that help to monitor the progress and report on the objectives to be achieved;
3. Alternative delivery mechanisms and risks assessment
  - Ensuring the appropriateness of the instruments chosen for the implementation of the intervention;
  - Analysing the possible risks and identifying the possible countermeasures;
4. Added value of Community involvement
  - Assessing the rationale for taking action at EU level, and its complementarity to and coherence with other interventions;
  - Identifying synergies with other interventions;
5. Lessons from the past
  - Critically analyzing past actions, experiences, reports (etc.);
  - Define how these can be useful in order to improve the current programming;
6. Planning future monitoring and evaluation
  - Planning the necessary arrangements for collecting data and relevant factors for analyzing the achievements;
  - Analyzing the soundness and reliability of the proposed methods and instruments for collecting the data;
  - Ensuring the operability of the monitoring system.

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<sup>71</sup> European Commission, Ex-ante Evaluation, A Practical Guide for Preparing Proposals for Expenditure Programme, 2001, available at [ec.europa.eu/dgs/secretariat\\_general/evaluation/docs/ex\\_ante\\_guide\\_2001\\_en.pdf](http://ec.europa.eu/dgs/secretariat_general/evaluation/docs/ex_ante_guide_2001_en.pdf).

<sup>72</sup> Implementation Rules for the Financial Regulation, Commission regulation n. 1687/2001.

Feasibility studies are specific instruments dedicated at analyzing in details and assessing the achievability of pre-defined goals, the feasibility of a specific intervention, from a technical point of view and cost-benefit analysis. Furthermore, the organisation of periodic workshops can help monitor and support the implementation of the foreseen actions and eventually re-orient and adapt them.

The impact assessment, ex-ante evaluation and feasibility studies focus on identifying the problem addressed and assess the different options that could be implemented to solve the problem/need. They are often used to define similar practices and as synonyms, and sometimes they can overlap. The benefits deriving from the introduction of these supporting actions, even if considered in their strict sense or as a part of the same overall process, are manifest in terms of improvement of the quality, the relevance and comprehensiveness of the programming phase.

The JPI Oceans, in the process of defining the specific objectives to be reached, and in selecting among the several possible typologies of actions the most appropriate to reach the pre-defined goals, shall put into practice these supporting actions both in terms of ex-ante appraisal than ex-post evaluation.

The JPI to CO-WORK in its analysis on the JPIs experiences, underlines that each JPI would take advantage from the ex-ante impact assessment in terms of introducing a systematized and standardized procedure for national decision making processes, and as ex-post evaluation in terms of thinking through the rationales and the impacts of interventions. Furthermore the specific characteristics of the JPI, namely the bottom-up approach and the inclusion of the stakeholders in the definition and implementation of the JPI, are inherent in the JPI procedures.

The JPI to CO-WORK investigated the JPIs attempt to characterize the impact, in terms of outcomes of the JPIs and what they intend to achieve and in terms of impact they plan to have on the societal challenge that is being addressed. The JPI to CO-WORK identifies some major common issues emerged from the various JPI:

1. Creating a critical mass of players/funders and countries;
2. Developing a shared vision of the challenge and adopting a long-term planning;
3. Developing a coordination platform;
4. Prioritizing research topics and identifying the field to be developed and the possible gaps;
5. Jointly funding the activities and implementing large scale projects;
6. Implementing research, especially by opening up current research (including sharing data and results, allowing access to research databases, creating integrated data and information base, fostering quality research, etc.);
7. Encourage external coordination with other initiatives, defining common collaboration strategies towards “third countries” and with the Commission;
8. Involving industry stakeholders;
9. Addressing societal challenges through interdisciplinarity;
10. Addressing societal challenges through cooperation and coordination between researchers and policy makers;
11. Networking.

In the characterization of the impact and in the definition of the indicators to measure it, each JPI should take into consideration all the abovementioned aspects and the broad range of activities. The JPI Neurodegenerative Diseases Research – JPND, developed a monitoring and evaluation framework, which identifies four types of indicators: input indicators, output indicators, outcome indicators and impact indicators. Input indicators are defined in relation to the resources used to implement the JPI, like for instance human resources and amount of funding, while output indicators

relate to goods, services, technology and knowledge directly produced due to the JPI activities. These two indicators are considered the core indicators for monitoring the progress of the JPI, due to their short-term measurability compared to the outcome and impact indicators which are due to produce effect in a long-time perspective. Outcome indicators are defined as less tangible than the previous ones, indicating the initial results of the intervention and the reason for the programme. Finally impact indicators measure the long-term socio-economic changes caused by the intervention<sup>73</sup>.

## 6.2 FORESIGHT

Foresight has been included in the Voluntary Guidelines on Framework Conditions for Joint Programming in Research of the European Research Area Committee, Groupe de Programmation Conjointe (ERAC-GPC). The Guidelines describes the Foresight in a broad sense, using the concept of Forward-looking activities aiming at “inspiring future oriented strategic decision-making, providing fresh insight into current trends and possible disruptive events, building shared visions of the future challenges”.

The European Foresight Platform, network bringing together a number of different communities and professionals sharing their vision on foresight, identifies as components of Foresight process:

- Action-oriented activities, analysis and activities allowing for shaping the future (and not purely analytical studies and analysis);
- Openness to alternative futures, with identification of different alternatives among which select in order to shape the future;
- Participatory process, actively involving a number of actors;
- Multidisciplinary approach.

The European Foresight Platform also underlines the functions of the Foresight as follows:

- Informing policy, delineating future challenges, possible options and providing input to policy conceptualization;
- Improving transparency and legitimacy, by actively including different stakeholders in the process;
- Supporting policy definition, by translating the inputs and ideas into specific options for policy definition and implementation;
- Facilitating policy implementation, creating a supporting network of stakeholders with specific know how and competences in the field;
- Reconfiguring the policy system, in the perspective of addressing long-term challenges;
- Symbolic function of the transparency of the process, to be disseminate to the public.

### The double-role of Foresight as Framework Condition and as supporting action

In the JPI Oceans the Foresight is not just a framework condition, but also one of the possible typologies of actions that the JPI can implement to reach its goals. Foresight is in particular included in the “Supporting actions”, intended as preliminary activity and aiming at facilitating the decisions to adopt the actions and/or their implementation. In this sense, the Foresight exercise is a necessary preliminary step to be undertaken, together with the ex-ante evaluation and impact assessment, in

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<sup>73</sup> Joint Programme Neurodegenerative Disease Research, Monitoring and evaluation of EU Joint Programming – Neurodegenerative Disease Research – JPND, 2012  
[http://www.neurodegenerationresearch.eu/uploads/media/Monitoring\\_and\\_Evaluation\\_Framework\\_1.8Mb\\_.pdf](http://www.neurodegenerationresearch.eu/uploads/media/Monitoring_and_Evaluation_Framework_1.8Mb_.pdf)

order to orient further decisions on a defined topic area. Due to the complexity of the JPI Oceans in terms of different themes and objectives, covering diverse sectors and topics like marine technologies, climate change impact on marine environment, marine ecosystems and infrastructures, the implementation of several foresight exercises become essential. The outcome of each exercise and the document delivered will make suggestion for further proceeding the development of a specific topic or action.

Once established and regularly implemented, the Foresight process as framework condition and the Foresight as supporting action will merge, turning into a continuous process.

In the matrix showing the Framework Conditions as proposed to support JPI Oceans in adopting and managing different typologies of actions (see Figure 2.2.2), the Foresight is considered both a framework condition and an action, generating effects and impact respectively in terms of process and product. In the framework of the dynamic planning cycle for joint programming, a programmatic foresight is part of the so-called “Motivation/drivers”, the engine for stimulating the process, which in the JPI Oceans vision, is strictly connected to the objectives. The analysis of the current situation in the marine and maritime sector in Europe shows that forward-looking activities have been and are performed but non in an integrated, strategic and long term perspective with the involvement of research organisations, policy-making communities, industry and society. The main purpose for instigating a Foresight is based on the need to explore a specific area and outline key future needs and challenges. It can be used as an accompanying practice for a JPI Oceans action, or used to detect a new topic considered to be relevant.

Accordingly to what described in detail in D7.2, a Programmatic Foresight Process shall be demand-driven, have a strong product-orientation and generate process benefits. Concerning the first aspect, the JPI Oceans Foresight approach will be structured following a top-down process, more focused on the Management Board intent to further investigate a specific topic. The strong product-orientation moves from the idea that the main goal of the foresight should be a sort of roadmap for a defined area, but oriented not just on the normative-environmental vision of the future but also in the form of concrete recommendations for actions. This aspect gives the foresight the characteristic also of a “supporting action”, which can imply spending funds. In terms of process benefits the programmatic foresight will at first contribute to mobilise the relevant stakeholders in advance of JPI activities by setting up a community of knowledgeable agents on a specific area. Secondly, foresight capabilities will be developed within the JPI Oceans as well as in the participants, providing them the ability to better respond to future challenges. Finally, the Foresight process can help the JPI Oceans to act in a coherent and integrated way and to become a driving actor in the political debate on marine and maritime issues in Europe by embedding any JPI action in a wider process.

A six phases approach is proposed to put into practice a Foresight process:

1. Instigation by the Management Board of the process for a specific topic;
2. Preparing Scoping & background material;
3. Development of Ideas Meeting;
4. Vision Paper synthesising the workshop results;
5. Implementation meeting, to explore the modalities for implementing the vision;
6. Outputs: Roadmap or “joint programme” including concrete recommendations for actions to be presented to the Management Board.

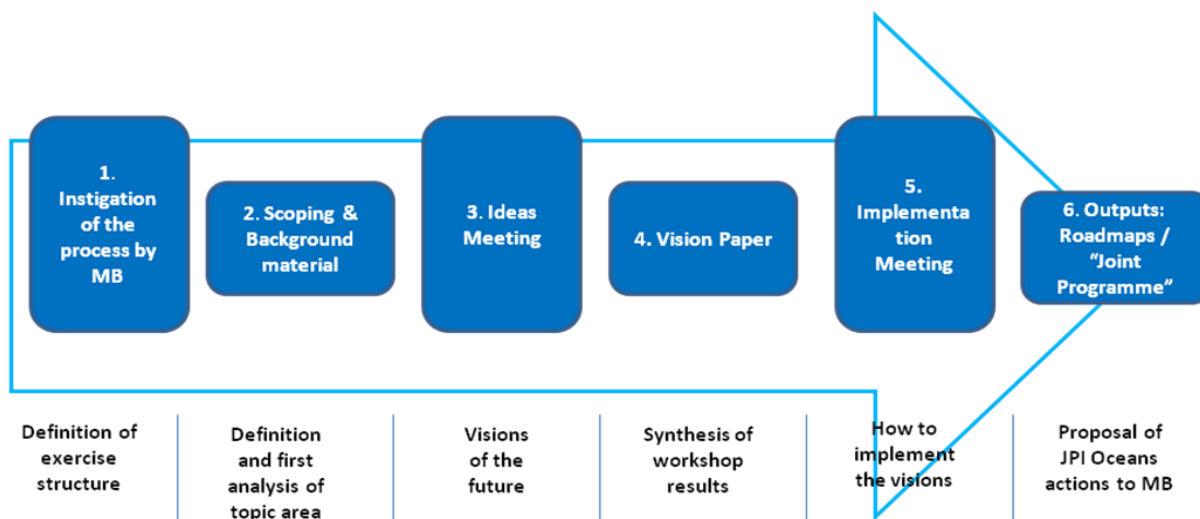


Figure 6.2.1: A sketch of the six phases of a Foresight process.

The first action is defined as a Management Board prerogative, requiring a sufficient interest and support of at least one other member country. To be launched the foresight exercise should be funded at first by the proposing country, or from other member countries. Member Countries can decide to take part in the Foresight exercise at different levels of engagement, from a minimum involvement requiring the appointment of one national contact point, to the possibility of creating national mirror groups conducting a parallel exercise at national level. In this phase the appointment, by the participating member countries, of a Steering Committee in charge of the management of the exercise is foreseen.

The Scoping phase entails two main actions: selecting, with the support of the national contact points, the single experts participating in the exercise; conducting an initial analysis of the topic and collecting preliminary information on the main future themes, trends and challenges connected to the abovementioned topic.

The meeting/workshop phase aims at developing normative visions of the future, involving the participants to think creatively about key future needs and challenges relating to the topic area and stimulating them to reflect upon the long-term objectives that the JPI Oceans shall pursue. On the basis of these discussion and visions, a vision paper is delivered, representing a basis for the subsequent development of action proposals for the JPI Oceans. The implementation workshop intends to translate the visions emerged during the Ideas meeting into concrete action proposals. Since the workshop is "solution-oriented", it shall have a more technical nature, reflected also by the composition of participants stakeholders, in particular science, industry and public authorities.

As a final step of the Foresight process, a roadmap for the topic area, a sort of "joint programme" is finalised, incorporating the development visions and an implementation plan with concrete recommendations for JPI's actions. It is then up to the Management Board to decide to adopt and put into practice any of these recommendations.

A key element of any Foresight process is the involvement of the stakeholders and experts active in the field. At each key step the appointment and active involvement of external experts is foreseen, having the necessary skills, know-how and expertise in the specific topic area, and showing the ability to moderate the process. These experts include representatives from the scientific community, industry, civil society and public authorities. The participation of experts and stakeholder is also identified by the JPI to CO-WORK as one of the four key steps for setting up a foresight process, together with a preliminary feasibility assessment, the design/scope of the exercise and the definition of the methodological framework and of the methods.



### INTRODUCTION

Europe is the world's largest market in crude oil imports, representing about one third of the world total. Ninety percent of oil and refined products are transported to and from Europe by sea. Inevitably, some of this makes its way into the sea. Whether by accident or normal ship operation, the marine environment is degraded. Large oil spills at sea constitute a threat to the environment, placing enormous demands on the national authorities responsible for response and clean-up operations. Rapid and radical degradation of the world's seas and oceans is triggering increasing calls for more effective approaches to protect, maintain and restore marine ecosystems. A broad spectrum of land and ocean based activities, coupled with continued growth of the human population and migration to coastal areas, is driving unanticipated, unprecedented and complex changes in the chemistry, physical structure, biology and ecological functioning of oceans worldwide. Symptoms of complex and fundamental alterations to marine ecosystems abound, including increases in: zones of hypoxic or anoxic water, abrupt changes in species composition, habitat degradation, invasive species, harmful algal blooms, marine epidemics, mass mortalities, fisheries collapses, etc. Fishing practices, coastal development, land based chemical and nutrient pollution, energy practices, aquaculture, land use and land transformation, water use and shipping practices combine to alter the structure and functioning of marine ecosystems globally and pose an insidious long term threat to the marine and coastal environment. Therefore, there is an urgent search for effective actions to prevent or reverse widespread declines and to protect, maintain, and restore ocean ecosystems and its resources.

These actions, though typically adopted at local or regional sea basin, need a global perspective and cross-border cooperation, as well as for exchange of best practices, frontier and basic research in order to capture the benefits from past experiences, emerging science and technology opportunities.

Some relevant emergency issues in the marine environment that require new and effective approaches for actions and solutions are listed in the following:

- Impulsive discharge of contaminants from petrochemical plants, nuclear plants, etc., located on the coast;
- Leakage of different contaminants (organics, inorganics, radionuclides, etc.) from shipwrecks at the sea bottom;
- Leakage of different contaminants (organics, inorganics, radionuclides, etc.) from dumping areas at the sea bottom;
- Earthquakes and associated tsunamis as triggers of accidents on coastal areas and deep sea;
- Military activity;
- Ballast water;
- Tank washings;
- Engine room effluent discharges;
- Ship traffic and accidents;
- Trawling;
- Landslides and Earthquakes with specific impact on coastal areas and deep sea;
- Storms, extreme weather impacts;
- Oil and more generally pollutants spilling.

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## THE ROLE OF JPI OCEANS FOR POLICY SUPPORT TO EMERGENCY ISSUES

JPI Oceans, with its role of coordination and the aim of developing joint research programs in European countries, represents the ideal integrated “environment” to implement a new, sound knowledge-based and successful system to create effective lines to assail a large number of emergency issues in the marine system. It could be a possible answer to the Community Mechanism established by the Council Decision of 23 October 2001 to respond to any major disaster inside and outside the EU by coordinating requests and offers for assistance between 30 participating states: the EU 27 and the three European Economic Area (EEA) countries - Norway, Iceland and Liechtenstein.

The prevention and intervention for tackling emergency issues or emergencies/disasters has been largely developed in the Civil Protection systems in the world. The procedures for the involvement of the scientific consultancy to support the decisions mainly depends on the timescales required for the intervention.

These timescales depend on the emergency (from some hours/days for earthquakes and tsunamis to days/months for oil spills etc.) and the procedures to manage them are mainly responsibility of dedicated agencies, mainly at national or regional level.

Emergency issues are indeed often not properly defined or well-recognized and can require a more structured organization at global level for the exchange of practices and definition and selection of procedures for the intervention.

We propose some framework conditions which can facilitate the knowledge-based decisions for the Management Board (MB) in order to launch dedicated actions to tackle emergency issues. The aspects to be addressed are:

- the selection of an emergency issue,
- the selection and establishment of a panel of experts,
- the consultancy on demand.

In practice, the MB will be supported by panels of experts which are prepared to give advice to specific requests. This procedure is similar to that adopted by some Civil Protection Departments which establish “Centers of Competence” which are ready to response quickly to provide data, analysis and advice for selecting and monitoring actions.

This procedure guarantee a fast response. The quality of the response is referred to the credibility and excellence of the experts since no peer review of the documents they prepare is adopted.

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## THE ESTABLISHMENT OF INTERNATIONAL BOARDS OF EXPERTS TO QUICKLY SUPPORT THE MANAGEMENT BOARD FOR EMERGENCY ISSUES

An emergency issue needs its definition and selection as follows:

### ❖ DEFINITION OF AN EMERGENCY ISSUE

- The emergency issue addresses cross-cutting issues in line with the goals and objectives of JPI Oceans, as expressed in the VISION DOCUMENT.
- The emergency issue is already recognized at the public level (newspapers etc.) or by the scientific community.
- The emergency issues has a European or global dimension, requiring the support for filling knowledge gaps or sharing good practices or defining procedures/actions of intervention.

## ❖ SELECTION AND ENDORSEMENT OF AN EMERGENCY ISSUE

- The emergency issue can be addressed to the Secretariat by any member of the MB, of the Strategic Advisory Board (StAB) or by the Secretariat through the analysis of stakeholders' consultation.
- The secretariat will submit the proposal to the MB for discussion and selection.
- MB will define the specificities of the emergency issue (general, thematic etc.), the number, the typologies of experts needed to be consulted, the procedure and timing for their selection (open call recruitment, hunting, nomination etc.) and the guidelines for the panel of experts to work and report. StAB can be asked to advice.
- MB can address a specific budget or resources to allocate to support different panels.
- MB mandates the Secretariat to manage the selection of the panel of experts and of the information flow between the panel and the MB.

## ❖ ESTABLISHMENT OF BOARDS OF EXPERTS

### Aim

Experts will constitute boards which will provide sound knowledge for timely and successful decision-making and risk management assessment for emergency issues at sea.

The boards should have a long term perspective, with the experts selected for their excellence but also for their experience in past emergencies. The boards should provide risk assessment thanks to the identification, analysis and evaluation of different issues and then suggest risk reduction and control with a complete risk management approach.

The boards should also coordinate interactions with national protection agencies and drive processes to stimulate specific actions for policy and environmental security.

The boards should provide sound scientific and technical support for appropriate and operative definition of emergency issues in the marine environment and freeze time and operative actions to cope them. Roles and interaction within and out of the boards will be defined to guarantee rapidness and efficiency to face the emergency event. The specific nature of the boards needs innovative protocols to timely and properly manage actions to face emergency issues at different temporal scale and an approach faunting-like.

Response to emergency issues could cover a wide spectrum of time, hours to weeks, and the boards should be able to provide successful plans to face the different aspects of the issues: analysis of problems, risk assessment for the ecosystem and human health, search for solution, etc.

In a long-term perspective, the experts will constitute a of competencies at European level.

### Selection

Accordingly to the decision of the MB, the recruitment of the experts will be selected through an open call published on the JPI Oceans website, through a scouting procedure with the support of the MB and StAB, though the nomination by MB.

The names of the experts and their CV will be proposed to the MB for the final approval.

A letter of endorsement will be sent to the experts by the Secretariat, including the Terms of Reference for the organization of the panel and the information flow to be signed and returned by each expert.

### Operation

Three main lines of operation are suggested:

- a) Continuous discussion and periodic meetings between the members of the board to analyse specific or general issues covering different aspects of problems in the marine environment and planning dedicated actions to handle them.
- b) rapid consultation to manage sudden and unforeseen issues at sea.

The meetings and the specific requests for consultation will be appointed by the Executive

Committee and the Secretariat.

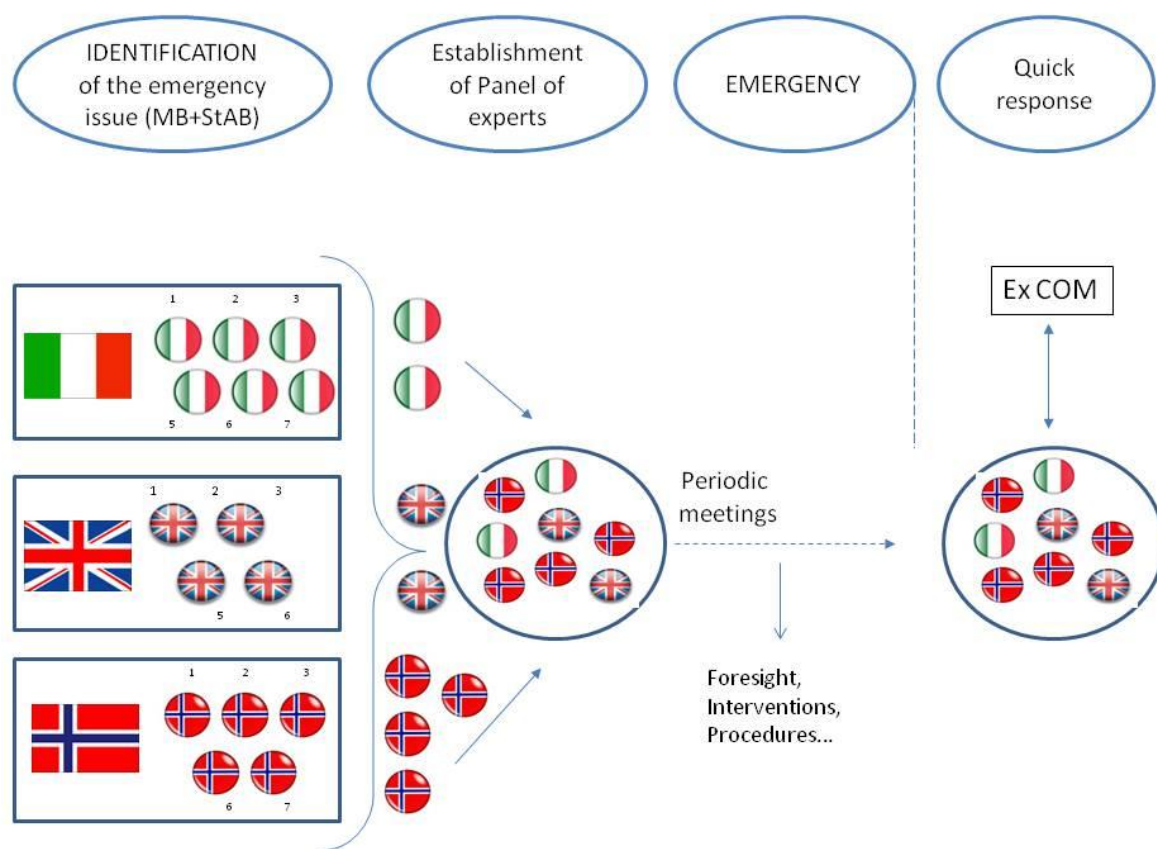


Figure 6.3.1: Sketch of structuring for addressing emergency issues as described in the text.

## 7. COMMON GUIDELINES TO DESIGN AND MANAGEMENT OF ACTIONS

### 7.1 CRITERIA FOR SELECTION OF ACTIONS

#### BACKGROUND & DEFINITION

Pilot actions are small-scale trials or test cases, limited in time and scope. They are called pilot actions because they will be implemented with the primary objective to test procedures and instruments of cooperation and coordination in the framework of JPI Oceans. Pilot actions are not based on the Strategic Research and Innovation Agenda (SRIA), which is currently in development. Routine procedures and well-known instruments such as simple calls for proposals shall not be the prime focus of pilot actions as they have been extensively tested through ERA-nets and other European initiatives. A pilot action should demonstrate the added value of JPI Oceans as a coordinating and integrating platform. Proposals for pilot actions should clearly be linked to the goals and objectives of JPI Oceans, as expressed in the Vision document. They should be fit for purpose and could take on a number of different forms (incl. any combination of them), as stated below. Pilot actions are also supposed to test and provide potential templates for activities to be developed on the basis of the SRIA.

**A pilot action is an early action that aims at testing new instruments for cooperation and coordination in the framework of JPI Oceans. Pilot actions shall demonstrate the added value of joint programming.**

#### GUIDELINES FOR THE SELECTION OF PILOT ACTIONS

##### GENERAL

JPI Oceans aims at addressing societal needs and challenges related to marine and maritime issues by coordinating national research activities. Particular attention is given to activities promoting the aims and objectives of JPI Oceans as described in the Vision document.

Pilot actions are important for the development of JPI Oceans for several reasons. Firstly, they provide practical examples which can be used to test procedures for setting up and implementing joint actions in the framework of JPI Oceans, accounting for the principle of variable geometry and aiming at exploring and exploiting synergies among participating countries to the benefit of all. In this way, pilot actions will pave the way towards full-fledged actions of JPI Oceans based on the SRIA. Secondly, pilot actions will be launched in order to demonstrate the added value and benefits of cross-border coordination of national research activities. Successful pilot actions will strongly enhance the credibility of JPI Oceans as a useful and strong platform to align national research

agendas and to initiate novel joint actions, that surpass the traditional model of joint funding calls. Thirdly, they can provide valuable input on how the SRIA of JPI Oceans can be implemented, especially with respect to testing procedures and establishing baselines for monitoring, reporting and communication.

To achieve these goals, pilot actions will have to be rather limited in scope and in time, and the approach to their implementation will be practical and pragmatic, drawing on established structures, processes and funds. Yet, pilot actions will add value to existing national and international initiatives by creating smart links between them.

The selection of pilot action proposals should be based on a critical assessment of their relevance, feasibility, and added value for JPI Oceans. Based on these principles, criteria have to be developed to facilitate the selection process for evaluating and adopting new proposals for pilot actions. These criteria and principles may also be used as basis for developing assessment criteria for future actions of JPI Oceans based on the SRIA.

## CRITERIA FOR THE SELECTION OF PILOT ACTIONS

The following criteria should facilitate the assessment of proposals for pilot actions. They provide a simple tool for assessing the relevance and maturity of proposed pilot actions prior to taking them forward in the direction of implementation. A fact sheet<sup>74</sup>, to be filled in by proposers of pilot actions, is supposed to provide all relevant information for this assessment. The criteria can be grouped into four equally important categories. Pilot actions considered for implementation should be assessed positively on all of the four main criteria.

### ❖ BASIC REQUIREMENTS & FEASIBILITY

- The pilot action addresses cross-cutting issues in line with the goals and objectives of JPI Oceans, as expressed in the VISION DOCUMENT.
- The pilot action will have a quick start, making primarily use of existing capacities and resources. Pilot actions should ideally be aimed at “low hanging fruit”.
- The pilot action requires the support of at least 4 countries represented in JPI Oceans.
- The pilot action has a committed leader<sup>75</sup>.

### ❖ RELEVANCE & IMPACT

- The pilot action explores and utilises synergies and complementarities between countries and/or capacities and/or scientific fields and/or science-industry-society to reach a common goal.
- The pilot action avoids unnecessary duplication of efforts by enhancing cooperation and/or coordination.
- The pilot action can potentially produces tangible outcomes within a time frame of 1-3 years.

### ❖ ADDED VALUE FOR JPI OCEANS

- The pilot action tests modes of collaboration among countries for aligning national research programs, thereby contributing to an operational model for joint programming.
- The pilot action strengthens structures or processes that facilitate future collaboration of partners in JPI Oceans.

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<sup>74</sup> Currently under development.

<sup>75</sup> I.e., a member country of JPI Oceans.



## 7.2 ORGANISATIONAL FORM

### PREAMBLE

JPI Oceans implementation plan is based on a variable geometry, that is, some countries will participate to some actions, other countries to some other.

There is a wide spectrum of organizational forms which can be invoked to implement Pilot Actions, such as the establishment of a legal body with supranational status, transitory coordinating structures and the delegation of tasks to a single national agency (so-called “lead agency”). Combinations of these models are also possible and the best solution has to be flexible and selected on the basis of a case by case analysis.

We distinguish two main typologies of organizational forms: a fully centralized (as a neuron) and a partially centralized (as a brain). We explain in the following the different aspects (and sketched in figure 7.2.1).

A supranational agency, usually including representatives from the participating Countries or completely independent from them, which is responsible for implementing the Pilot Action.

This is suggested, but not exclusively, for those actions where a pan-European dimension and/or an enlarged participation are present. In this case, even if the management is fully centralized, some actions/responsibilities are left to the Countries to maintain a level of flexibility and efficiency: as an example for funding respecting national rules (as in the mixed model for the virtual common pot in ERANETs and art. 185).

A partially centralized management can be also used, especially in case of regional actions, where the delegation to one Country/agency can be adopted, even if the implementation of actions is carried by actors in different participating countries.

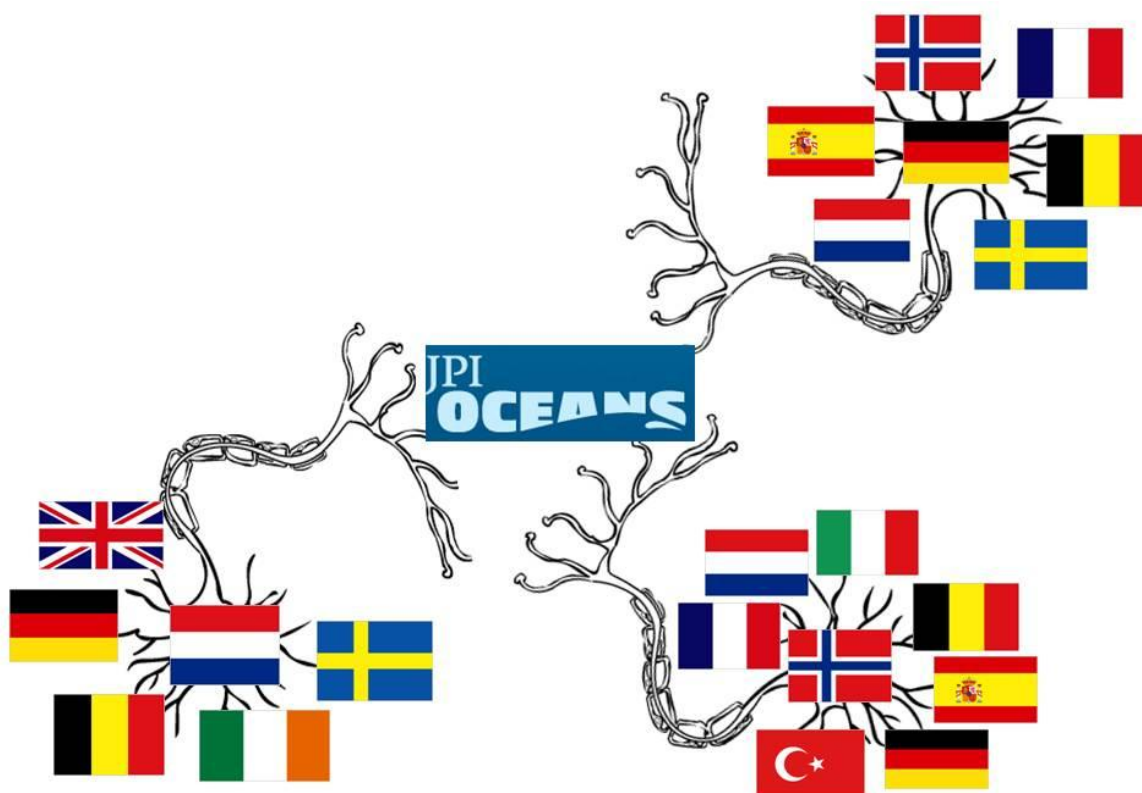


Figure 7.2.1: Sketch of an organizational form for managing JPI Oceans Pilot Actions. Any proposer/Country of a Pilot Action has the responsibility for the elaboration and implementation of the proposal and acts as a hub for the other participating to the action. Relevant information is transferred to the Secretariat of JPI Oceans, which acts as the link towards the Countries non-participating to the action and a back-up memory with specific access rules.

#### JPI OCEANS AS A BRAIN

Any proposer/Country of a Pilot Action has the responsibility for the elaboration and implementation of the proposals (which becomes the lead agency). In order to guarantee the transparency, the dissemination of the results, increasing the impact and the possibility of enlarging the dimension of an action, the partially centralized management should always transfer information to the Secretariat of JPI Oceans, which in this case should be considered as the link towards the Countries non-participating to the action and a back-up memory with specific access rules. This is fundamental when different actions are considered tiles of a mosaic to achieve the objectives of JPI Oceans but not all the Countries in JPI Oceans participate the whole bouquet of actions. This is a behavior as a brain linking different neurons acting for different functions.

#### IN PRACTICE

Any Pilot Action has a sort of business plan, with a presumable list of “deliverables” and timetable. In general, a Pilot Action can include different typologies of sub-actions, like the organization of workshops, hunting/mapping of experts, funding products/projects etc.

So, it is mandatory to maintain a log of the activities, results and reference persons involved in the relevant actions. A proposal for the list of details and an example is given in the tables below.

The dissemination and access to information has to be decided on a case by case analysis.

Action: Protect northern boundaries from barbaric invasions

Sub-action: building the Adrian Wall

Who	Role in the Pilot Action	Relevant actions	Organization	Contact details
Julius Caesar	Responsible/project manager	Pilot Action	Roman empire	
Caius Marius	Financial manager	peer review, allocation and monitoring of funding etc.	Senate/funding agency	
Cicero	Responsible of communication plan and text reviser	Communication/Dissemination	Private company	
Maximus	Chair of the panel of experts	Evaluation	Roman Army	
Proximo	Chair of the organizing committee	Workshop	Coliseum	

Table 7.2.1: Information linked to involved persons (example).

Typology of information	Dissemination	Repository	Access rules	Contact details
Data	Restricted to 1,2,3	Owners	On request to 1,2,3	
List of experts	Public	Web	Open	
Reports	Restricted to MB	Extranet	Access to MB	
Publications	Public	Web links	Open	
Agreements	Restricted to MB	Extranet	Access to MB	

Table 7.2.2: Information linked to supporting documents (example).

## GUIDELINES FOR THE FOLLOW-UP OF PILOT ACTIONS BY THE SECRETARIAT

One (or more) member(s) of the Secretariat is(are) in charge of following a Pilot Action.

The tasks of the Secretariat member with the responsibility to follow up on a pilot action are:

- Inform the proposer of the pilot action that (s)he will be following up on the progress of the pilot action from the Secretariat side and ask to be included in all communication related to the organisational aspects of the action.
- Maintain the flow of input of information (scientists, experts, institutes, events, reports, publications, data, agreements) updated within the Secretariat.
- Participate, whenever possible, in the workshops for the development of the pilot action.
- Initiate discussion on the availability of the information – storage and accessibility.
- Assure that the dissemination and access to information is available and efficient.
- Ensure that the proposer(s) of the pilot actions fulfil(s) their obligations to:
  - Contact all MB members that have signalled their interest in participating in the action as well as remind other MB members of their task to disseminate this information at the national level.
  - Ensure that participants of the pilot actions are well enough acquainted with JPI Oceans.
  - Fill out the pilot action fact sheet.
  - Report at each MB meeting on the progress of the action.

## 7.3 QUALITY CONTROL & PEER REVIEW

### INTRODUCTION

Joint Programming Initiative “Healthy and Productive Seas and Oceans” (JPI Oceans) is along-term strategic process to address a societal challenge (see the vision document of JPI Oceans at [www.jpi-oceans.eu](http://www.jpi-oceans.eu)), which cannot successfully addressed by the research efforts of a single country. Therefore, JPIs aims at aligning national research programs and developing common solutions between participants.

No single set of rules nor any single instrument can fulfil the diverse needs and different typologies of actions will be proposed and prepared on a case-by-case basis, allowing for variable geometry and promoting an inclusive and integrated approach to reach the ten objectives defined in the vision document of JPI Oceans.

JPI Oceans deals with a complex system in terms of topics and participants: the different typologies of joint actions can include cooperation and competition between participants at different levels (funding organizations, research performing organizations, and research groups).

In this context, “peer review” is aimed to maintain standards of quality of actions, improve their performance and provide credibility to the process itself.

“Peer review” in meant as the process to support the selection of actions/projects and its methodology depends on the typology of action to be adopted. According to the vision document of JPI Oceans, we distinguish three main different cases where peer review is needed: master plans for reaching the objectives of JPI Oceans, joint calls, other typologies of actions. We report in Table 7.4.1 an example of a number of steps and/or actions which could be identified to reach a certain objective of JPI Oceans.

<b>Objective</b>	Improve understanding of marine ecosystems and their processes with particular reference to ecosystem services and impacts of human activities
<b>Mapping and analyzing</b>	Result of the analysis: Existing mathematical models of marine ecosystems do not represent or evaluate changes in biodiversity
<b>Strategic Research and Innovation Agenda</b>	Develop mathematical models of marine ecosystems including impacts of overfishing and climate change on biodiversity
<b>Implementation Plan</b>	<ul style="list-style-type: none"> <li>- Identify interest of countries, and/or institutions within countries</li> <li>- Identify best researchers / research groups for collaborative projects (sign MoU’s between institutions, funding for travel and workshops)</li> <li>- Competition among teams: Joint funding (<b>JPI joint call</b>, Horizon 2020, ...)</li> <li>- Increase infrastructure sharing (e.g. computational power, data access)</li> <li>- Organize workshops (JPI secretariat)</li> <li>- Plan and fund new Phd and post-doctoral projects and/or courses (MoU between funding organizations, Horizon 2020)</li> </ul>
<b>Measurable impact</b>	<ul style="list-style-type: none"> <li>- Generate more accurate predictions</li> <li>- Targeted, measurable policy advice for fisheries</li> </ul>

Table 7.4.1: Example of steps and/or actions which could be identified to the call objectives.

In this deliverable, we discuss the peer review in “joint calls” (marked in bold in Table 7.4.1), that is, actions linked to procedures that involve several countries, within which projects are funded

cooperatively and whereby projects pass through a peer review process before being ranked and selected. In few words, we consider the aspects of peer review when there is a competition and where the funds are allocated mainly to research groups.

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## QUALITY CONTROL & PEER REVIEW

Different typologies of Joint Actions and a variable geometry approach require different view of the evaluation and of the peer review processes guaranteeing quality, feasibility, and efficacy. In Joint Actions the role and the dialogue of the different involved actors became crucial in order to overcome differences and conflicts; some modifications of autonomies in favour of the exploitation of synergies are, therefore, necessary and they are a precondition of the effectiveness of the entire process.

In these specific actions, the focus is often on the dynamics related to the effort to foster networking and alliances (across the innovation chain) more than on competition. Cooperation, in fact, implies to agree on the right strategy options, resolve internal conflicts and to act together in order to achieve common objectives. This also implies a common effort to render the action compatible and interoperable (valid and acceptable for each actor); however, an adaptation of the procedures without scarifying the specificities and the needs of each single partner should be preserved. Effective project management strategies should also be put in place.

Within this frame the process of evaluation is the result of an agreed procedure transmitted to the Boards of JPI Oceans, which can intervene for refining the workflow of activities and for acting as evaluator in the process of the quality control, which could include external experts too. For example, in cases related to sensible ethical issues, or the risk of violate legal and propriety obligations, an additional board can be involved for advices.

This being said, the concept of peer review from that usually adopted for Joint Calls has to be enlarged. The perspective is meta-evaluative, i.e. a procedure that set up the preconditions and the conditions to guarantee the feasibility of the entire process and its review.

A preliminary phase of negotiation that renders the procedures explicit and that takes into account the needs, objectives of the committers and of all the other actors involved is the base for the success of the action; not to ignore the importance to be devoted to the cultural contexts namely the socio and political context in which the action is going to be implemented and realized. According to this approach the scale of effort and the impact is different if it is compared to a traditional peer review process. The accent is on the quality assessment, in the monitoring, more that in the peer review which is only a phase (and in some case it is even not included) of the entire process. All the external factors such as for example external experts, ranking (if considered) are embedded in the process.

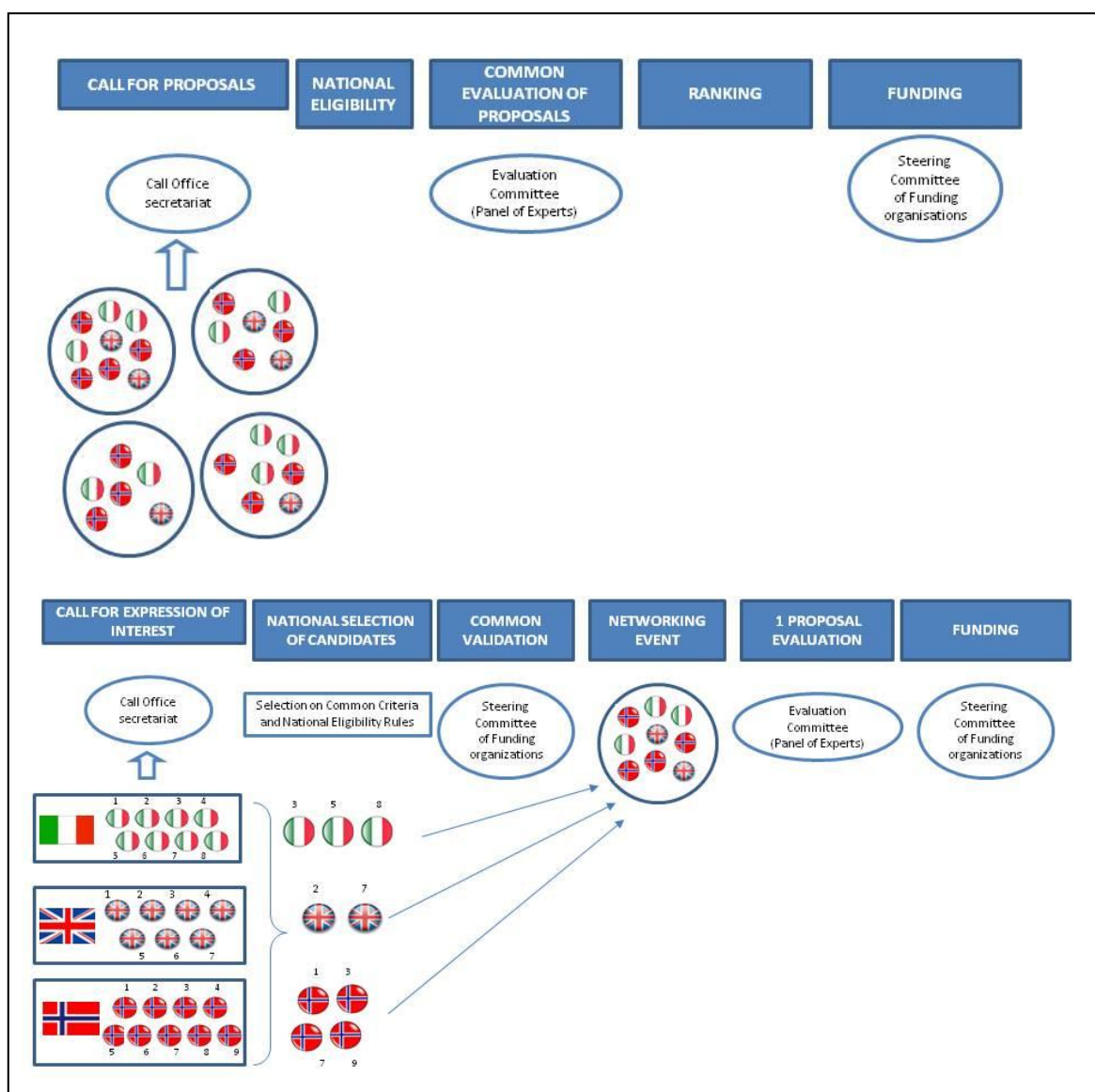


Figure 7.4.1 Comparison between standard peer review process for competition among proposals (top) and for cooperation towards one proposal (bottom, as Knowledge Hubs).

Taking the above perspective in some cases the Coordination is necessary to pave the way to any action (see the sketch in Figure 7.4.1, bottom). The objective is to develop and strengthen the coordination of national/regional stakeholders through specific actions, as for example in the coordination of ERANET's consortia or Research Alliances. The approach taken in Joint Calls Actions and the schema of the process delineated requires a high level of flexibility and adaptation. Nevertheless, some guiding principles need to be selected, and it should be added that here it is more appropriate to talk about principles (enabling factors) that to rules (constraints factors). Some essential (unavoidable) principles have therefore to be endorsed:

- **Flexibility:** processes and procedures need to be adapted and readjusted according to the case-by-case contexts.
- **Feasibility:** To increase evaluation effectiveness and efficiency, the responsibility of the committees and the actors involved (see accountability) should be clear.



- **Accountability:** The process of assigning actions along with the related responsibility to specific actors. The workflow is reported to the MB, which has the right to intervene.
- **Transparency:** Standards to assure an adequate documentation, clear statements in the process of governance, clear descriptions of the rules and procedures followed in the decisional processes, clear assumption of responsibility.
- **Effectiveness (timebound):** Evaluation should be addressed and developed within the right timescales to guarantee the efficiency and efficacy of the actions. Connect objectives to a timeline.

Furthermore, there is a sort of “intangible” principle that can be used also as an indicator (see below) deriving and embedded to the principles listed above, that of **Credibility**: it is related to the assumption of responsibility of the involved funding organization and actors and to the integrity of the process.

In this perspective, and based on the five principles mentioned above, the evaluation involves the entire process and takes into account a complete descriptions of actions, findings, limitations, and results. Evaluation should construct a judgment in a way that will also encourage committers to reinterpret or revise the process and their behaviour in case of failure or partial failure.

Evaluation procedures should be therefore practical and responsive to the way the all process operates. It is both a systematic measurement and a process of comparison with a standard, monitoring of the processes in order to prevent (as much as possible) errors.

From the first steps the “fit for purpose” is a guideline, the action should be suitable for the intended purpose, and this is a precondition.

Evaluation embeds “quality control” and reporting to Management Board, who makes the decision to reinforce or minimize the influence of collateral issues, it can intervene in the ex-post assessment for corrective actions and for a different assignment of responsibility. This stresses the fact that in the proposed model we are referring to a model implying a “continuous evaluation”.

They are at least four indicators (short term indicators) in order to measure the performances and to be able to reinforce or to correct the process (ex-post). These indicators (for the Joint Actions) should be directly linked to the specificity of the objectives, they can be used as pre-established criteria (ex-ante) and are underpinned in the monitoring activities during the on doing evaluation of the entire process:

- **Robustness:** the process should be immune (as much as possible) to uncertainty; all constituents should “look good” after the process is completed.
- **Reliability:** to perform all the required functions/steps under stated conditions and in the established period of time.
- **Credible process (consistency and completeness):** The evaluation process, both in planning and implementation, should be consistent with knowledge, values, and the goals stated. Documentation should adequately support the process sustaining the values of fairness and transparency.
- **Appropriateness:** appropriate measures should be guarantee to meet the goals and the needs of the planned actions, within the parameters of the framework prescribed in the policy and the information provided in the call.

Quality control and evaluation are therefore interconnected: the action progresses and results are assessed towards the stated objectives, the results (outcomes), the relation between costs and benefits and the impact.

## SCENARIOS

The implementation of the Joint Actions are planned and approached on a case-by-case basis, allowing for variable geometry and promoting an inclusive and integrated approach to reach the defined objectives. Quality control is the validation instrument and the accent is not only in the efficiency but also on effectiveness.

Different scenarios for different actions can be envisaged and the model can be redraw according to the weight given to the single actors or phases. In the following we describe the aspects which embed peer review in the broader concept of quality control.

### JOINT ACTIONS FOR EMERGING ISSUES

An interesting case is the process that should be followed in emergency issues (see Figure 7.4.2)

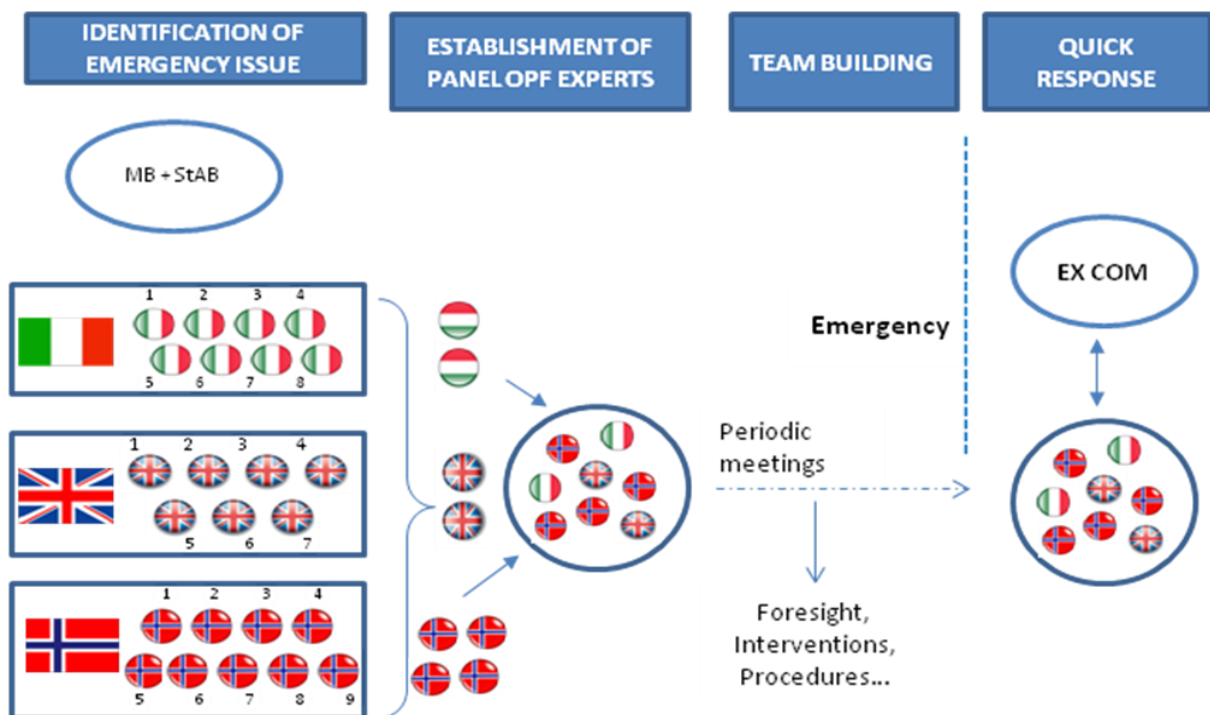


Figure 7.4.2: Sketch of structuring for addressing emergency issues.

From this specific case at least three good practices can be drawn:

1. The selection of an emerging issue is the result of a consultation within the boards of the JPI Oceans and stakeholders. The decision is made by the MB.
2. MB defines the specificities of the emerging issue (general, thematic etc.), the number, the typologies of experts to be consulted, the procedure and timing for their selection (open call recruitment, hunting, nomination etc.) and the guidelines for the panel of experts to work.
3. The experts are selected according to their excellence and to their experience in past emergencies. In the selection of the experts the MB take responsibility in final approval of the team recruited. In this phase peer review somehow crosses with quality control and evaluation (transparency – i.e. CV and names of the candidates; access to the letter of endorsement sent to the experts by the Secretariat, etc).

It should be stressed that in this type of actions the key role is played by the experts and their coordination actions (based on protocols), which constitute a board guaranteeing timely and

successful decision-making and risk management assessment. This board should provide clear and documented risk assessment thanks to the identification, analysis and evaluation of different issues and then suggest risk reduction and control with a complete risk management approach which is part of the plans. In this way the board is also guaranteeing the Quality Control of the process. Coordination actions are also the results of periodic meetings and a coordinated program of trainings, forays, and verification of the procedures. Moreover, there is a high expectation of sustainability, these actions can be in fact institutionalized.

## JOINT ACTIONS FOR RESEARCH INFRASTRUCTURES

A different scenario for peer review and evaluation is those related to those Joint Actions which could involve Research Infrastructures (RIs), which typically not follow uniform procedures but they are rather the result of complex and dedicated discussions on the needs and requirements of the research community vis à vis national/international needs and requirements.

RIs represent relevant investments and very often the results can be measured only in a long term scale. In addition to the established set of procedures for peer review and evaluation designed for Joint Calls (see following paragraphs), we can here refer to some ad hoc practices based on identified common elements aiming at a tailormade process<sup>76</sup>.

1. RIs are better evaluated by review panels. Panels should be established with members (internal and external to the committers) from scientific experts, active scientists and experts in evaluating and/or managing infrastructures and large capital projects.
2. The “long term character” of a RI, implies that Panel members should act for designated periods and for foreseen evaluations. Continuity, experience and competency are in fact essential for this type of actions.
3. The scientific and strategic concept of the RI is crucial for the evaluation process.
4. The review panel evaluation report will form the most important basis for final assessment of the action by the MB. The MB should also consider additional aspects such as strategic goals and financial budgets.
5. In evaluating RIs projects it is essential to consider the full life-cycle infrastructure and its potential users.
6. Governance and management plans will be essential to include in the budgets presented for evaluation.

## GENERAL RECOMMENDATIONS FOR QUALITY CONTROL & PEER REVIEW IN JOINT ACTIONS

- Evaluation should be an appraisal of results (achievements of the objectives) and quality (the results meet the stated needs).
- Caution is required for preventing misuse of the evaluation process.
- Actors involved in joint actions should have some training in job evaluation; as a whole: be knowledgeable about the standards and the requirements in question, the work/actions being evaluated and the organization/context in which the work is performed.
- None of the actors involved should be in a position to benefit, either personally or operationally, from the process of evaluation.
- Decisions concerning evaluation process arrived at by consensus rather than through voting or majority rule.
- In case of dissenting positions, the MB makes the final evaluation decision.

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<sup>76</sup> See European Peer Review Guide, 2011, p. 73.

## 7.4 PEER REVIEW IN JOINT CALLS

There are different joint funding models such as: common pot, virtual pot, mixed model. The peer review and evaluation model chosen for the allocation of funding are strictly related to the funding model adopted, this is the reason why the peer review model should also be on a “variable geometry” and tailored according to the typology of actions put in place. Peer Review is in fact an integral part of the research and innovation activities. Without being a standardized practice, peer review processes are very different regarding its form and implementation.

- (a) The term peer review is sometimes used as an acronym for various forms of expert assessments, including expert panels;
- (b) The evaluation criteria, which have to be applied by peers, vary according to the different tasks, which the peer review process has to fulfil;
- (c) The peer review process is embedded in decision processes, which differ considerably from each other;
- (d) Peer review practices vary also because of the different type of funding instruments<sup>77</sup>. This might be of particular relevance for the case of the JPIs, specifically CSA Ocean, which develop a number of different funding instruments. Therefore, peer review for CSA Ocean need to be a peer review of “variable geometry”.

These assumptions and approach are related to one of the most critical aspects of peer review for articulated programs: to provide the foundations for “a fit- a fit-for purpose” peer review process. Such an approach includes to defining in a flexible way the key steps of the peer review process and the whole process of evaluation:

1. The definition of main stages of peer review process
2. The definition of main features required for the peer review model: overall decision making process using panels, internal reviewers and/or individual/remote (external) reviewers, committees
3. The operational details and lower-level requirements such as timelines, workflow, reporting, costs etc.
4. The assessment process: identify specific features such as the nature and number of assessors, the source of identifying experts, multi/inter disciplinary considerations, work load for external experts and panel members
5. Schemes for the flow of information and documentation (IT tools, web-pages, online submission forms, guidelines, templates, score grids).

The peer review process for joint calls will address some key issues, steps and objectives:

- a) cooperation and competition, in-kind e in-cash contribution;
- b) selection of experts (panel, internal or external agencies, mix);
- c) definition of criteria;
- d) grid for evaluation: steps of selection;
- e) project ranking (virtual common pot o left resources redistribution);
- f) good practices.

Moreover, some questions that in the current debate on peer review are still open will be addressed:

1. What kind of management structure is desired?
2. What kinds of governing bodies are needed?
3. What are the roles, responsibilities and reporting relationships of the committees/boards?

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<sup>77</sup> The European Peer Review Guide of the European Science Foundation (ESF, 2011) acknowledges that the appropriateness of peer review practices can be meaningful only when considered in the context of the specific programs or funding instruments to which they must apply.

#### 4. What is the minimum time requested devote to peer review for fulfil the objectives?

### SPENDING AND FUNDING

Peer review processes serve a critical role in the allocation of scarce resources as research funds, as well as in helping to produce knowledge on which researchers rely (Chubin and Hackett 1990). Given its societal challenge's focus, JPI Oceans is an important example of the shift to "policy-driven" model to "science-based" one in funding research. "Political System" and "Science System" are generally used to have different objectives and rules and their convergence is somehow a challenging issue: "how to choose the best scientists/peers", "how to get scientists/peers to do what politics want" etc. (Poti and Reale 2007).

Excellence criterion should go hand in hand with "appropriateness to political purposes" as offering solutions to grand societal problems.<sup>78</sup> It should be stressed that, the evaluation of scientific excellence or of research quality, constitutes the very core of any peer review process.

The assessment of "excellence in research" is regarded as the central pillar for any scientific peer review system. However, the Voluntary Guidelines on Framework Conditions for JPIs (VGs) recognise that "divergence of approaches concerning a number of ancillary elements, including the possible use of additional non-scientific criteria, would require attention if consistency of evaluation results is to be achieved" (VGs p.19). And, the VGs also argue that commonly accepted peer review procedures are essential for a smooth management of the calls "at the heart of any excellence-based research policy and practice" (VGs p. 19) as it forms the decisions on which research(ers) will be funded (see infra §§5.2 and 6.1).

In order to address properly the process of allocating resources, we distinguish funding from spending.

Funding refers to the way in which actors provide money to develop R&I activities for a specific initiative, while spending refers to the further allocation of money on support activities, tasks, sub-organizations, etc. (Gulbrandsen et al., 2011, p. 8). Spending is thus closely related to other governance dimensions, not least priority-making. The eligibility of all costs for each applicant depends on the national/regional regulations applied by the Joint Call funding institution and should be calculated accordingly.

Therefore, it is quite likely that not all Joint Call funding institutions will be able to fund all of the below mentioned cost categories:

i. Research material and small/big-scale research equipment, ii. Personnel costs; iii. Travel costs; iv. Living expenses; v. Expenses for the organisation scientific events; vi. Expenses for the trainings; vii. Others.

This document mainly addresses peer review for CSA Ocean - Join Call Competition. In particular we are describing the most general procedure and ad hoc procedure can be designed and provided case by case (see templates and toolkit). The entire process can be described in the following general sketch.

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<sup>78</sup> Porter and Rossini (1985) found some evidence that interdisciplinary proposals are downgraded in peer review because peer reviewers tend to rate proposals from their own discipline/fields more favourably (as quoted in Rinia E.J. et al 2001).

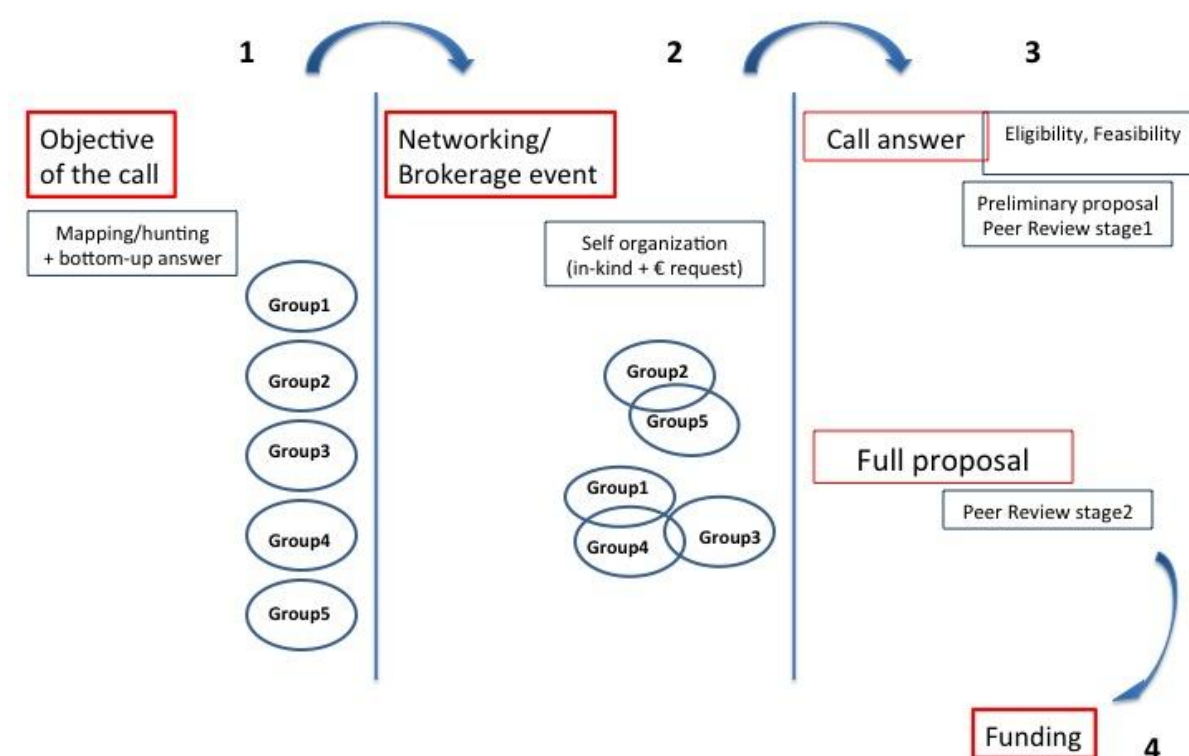


Figure 7.5.1: CSA Ocean - Join Call sketch for the most comprehensive procedure: the knowledge community (organized in groups) is self-organizing to prepare preliminary proposals describing the in-kind contribution and the request of spending or funding. This self-organization process can be facilitated by meetings between the groups and eventually with the funding organizations. The submission of the proposals is a two-stage process where the first step is used to evaluate the eligibility and feasibility. The funding in this sketch is intended as the allocation/appropriation of resources. The commitment of the resources can be done before the call publication or after the self-organization phase in order to permit the funding organizations to fulfil the more appropriate answer to the knowledge community.

In the CSA Ocean the evaluation and assessment process is divided into 3- main phases:

Phase	Activities	Evaluation Steps	Actors
Phase 1	- Ex ante activities - Selection of reviewers - Constitution of the panels	1. Eligibility	Management and Secretariat office
Phase 2	Review of the pre-proposal Review of the full proposal: scoring	2. Two stage Peer Review	Reviewers- Panels (panel chair)
Phase 3	Ranking Funding decision Reallocation of funding	3. Assessment 4. Funding	Management committee and observers (if any)

Table 7.5.1: Evaluation and assessment process



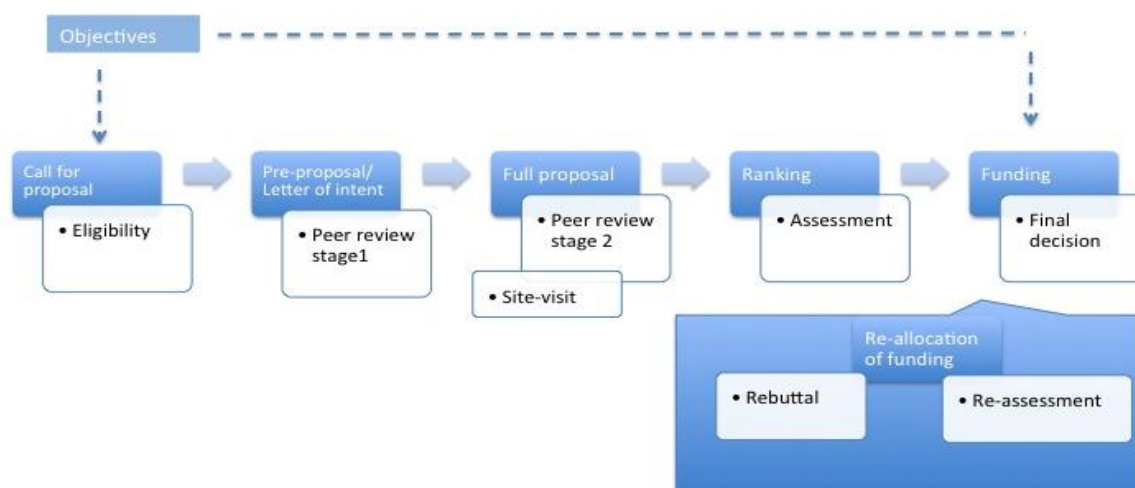


Figure 7.5.2: Description of the main stages of the evaluation process

## MANAGEMENT AND ELIGIBILITY (PHASE 1)

Practices of call management processes and underlying peer review assessments differ by country, funding organisation, funding instrument, and type of research activity funded (e.g. interdisciplinary research, basic research vs. applied research and experimental development). There are some basic assumptions that need to be taken into consideration also for CSA Ocean. The following is a suggested “vademecum”:

- 1) General development of program with reference to general management and on-going activities vis à vis the funding model;
- 2) National and transnational accessibility of the infrastructures/research;
- 3) Cooperation and coordination between nodes and national and international infrastructures/research;
- 4) User aspects, such as support and training;
- 5) Strategic role of the infrastructures/project in the political frame;
- 6) Role of industry and stack-holders in relation to the research infrastructure/research;
- 7) Risk-assessment to identify and mitigate measures;
- 8) Consider possible overlaps;
- 9) Develop performance indicators to track and assess its value;
- 10) Identify its users and keep track on its usage.

To manage the peer review process a **Management Committee** (MC) is needed to take responsibility for the practical implementation of the call. It should be composed by representatives from each funding partner participating in the call and chaired by one of the representative chosen unanimously. The Management Committee will manage the proposal evaluation process, decide on the funding of projects, and monitor and evaluate the running projects. The MG is also composed by a national contact person for each participating funding partners, whom the applicants can contact to enable an effective implementation of the call and taking national rules and procedures sufficiently into account.

Partners who are not contributing funding to the call will be able to attend MC meetings as observers. The MC will be assisted by a **Secretariat Office**. The office will deal with the application forms, the eligibility phase and the MC.

After the closing date, applications are checked for eligibility by the office secretariat. Proposals not meeting the requirements will be rejected. All proposals are discussed by the MC of the funding program, in a plenary discussion, following project numbering. A “pre-assessment” of the proposals

in writing is made by the MC. MC will nominate the reviewers for the composition of the panel based on the content of the proposals and individual expertise. Once members of the MC agreed, proposals are sent to panel's members for peer review. The MC decides in fact on the final composition of the peer review panels and selects the panel chair. The panels are organized at a "variable geometry". Panels will act as referees and provide the written reviews to the MC, their workflow is supported by the Secretariat Office. The panel's members rank and recommends proposals on the basis of the written scientific assessments (see template) and the applicants' response (rebuttal) if included in the process.

### **Documentation**

The MC should prepare the text of the Call, the guidelines for proposal, guideline for the secretariat office, guidelines for reviewers (including mandate), template for reviewers, template for assessment and ranking, code of conducts, conflict of interest.

### **Eligibility**

The Secretariat Office checks the proposals against the eligibility criteria indicated in the call. In the case of inter-multidisciplinary or breakthrough research, it could be necessary to involve scientific experts to screen proposals or letters of intent for eligibility.

Some of eligibility criteria used by funding organisations are:

- Completeness of the proposal;
- Timeliness of the submission;
- Eligibility of the applicants;
- Eligibility of the scope of the research proposed in relation to the call;
- Ethical concerns.

Applicants who have failed the eligibility checks should be informed as soon as possible.

### **Selection of experts-panel composition**

The panel consists of scientific experts. Each participating funding partner may suggest two to three members. Non-funding partners who have researchers involved in proposals may also suggest members. It would be desirable for each proposal to be evaluated by members of the panel who are from a country outside of the proposal applicants, and one from the same country of the proposal applicant. Selection takes into account the appropriate qualification of the reviewers and scientific coverage and disciplinary competence.

National and gender balance is preferred, but there are no fixed quota. Expertise should be the most important criteria. Reviewers stake part in the panel as independent experts and not representing any nor can they send any replacements. Panel's members should declare any potential conflict of interest (see infra Section 8)

Criteria for selecting experts are not always straightforward and need to be tailored to the funding programme. Of course, peer reviewers must have a high level of expertise in the field, in the case of CSA Ocean different types of expertise are needed: "quality evaluations come from diverse panel of experts, which might include a mixture of backgrounds and, if relevant, different scientific viewpoints"(VGs p. 19). As a concrete example, experts without formal academic qualification might be needed to judge applied research with a more immediate commercial impact. Due to the limited availability of experts, and multiple demands from agencies etc., "the market for peer reviewers needs to be analysed, including the possible identification of non-financial incentives" (VGs p.20).

Generally there are two main groups of experts who take part in the peer review process:

- External or individual remote reviewers: they assess the proposals on their own and separately from other members. These reviewers do not discuss the proposals with anyone and provide their assessments using known and clear criteria and scores<sup>79</sup>.
- Review panels: they collectively discuss and evaluate groups of proposals.

Although is generally recommended not to mix remote and panel reviewers and to have different individuals providing remote assessments from those who will participate in ranking, in many cases remote reviewers can be members of the panel, it is important to keep clear the main function of the panel: i.e. to evaluate, consolidate and to rank or prioritise proposals on the base of clear and stated criteria and parameters.

### **Mandate of the panel members**

- Provides a scientific review (see template) for the scientific assessment of the proposals following the criteria indicated in the call and following the mandate
- Ranks and recommends proposals at the MC on the basis of the criteria published in the call and the scientific assessments.
- Provides a written summary to explain its decisions to the MC and the applicants.

## **PANELS: INTEGRATION AND COLLABORATION WITH DIFFERENT SECTORS AND AREAS**

Proposals of inter/multi/transdisciplinary nature may only be evaluated to a limited extent by individual remote reviewers, which have core knowledge in their specific field of activity. A core question for CSA Ocean is therefore, how to consider these aspects (e.g. targets, industry, academics, etc.) in the selection of reviewers and the composition of panels. The selection of panellists should also be made in terms of their degree of expertise in a specialty field (i.e. including specialist and generalist/interdisciplinary panellists). Interdisciplinary panellists are, from the start, capable of understanding, judging and comparing a wide variety of proposals without having fully developed expertise on the subject matters. Some of key factors can be considered in the composition of panels for evaluating join call competition in CSA Ocean, such as:<sup>80</sup>

- Ad hoc responsibilities between panel members. The extent to which panellists hold themselves accountable to each other for their evaluative behaviour; way they do so, i.e. vary according to the scope, composition, and distribution of expertise in a panel;
- A panel that develops good interdisciplinary dynamics does not, at the same time, allow much disciplinary discretion to individual panel members;
- Overlap in the panellists' competencies. High overlap in disciplinary panels may induce a relatively tight disciplinary control between participants, while a multidisciplinary design in turn, seems to create a shared sense among panellists that they are accountable for their judgements to a number of different disciplinary communities;
- Composition of the panel is to be made public after the decision of funded projects is made.

<sup>79</sup> One exception is the Commission's evaluation system for FP7 (non-ERC). Here, after the individual review, the experts concerned take part in an in-depth discussion of the proposal concerned, and draw up a consensus report of comments and scores. It is this consensus report, not the individual review, which is passed on to the panel review stage.

<sup>80</sup> See Huutoniemi (2012), for evaluating interdisciplinary proposals he suggests that besides including "interdisciplinarity" as a formal criterion for evaluation, research funders can encourage interdisciplinary accountability through indirectly influencing the account-giving relationships between reviewers.

## PEER REVIEW PROCESS (PHASE 2)

The peer review process for CSA Ocean is preferably a two-stage process:

**Stage 1:** An outline proposals (or letters of intent) followed by full proposals. The outline proposals contain a short description of the nature and overall objectives of the research as well as indications on the required resources, infrastructures, budgets and the proposing team. The evaluation of the outline proposal is normally sifted through a dedicated panel, or management office and the strategic advisory board for the CSA Ocean.

**Stage 2:** Full proposals go through a complete two-stage peer review system: remote assessment followed by review panel deliberation and ranking. Overall decision (prioritisation, funding) is made in decisional meeting with panels chair, members of the committee management office and the strategic advisory board for the CSA Ocean, observers.

Whether re-submissions are accepted the condition should be clarified.

According to the funding model and the character of the call, mainly its level of interdisciplinarity and the involvement of industry or not, each phase and step can be enriched by additional activities and actions such as:

**Site-visit:** In case of a on-site infrastructures, a site visit should be included as step of the evaluation, and an additional panel can be constituted ad hoc. Of course, the dimension of the infrastructure is strictly related to the “dimension” of the review.

**Mid-term review:** Once the project is launched a mid term-review can be envisaged in order to monitor the best achievements of the objectives of the proposal or a redistribution of funding. In this case a “in itinere evaluation” can be planned. A report ad hoc based on some mid term evaluation criteria to be sent by the Consortium (or the PI) to the Management Committee. The report should include some “monitoring variables” such as: timeline, budget, resources, critical issues.

## EVALUATION CRITERIA AND PRINCIPLES

The experts should review the assigned proposals based on three main core principles and related criteria:

1. Scientific and technological excellence	2. Quality and efficiency of the management	3. Impact
-Sound concept -Novelty vis à vis state of the art -Originality and level of innovation -Trans/inter-disciplinarity	-Transnational collaboration -Quality of applicants and suitability of the consortium -Feasibility of the proposed research/project: appropriateness of the work plan and planned deliverables -Level of integration and collaboration European added value -Project governance -Suitability of budget requirements	-Impact and effectiveness -Take up and use of the project results and infrastructures by end-users -Knowledge and technology Transfer -Training opportunities -Networking and dissemination activities

Table 7.5.3: Principles and criteria for evaluation.

The evaluation procedure should follow the principles of:

- Excellence: high quality objective oriented.
- Transparency: clearly described rules and procedures.
- Fairness and impartiality: all proposals are treated equally and they are evaluated impartially on their merits.

- Confidentiality: all documents and knowledge are treated in confidence.
- Efficiency and speed: evaluation is as rapid as possible.
- Ethical considerations: any proposal that contravenes fundamental ethical principles may be excluded.

## SCORE

Each proposal is given a score according to the following scale, both full and half numbers can be used:

Score - Numerical	Score – Alphabetic	Evaluation
0		The proposal <b>fails</b> to address the criteria and cannot be judged. An inadequate project that is of no national or international interest and significance, or a project in which parts of the application are so poorly described that it is impossible to evaluate
1	A	<b>Poor.</b> The criteria are addressed in an inadequate manner. The proposal presents serious inherent weakness. A low-calibre project with very little national or international interest
2	B	<b>Fair.</b> While the proposal addressed the criteria well there are still significant weakness. A project of low international standard, with little national and international.
3	C	<b>Good.</b> The proposal addressed the criteria well but improvement and modifications are necessary. The project has reasonable international standard, but limited national and international interest.
4	D	<b>Very good.</b> The proposal addressed the criteria very well, although some improvements can be possible. The project is of a high international standard and of national and international interest. The proposers have a very good reputation in their field.
5	E	<b>Excellent.</b> The proposal successfully addressed all criteria shortcoming are minor. The project is at the highest international level and of the utmost scientific interest nationally and internationally. The proposers are among the leaders in their field.

Table 7.5.4: Scores.

The score does not imply the ranking. Considering the complexity of JPI Oceans, which is characterized by an integrated cooperative approach and a variable geometry, scoring is basically made according to two main parameters: the scientific excellence and the impact or the support that the project give to the socio-economic and political system. Therefore, a double score (excellence and impact) is recommended to be adopted.

## PANEL MEETING

Two panel meetings are recommended.

The panellists meeting can be planned in order to discuss the proposals and their assignment. Before starting the discussion of proposals, possible cases of conflict of interest are identified. In the case that a panel member has a possible conflict of interest with any of the proposals, he/she leaves the meeting during discussion of the proposal. Proposals are discussed in numerical order.

After individual evaluation and scoring experts are invited to panel meeting. The panel chair starts with a short introduction and comments after which, the proposal is scored according to the

guidelines. A written explanation is provided for proposals not recommended for funding. A ranked list, written summary and projects recommended for funding are sent to the Management Committee who may only change the ranked list for national budgetary reasons. An independent observer will participate in the meeting to oversee the fairness and transparency of the evaluation process.

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### ASSESSMENT AND FUNDING (PHASE 3)

The Funding Partners retain the right to cut the budgets of proposals if necessary. Imposed budget cuts should not threaten the feasibility of projects. The Funding Partners aim at funding a balanced package of proposals with respect to the scientific topics specified in the call, strategic considerations and (trans)national participation. It provides realistic expectations to the applicants on the maximum number of projects to be funded in each country.

Partners do agree on flexibility in this budget:

- Pre-financing should be promoted
- Funding partners do not have to spend all the money that has been provisionally reserved, e.g. when there are no (more) projects of excellent scientific quality for that country
- Funding partners may be able to come up with extra money to fund excellent proposals.
- In-kind contribution should be included

Funding decision: The Management Committee will decide on the projects to be funded. The Management Committee has the intention to fund the highest ranked proposals within the possibilities of national budgets. The Funding Decision of the Management Committee has to be formally approved by the Funding Partners before publication of the results. The management committee or the secretariat office can have the mandate to negotiate with the project coordinators about issues raised by the evaluation recommendation.

#### RANKING

Prioritisation or ranking of proposals leads to the final funding decisions.

Proposals should to be sorted into an initial ranked list according to the total sum of score each proposal obtained by the reviewers. To determine a final ranked list, the MC considers and discusses proposals – particularly those around the funding margin.

MC may revise the ranking of a proposal in response to a number of factors including: reviewers reports; persuasive rebuttal arguments (in case of rebuttal or the right to reply is included in the peer review process); the MC discusses comparing the relative merits of the proposals against the selection criteria and the objective in particular in case of reallocation of funding.

MC members are recommended to take also into account any ranking anomalies.

#### REBUTTAL/RIGHT TO REPLY

Rebuttal: at the end of the selection process after the final decision is made applicants can appeal to the funding organisation or to a dedicated independent office. The applicants can object to the outcome of the peer review. In a general sense, redress only concerns the evaluation process or eligibility checks and applicants cannot question the scientific or technical judgement of the reviewers. Depending on the situation and in the case where decisions have been made incorrectly, the applicants should be given another chance with a fresh review of their proposal (see ESF, 2011).

Right to reply: the 'right to reply' can be included as part of the peer review process itself. "It is normally applied to two-stage peer review systems where a panel of experts makes a selection, prioritisation or ranking of proposals based on external referee assessments. Feedback and intervention from applicants are not provided to amend or elaborate the initially submitted proposals or to change them in any way. It is only meant to allow the applicants to identify and



comment on possible factual errors or misunderstandings that may have been made by the referees while assessing the proposal” (see ESF, 2011).

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## GOOD PRACTICE AND CONFLICT OF INTEREST

“There are common basic principles that must be adopted to assure integrity of practices. Flexibility and pragmatic interpretations may be exercised with care and according to the context and without ignoring the core meaning of these principles or violating their spirit” (see ESF Peer Review Guide). Evaluators, members of management committee and staff should not find themselves in situations that questioned their impartiality. To safeguard integrity it is absolutely essential to avoid discretionary decisions. Integrity principles must be formulated and promoted to help all parties implicated in the peer review process, namely, applicants, reviewers, panels, committee members, chairs, programme officers and staff. These principles include<sup>81</sup>:

- Honesty in communication;
- Objectivity;
- Impartiality and independence;
- Openness and accessibility;
- Duty of care;
- Fairness in providing references and giving credit;
- Responsibility for the scientists and researchers of the future.

Obviously each data, information and document should be treated under strict confidentiality. Conflicts of interest are broadly divided into two categories: intangible, i.e., those involving academic activities and scholarship; and tangible, i.e., those involving financial relationships. In peer review it is important to set out in advance in as much detail as possible those conditions that are deemed to constitute perceived and real conflicts of interest. It may be appropriate to distinguish conditions that would automatically disqualify an expert, and those that are potential conflicts and that must be further determined or resolved in the light of the specific circumstances. To uphold the credibility of the process, both real and perceived conflicts should be addressed.

- a. Close family relation or personal relationship
- b. Close/significant scientific conflict/collaboration
- c. Current or prior activity in advisory bodies of the applicant’s institutions
- d. Personal economic interest in the funding decision

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<sup>81</sup> See European Science Foundation (2010a), p. 6.

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## 8. ACKNOWLEDGEMENTS

The main authors of this deliverable are Pier Francesco Moretti and Gaia Brenna. Contributions were received also by Margherita Cappelletto, Stefania Sparnocchia, Luigi Mazari Villanova (for the aspects on capacity building) and Cristina Marras (for the aspects on Peer Review). The text for Foresight and Joint Calls has been mainly based on deliverables D7.1, D2.1 and D2.3 with the contributions of John Hanus, Josef Stuefer and Uli Wolf.

We also thank Kathrine Angell-Hansen, Willen De Moor, John Hanus, Lisa Almesjo, Emanuela Reale, Karel Haegeman, Joerg Niehoff, Massimo Busuoli, Vincenzo delle Site, Cristina Sabbioni, Hans-Guenther Schwarz, Erasmo Coccoluto, Enrique Playan, Mario Sprovieri, Francesca Cinardi, Alessandra Sanson, Annalisa Sempreviva , Francesco Lufrano, Vincenzo Antonucci, Patrizio Massoli, Daniela Fontani, Ilaria Bencini, Arianna Turini, Gianluigi Di Bello and Ezio Andreta for fruitful discussion and for supporting information exchange.

## **“NEUTRALIZED” (TEMPLATES) AND SUPPORTING DOCUMENTS FOR THE JPI OCEANS TOOLKIT**

In the following a list of documents to support and facilitate the implementation of joint actions is provided. The associated files are archived on a dedicated repository accessible to the Management Board.

Templates have been produced starting from the text of other initiatives/projects whose documents, which are included in as “other samples”. The dissemination of the “other samples” is often restricted.

These templates are neutralized in the sense that any text referring to specific or confidential information have been removed. The templates are not definitive and can/should be adapted on a case by case basis in order to fulfill the specific requests of the actions and taking into account of the recommendation which have been suggested also in other deliverables (D2.1, D2.2, D2.5).

### **PROJECT FUNDING – JOINT CALLS**

#### **TEMPLATES**

##### **PRE-CALL**

1. MoU joint call (option for one or two step call)
2. MoU joint call (with interim negotiation clause)
3. MoU ERA-NET scheme/cofund
4. MoU (Netwatch Learning Platform Toolbox)
5. Funding model (annex to MoU)
6. Financing model ERA-NET scheme/cofund
7. Instruction for the secretariat (annex to MoU)

##### **CALL**

8. Call for proposals text
9. Guidelines for applicants
10. Call for proposals application form single step procedure
11. Application form pre-proposals for two steps procedure
12. Application form full proposals for two steps procedure
13. National Regulations Template (annex to call text)
14. Feedback letter

##### **PEER REVIEW**

15. Guidelines for reviewers of proposals
16. Evaluation form of proposals
17. Evaluation criteria for proposals
18. Non disclosure agreement Declaration of Confidentiality
19. Non disclosure agreement Declaration of Conflict of Interest
20. Summary report template of evaluation
21. Consensus report template of evaluation
22. Letter to the grantees

##### **IMPLEMENTATION & EVALUATION OF THE CALL**

23. Participant declaration ERA-NET and ERA-NET PLUS actions (ERA-NET schemes) (annex to the Grant Agreement)

24. Grant Agreement annex – Specific provisions for ERA-NET scheme actions
25. Grant agreement model
26. Guide to reporting in kind, free of charge infrastructure contributions
27. Consortium agreement with IPR rules
28. Check list consortium agreement (Netwatch Learning Platform Toolbox)
29. Periodic reporting
30. Final reporting
31. Call evaluation feedback
32. Impact assessment of the project/programme

## **JOINT PUBLIC PROCUREMENT**

33. Public Notice for the realization of a Pre-Commercial Procurement R&D Project
34. Call for Proposals and Project Proposal Technical annex
35. Template for Statement of Participation
36. Framework Agreement between the Contracting authority and the Contractor

## **OTHER SAMPLES**

### **PRE-CALL**

1. SEAS ERA - Memorandum of Understanding first/second Pan-European, Atlantic, Mediterranean, Black Sea SEAS-ERA Call  
Official document from SEAS ERA - CONFIDENTIAL
2. JPI on “Cultural Heritage and Global Change: a new Challenge for Europe, JHEP Joint Pilot Call  
Memorandum of Understanding -  
Official document from JPI JHEP CONFIDENTIAL
3. Memorandum of Understanding for Joint Calls – Wadden Sea  
Official document from NOW – CONFIDENTIAL
4. Memorandum of understanding ERA-NET PLUS  
Official document from Nano-SCI ERA - CONFIDENTIAL
5. Funding model – Virtual common pot, Wadden Sea (annex 3)  
Official document from NOW
6. Funding model – Virtual common pot, Seas Era (annex 1)  
Official document from Seas Era
7. Financing model ERA-NET PLUS Heritage plus  
Official document from Heritage Plus
8. Lead agency process (Agreement between SNSF and FNR, and between SNSF, DFG and FWF)  
[www.snf.ch/SiteCollectionDocuments/int\\_eu\\_lead\\_agency\\_process\\_e.pdf](http://www.snf.ch/SiteCollectionDocuments/int_eu_lead_agency_process_e.pdf)

### **CALL**

9. Instruction for the call secretariat, Wadden Sea (annex 5)  
Official document from NOW
10. Instruction for call secretariat, Seas era (annex 5)  
Official document from Seas Era
11. Guidelines for applicants for ERA-NET call (Netwatch Learning Platform toolbox)  
[netwatch.jrc.ec.europa.eu/web/lp/learning-platform/toolbox/call-implementation/submission/submission-of-national-regional-funding-application-forms/guidelines-for-applicants](http://netwatch.jrc.ec.europa.eu/web/lp/learning-platform/toolbox/call-implementation/submission/submission-of-national-regional-funding-application-forms/guidelines-for-applicants)
12. Call for proposal application form, Transnational call on bilateral Wadden Sea Research (annex 2)  
Official document from NWO
13. Bonus call Innovation application form & annexes

- [www.bonusportal.org/bonus\\_2010-2016/bonus\\_calls/bonus\\_call\\_2012\\_innovation](http://www.bonusportal.org/bonus_2010-2016/bonus_calls/bonus_call_2012_innovation)
14. Bonus Innovation Guide for applicants  
[www.bonusportal.org/bonus\\_2010-2016/bonus\\_calls/bonus\\_call\\_2012\\_innovation](http://www.bonusportal.org/bonus_2010-2016/bonus_calls/bonus_call_2012_innovation)
  15. Bonus call Viable ecosystem application form & annexes  
[www.bonusportal.org/bonus\\_2010-2016/bonus\\_calls/bonus\\_call\\_2012\\_viable\\_ecosystem](http://www.bonusportal.org/bonus_2010-2016/bonus_calls/bonus_call_2012_viable_ecosystem)
  16. Bonus Viable ecosystem Guide for applicants  
[www.bonusportal.org/bonus\\_2010-2016/bonus\\_calls/bonus\\_call\\_2012\\_viable\\_ecosystem](http://www.bonusportal.org/bonus_2010-2016/bonus_calls/bonus_call_2012_viable_ecosystem)
  17. Seas Era call for proposals (annex 2)  
Official document from Seas Era
  18. Seas Era Pre-proposal form (annex 3)  
Official document from Seas Era
  19. Guidelines for applicants – JPI JHEP Pilot Transnational Call  
[www.jpi-culturalheritage.eu/joint-call/documents/](http://www.jpi-culturalheritage.eu/joint-call/documents/)
  20. Application Form for Projects Proposals JPI JHEP Joint Pilot Transnational Call  
[www.jpi-culturalheritage.eu/joint-call/documents/](http://www.jpi-culturalheritage.eu/joint-call/documents/)
  21. Application for EraSME call for proposals for transnational projects  
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36. Guidelines for the Evaluation Committee Wadden Sea (annex 6, 8)  
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37. Evaluation form Wadden Sea (annex 7)  
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38. Assessment criteria Seas era (annex 6)  
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39. Guidelines for reviewers Seas era (annex 7)  
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## RESEARCH ALLIANCES

### TEMPLATES

1. Agreement to establish a Research alliance

### OTHER SAMPLES

2. Letter of Intent relating to the participation of European Energy Research Alliance (EERA) Joint Programmes  
[www.eera-set.eu](http://www.eera-set.eu)
3. Declaration of Support relating to the Membership of the European Energy Research Alliance (EERA)  
[www.eera-set.eu](http://www.eera-set.eu)
4. European Energy Research Alliance (EERA) Description of Work  
[www.eera-set.eu](http://www.eera-set.eu)

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## CONNECTIVITY - KNOWLEDGE HUBS

### TEMPLATES

1. Knowledge Hub Call Text
2. Letter of Intent
3. Role of Coordinator
4. National Regulations (Annex)

### OTHER SAMPLES

5. JPI on Agriculture, Food Security and Climate Change (FACCE JPI) Strategic Research Agenda  
[www.faccejpi.com](http://www.faccejpi.com)
6. JPI A Healthy Diet for a Healthy Life (HDHL) Vision Paper  
[www.healthydietforhealthylife.eu/](http://www.healthydietforhealthylife.eu/)
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[www.healthydietforhealthylife.eu/](http://www.healthydietforhealthylife.eu/)
8. FACCE JPI Pilot Action Call for “The FACCE JPI Knowledge Hub” on a “Detailed climate change risk assessment for European agriculture and food security, in collaboration with international projects”  
[www.faccejpi.com](http://www.faccejpi.com)
9. FACCE JPI Pilot Action Call for “The FACCE JPI Knowledge Hub” on a “Detailed climate change risk assessment for European agriculture and food security, in collaboration with international projects” – Knowledge Hub full proposal  
[www.faccejpi.com](http://www.faccejpi.com)
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13. DEDIPAC Annex A Role Hub Coordinator  
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14. DEDIPAC Annex B National Regulations  
[www.healthydietforhealthylife.eu/](http://www.healthydietforhealthylife.eu/)

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## CONNECTIVITY - BILATERAL AGREEMENTS

### TEMPLATES

1. Bilateral agreement scientific cooperation

### OTHER SAMPLES

2. Bilateral agreement between Centre National de la Recherche Scientifique (CNRS) and Consiglio Nazionale delle Ricerche (CNR)  
[www.cnr.it/sitocnr/IICNR/Attivita/Attivitainternazionali/Mobilita\\_file/Accordiquadrobilaterali.html](http://www.cnr.it/sitocnr/IICNR/Attivita/Attivitainternazionali/Mobilita_file/Accordiquadrobilaterali.html)
3. Bilateral agreement between Consiglio Nazionale delle Ricerche (CNR) and the Chinese Academy of Agricultural Sciences (CAAS)  
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5. Bilateral agreement Fonds de la Recherche Scientifique (FNRS) and CONSEJO NACIONAL DE INVESTIGACIONES CIENTÍFICAS Y TÉCNICAS (CONICET)  
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## CAPACITY BUILDING

### TEMPLATES

1. Call for applications for Fellowships
2. Training Course Application Form

### OTHER SAMPLES

3. COFUND – BANDIERA, Best Action for National Development of International Expert Researchers Activities Co-funded by FP7 Marie Curie Actions – People, RITMARE Flagship Project Call for applications for the assignment of six (6) fellowships to experienced researchers to carry out research activities within the objectives of the RITMARE Flagship Project at Italian research institutions by means of individual personalised projects in the fields of Oceanography and Marine Sciences
4. EUROFLEETS, “A ship-based training course in multibeam echo sounder technology for technicians and scientists in marine research - Application Form 2010”

### TEMPLATES

1. MoU on access and sharing of infrastructures
2. Guide to reporting in kind, free of charge infrastructure contributions, general
3. Guide to reporting in kind, free of charge infrastructure contributions as BONUS
4. Reporting form in providing in kind, free of charge infrastructures contribution based on a "unit access
5. Reporting form in providing in kind, free of charge infrastructures contribution based on real costs
6. Reporting form in providing in kind, free of charge infrastructures contribution based on a fraction of the total costs in a given period related to the period of use

### OTHER SAMPLES

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[www.bonusportal.org](http://www.bonusportal.org)
8. Guide to Reporting in kind, free of charge infrastructure contributions to Bonus  
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[www.bonusportal.org](http://www.bonusportal.org)
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13. SEAS-ERA Marine Research Infrastructures (MRIs) common management guidelines for joint research activities  
[www.seas-era.eu/np4/%7B\\$clientServletPath%7D/?newsId=19&fileName=Deliverable\\_D\\_4.2.1.pdf](http://www.seas-era.eu/np4/%7B$clientServletPath%7D/?newsId=19&fileName=Deliverable_D_4.2.1.pdf)



## ANNEX 1:

### THE ANALYSIS OF THE SET-PLAN AND THE EUROPEAN ENERGY RESEARCH ALLIANCE

#### THE SET-PLAN AND THE EUROPEAN ENERGY RESEARCH ALLIANCE

##### ABSTRACT

The European Strategic Energy Technology Plan (SET-Plan) is the technology pillar of the EU Energy and Climate policy. It plans a long-term research, demonstration and innovation agenda for Europe, including concrete strategic milestones to be achieved in the energy sector. It aims at employing the European available resources through joint strategic planning and programming, avoiding fragmentation and promoting synergies. Different typologies of actions can be adopted to achieve the objectives of the SET-Plan, as the European Energy Research Alliance (EERA). EERA, in the speech held by Maire Geoghegan-Quinn in Dublin on 7<sup>th</sup> May 2013, has been reported “as a lesson for joint programmes in other areas of research. This is particularly important for institutional funding, which is something that is missing in many other joint programmes.”

We describe the aims, the governance, the management and the key actions of the EERA in order to understand the structuring of its operational joint programming and provide information to the Management Board of JPI Oceans to facilitate the adoption of some specific actions.

The information has been collected through documents, participation to EERA Conferences, interviews with experts directly involved in the EERA Joint Programmes (JPs), speeches of European Commissioners.

In this document, for sake of simplicity, we use some relevant figures and tables from the referenced articles.

##### LIST OF TOPICS

Abstract
Introduction
The steering group of SET-PLAN
EERA: the aims
EERA: the functioning and governance
EERA: Joint programmes in detail
EERA: pros and cons
References
List of supporting documents

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## INTRODUCTION

The European Strategic Energy Technology Plan (SET-Plan) is the technology pillar of the EU Energy and Climate policy. It plans a long-term research, demonstration and innovation agenda for Europe, including concrete strategic milestones to be achieved in the energy sector. Same as JPI Oceans, SET-Plan aims to employ the available resources through joint strategic planning and programming, avoiding fragmentation and promoting synergies.

The medium- and long-term objectives of SET-Plan are to achieve a 50% and 80% reduction of greenhouse emissions respectively. In order to achieve these objectives, SET Plan proposed the following actions to develop a coherent energy research landscape in Europe:

- Creating the European Industrial Initiatives to strengthen the collaboration with industries;
- Creating the European Energy Research Alliance;
- Creating the networks and information systems in order to coordinate and monitoring the different energy technologies in the European Area (“capacities mapping and technology mapping”);
- Creating a European Community Steering Group on Strategic Energy Technologies (EU Member States);
- Planning the transition of European energy infrastructure networks and systems.

The mechanisms of the SET-Plan are organized on the basis of the following structure:

**Steering Group of SET-Plan:** composed of representatives from Member States at governmental level and chaired by the European Commission, is in charge of defining the overall strategy and of ensuring a coherent approach among national, European and international efforts. It is also responsible for monitoring the progress of European Industrial Initiatives and the European Energy Research Alliance (EERA). A more detailed description of its role and activities are described in the following.

**SET-Plan Information System - SETIS:** Open access information system that offers up-to-date information on the state of energy technologies and R&D objectives across Member States and energy sectors, and on human and financial resources involved. The system supports the Steering Group to ensure the effective planning and implementation of the SET-Plan, by identifying new opportunities, monitoring and assessing the effectiveness and efficiency of the SET-Plan in delivering energy and climate change policy goals. SETIS is provided and managed by the Institute for Energy and Transport of the Joint Research Centre (JRC).

The main implementation mechanisms of the SET-Plan are the European Industrial Initiatives (EII) and the European Energy Research Alliance (EERA).

**European Industrial Initiatives - EII:** Bring together, at sectorial level, the industry active in each specific area. There are currently seven Initiatives: Solar Energy, Bio-energy, Wind Energy, Carbon Capture and Storage, Smart grids, Smart Cities and Sustainable Nuclear Fission. The Initiatives were officially launched, in two different phases, in 2010 (a first group of four Initiatives - on solar and wind energy, electric grids and carbon capture, was launched in June at the SET-Plan Conference of Madrid, the following three at the Brussels Conference in November) by a Joint Statement. In this Statement the public (Member States and European Commission) and the private sector (industry) jointly affirmed their commitment to support the Initiative’s objectives. Each initiative defined ambitious targets and established: a Technology Roadmap and Implementation Plan, with concrete actions and milestones; a light and non-bureaucratic governance structure, involving private and public actors while preserving full sovereignty over the use of their own resources. The EII are supported by the SETIS, especially in establishing monitoring and knowledge sharing arrangements and in the mutual open exchange of information.

**European Energy Research Alliance (EERA):** Bringing together Europe's leading energy research centres, is in charge of envisaging and implementing Joint Research Programmes in support of the SET-Plan. The Alliance pools and integrates research talents, activities and resources from national research centres and institutes in Europe, combining national and EU sources of funding and capitalizing synergies and complementarities. In June 2010 the first Joint Programme on wind, photovoltaic, smart grids and geothermal energy was launched, followed by other 14 Joint programmes. It is estimated that more than 2.700 researcher from over 150 public research centres and universities coming from 24 European Countries, are currently actively collaborating in the Joint Programmes.

**European Energy Research Platform:** Dedicated platform bringing together universities engaged in energy research. Established by the European University Association (EUA), represents the voice of universities and works in close connection with the EERA.

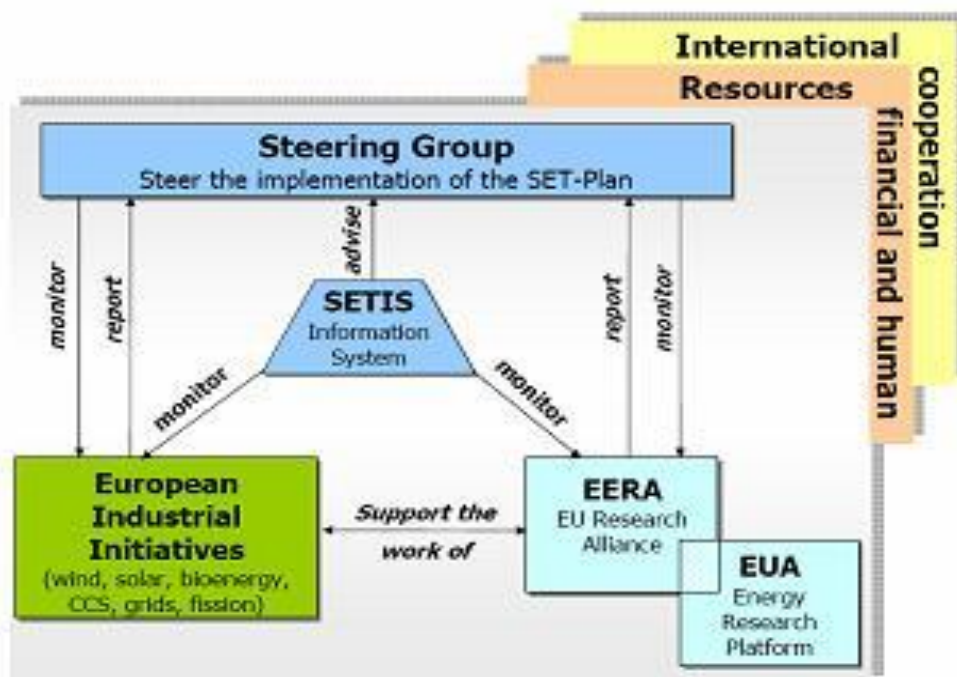


Figure Annex 1.1: A sketch of the SET-Plan process.

Source: [ec.europa.eu/research/energy/eu/index\\_en.cfm?pg=policy-set-plan](http://ec.europa.eu/research/energy/eu/index_en.cfm?pg=policy-set-plan)

Since 2008, the changes in the European energy sector to achieve the market low-carbon energy technologies are planned by SET-Plan through its roadmap. It is mainly the reference point for European, national, regional and private investment in energy research and innovation, prioritizing the technologies that are most relevant to energy and climate policies for 2020.

SET-Plan was backed by European investments, in particular from the FP7 for Research and different parts of FP7. Between 2007 and 2012 the Energy theme supported the SET Plan's technology priorities with funding of around 1.8 billion € to over 350 projects.

EU Member States, in order to align their funding in a particular area and to avoid unnecessary duplication promoted the foundation of the European Energy Research Alliance (EERA).

In 2008, ten research institutes from Denmark, Finland, France, Germany, Greece, Italy, the Netherlands, Portugal, Spain and UK, have established the EERA. The initial commitment, in terms of institutional investments, encompassed an annual R&D budget on energy research of more than 1,300M€ and over 10,000 scientists. Currently 15 research institutes, from Austria, Belgium, Czech

Republic, Denmark, Finland, France, Germany, Italy, the Netherlands, Norway, Poland, Portugal, Spain, Switzerland, and the UK, play a leading role and are partners of the Executive Committee.

This initiative has been conceived with the close collaboration and support of the European Commission. The key objective of the EERA is to accelerate the development of new energy technologies by conceiving and implementing Joint Research Programmes in support of the SET-Plan pool and integrate activities and resources, combining national and Community sources of funding and maximizing complementarities and synergies. The EERA aims to strengthen, expand and optimize EU energy research capabilities through the sharing of world class national facilities in Europe and the joint realization of pan-European research programmes.

In 2013, more than 150 public research centers and universities are actively collaborating in the EERA, with an estimated number of 2.700 researchers involved, coming from 24 European Countries (participants and associated). Taking into consideration both “Participants” and “Associated Participants”, the most active countries in terms of number of institutes collaborating with the EERA, are Italy (involving 30 research institutes, universities and private companies), UK (20), Germany and Belgium (12), Spain (11) and France (7). Several countries are currently involving 3-5 institutes (Switzerland, the Netherlands, Portugal, Norway, Denmark, Poland, Finland, Czech Republic), while a few involve 1 or two organizations.

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#### THE STEERING GROUP OF SET-PLAN

The EERA process is driven by the Steering Group of SET-Plan: to provide a high level discussion platform and a flexible framework for strategic planning and implementation, to maximize the cost effective contribution of technology to the achievement of the Energy Policy for Europe objectives.

The Steering group of SET-Plan is composed by High Level representatives from Member States and from the European Commission. The European Commission will ensure the Chair and Secretariat of the Steering Group.

Each Member State should designate up to two representatives, typically from the Energy and Research public authorities. The representatives are responsible for the national energy innovation strategies, having sufficient seniority and knowledge to take positions on Community and national research and innovation investments. The Steering Group may also invite other interested parties to participate to meetings on an ad-hoc basis, including representatives from industry, the research community, the financial sector and intergovernmental and non-governmental organizations.

The high-level objectives of the Steering Group are:

- To steer the implementation of the European Energy Technology Policy, including the SET-Plan actions and related Community Programmes, reinforcing the coherence between national, European and international efforts, maintaining a productive balance between the principles of cooperation and competition.
- To foster European joint actions and measures, matching specific instruments to the needs of different technologies, to ensure an optimization of overall energy R&D efforts in the European Research Area, through joint programming and concerted actions, involving groups of Member States under variable geometry when appropriate.
- To identify resources available to contribute to the financing of joint actions, such as European Industrial Initiatives and the European Energy Research Alliance, on the basis of Community and national priorities and preferences.
- To monitor and review progress in a systematic manner, fully geared towards reaching our common objectives.

The main tasks of the Steering Group are:

- Review the potential, maturity and specific needs of different technologies, discuss roadmaps and propose common objectives and milestones as necessary to bring them to the market (using input from the SET Information System).
- Facilitate the definition and launching of European Industrial Initiatives and the European Energy Research Alliance.
- Conceive and launch other joint programming actions and initiatives between groups of MSs interested in pursuing the various technology avenues.
- Assess the optimal timelines for investment in the various technologies.
- Identify resources available and assess regularly whether they are adequate to achieve the objectives of the SET-plan.

The Steering Group is assisted by a Secretariat and its work supported by an EU Energy Technology Information System (SETIS), both provided by the Commission.

To ensure maximum efficiency, meetings of the Steering Group will normally be prepared by 'sherpas' designated by the Member States for this purpose, working closely with the Commission. The work will be facilitated through a web-based platform.

The Steering Group will work in consensual mode. Groups of Member States can agree on specific actions in line with their national priorities and decisions on their own energy mix. In such cases, not all Member States will participate in the joint actions (principle of variable geometry). Participation will be on a voluntary basis, allowing Member States to pursue R&D in line with their own national situation and preferences.

The Steering Group may establish ad-hoc Working Groups to examine particular issues that warrant in-depth investigation.

Expenses of the Members of the Steering Group and 'sherpas' in relation to the work of the Group, including attendance at meetings, are not covered by the European Commission.

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## EERA: THE AIMS

The primary focus of the EERA is on the strategic and targeted development of next generations of energy technologies drawing on results from fundamental research and maturing technologies to the point where it can be embedded in industry driven research. It also intends to accelerate the development of new low carbon technologies.

The high-level objectives of the Alliance are to:

- accelerate the development of new energy technologies by conceiving and implementing Joint Programmes of research in support of the Set-PLAN priorities;
- work towards a long-term integration of plan-European energy research infrastructures;
- strengthen Europe's capacity to initiate and execute large precompetitive high-risk high-gain research and development programmes;
- Develop links and sustained partnerships with industry;
- Develop training, education and outreach activities for new researchers and professionals in strategic energy sectors.

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## EERA: THE FUNCTIONING AND GOVERNANCE

EERA consists mainly of a coordination/coherence (Executive Committee, ExCo) and an operational (Joint Programmes, JPs) levels (see figure Annex 1.2).

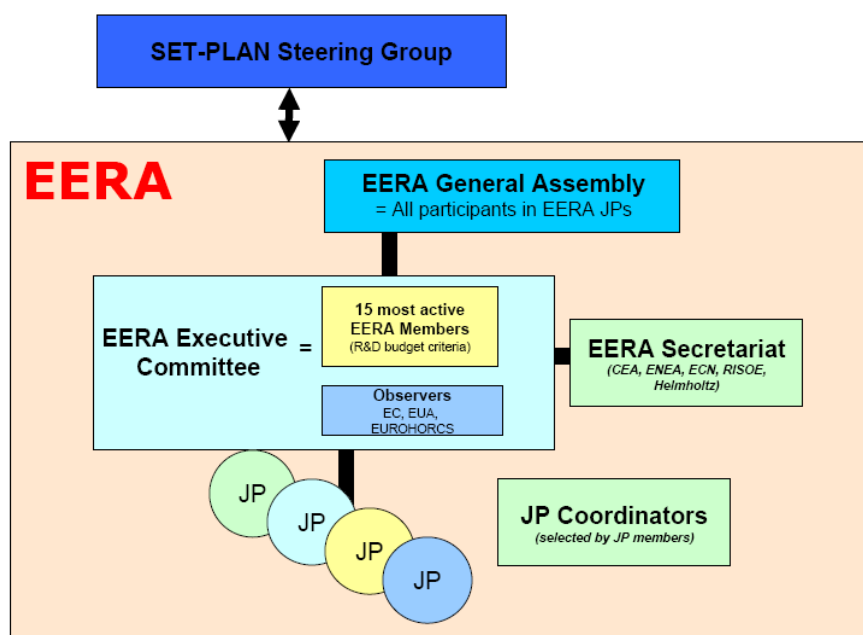


Figure Annex 1.2: A sketch of the EERA governance (from [www.lneg.pt/download/4274/EERA\\_LNEG.pdf](http://www.lneg.pt/download/4274/EERA_LNEG.pdf)). The Secretariat serves as point of contact between the Executive Committee and the EERA Joint Programmes and provides support to the Executive Committee. The other bodies are described in the text. EUROHORCS has been replaced by Science Europe (EERA press release 2<sup>nd</sup> EERA congress, 2012).

The Executive Committee provides the main guidance to the Alliance, takes the decisions for its functioning/governance, review the progress of JPs and approves the new JPs. The ExCo is composed of 15 members, maximum one per country, and the European University Association and the European Commission as observers<sup>82</sup>. The membership is reviewed biannually and based on the criteria of participation and capacity in terms of investments in research. In the current period, 2012-2014, the institutes partners of the ExCo are: the Austrian Institute of Technology (AIT), the Belgian Energy Research Alliance (BERA), the French Alternative Energies and Atomic Energy Commission (CEA), the Spanish CIEMAT, ECN from the Netherlands, the Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA), Helmholtz Association, the Institute of Power Engineering of Poland, Laboratorio Nacional de Energia e Geologia (LNEG), the Swiss Paul Scherrer Institut (PSI), the Research Centre Rez (CV Rez) of Czech Republic, the Technical University of Denmark (TUD), the Norwegian SINTEF, UK Energy Research Centre (UKERC), the Technical Research Centre of Finland (VTT).

Membership of EERA is in principle open to all research organizations which can bring in significant R&D capacity and own resources to a Joint Programme. EERA can and will evolve over time as experience is gained in the implementation of Joint Programmes<sup>83</sup>, possibly towards a legal structure in accordance with the EC Treaty. The Joint Programmes are the core activities of the EERA. Participants which significantly contribute to a Joint Programme will become Member of the EERA by

<sup>82</sup> The Executive Committee was originally supported also by EUROHOCs - European Heads of Research Councils. The EUROHOCs held its last meeting on October 2011 while all activities, in particular the work on the Road Map towards a Globally Competitive ERA will be taken over by its successor organization, Science Europe.

<sup>83</sup> The Joint Programme are: BioFuels/Bioenergy, Carbon Capturing and Storage, Concentrated Solar Power, Materials for Nuclear, Basic Science for Energy, Energy Storage, Fuel Cell, Marine Energy, Smart Cities, Geothermal Energy, Solar Photovoltaic, Smart Grids, Wind Energy. In April 2013 the EERA launched 2 new JP's: Economical, Environment and Social Impacts, Shale Gas.



signing both this Declaration of Support, that outlines the general principles of the EERA, and the Letter of Intent, thus expressing their commitment to contribute to a specific Joint Programme.

The Joint Programmes constitute strategic, permanent collaborations between major research organizations and institutes forming a sort of a virtual network of excellence. In response to the EU's SET-Plan, the Joint Programmes implement the need for better coordination among Member States, maximizing synergies and identifying priorities for future funding. All the JPs are open to research organization with a public mission, industries may participate as associate to a participant on programme level.

The participation to a JP is based on the contribution of an organization in terms of personnel investments: the organization becomes a "Participant" if this contribution is larger than 5 man-years/year per individual institute or cluster of institutions, while becomes an "Associate" if lower.

To become a member of a JP as a Participant the institution needs to fill an application to the JPMB. The application will be reviewed by at least two members of the Joint Programme Management Board (JPMB) based on the following criteria:

- The applicant belongs to a Member State or associated country of the European Union
- The capability to take responsibility for Associated Participants
- The applicant is a recognized institution within its field
- The R&D competences and priorities conformed with the reference's joint programme
- The applicant will be willing to commit substantial human resources with at least 5 person years per year.

To become a member of the JP as an Associated Participant the institution needs to fill an application and to be nominated by a Participant. The application of the nominated Associated Participant will be reviewed by a member of the JPMB based on similar criteria of a Participant but with a lower contribution in terms of personnel investments (< 5 man-year per year).

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## EERA JOINT PROGRAMMES IN DETAIL

Each JP is organized in a set of Sub-programmes; usually between 3-6 which covers the key areas in the field reflecting the priorities of the SET-plan. The Sub Programmes meet separately or jointly. JPs coordinate research based on the participating institutions own resources, combined with resources obtained through competitive calls on national and/or EU-level. Each JP is also responsible for establishing relationships with other relevant bodies in its field. The liaison with the European Industrial Initiatives (EII) is established through the seat of an EERA representative in the implementation teams of the respective EII and further relations between the respective EIs and EERA Joint Programmes are being developed.

Joint Programmes governance is mainly ruled by two bodies: the Steering Committee and the Management Board. Each Joint Programme is independent.

The Joint Programme Management Board (JPMB) is composed of the Joint Programme Coordinator (JPC), who chairs the JPMB, and the coordinators of the sub-programmes (SPC), which typically cover the key areas and are defined case by case. The JPMB meets at least twice a year and is responsible for all management aspects and the progress of the Joint Programme, which is reviewed annually by the EERA ExCo.

The Steering Committee is composed by the representative of the Participants (in the JPSC, Participants represent the interests of the Associate that are linked to them) and is chaired by the Joint Programme Coordinator.

JPSC reviews the progress of the programme and provides recommendations to the JPMB in order to ensure that the programme activities will meet the highest scientific standards and that the competences and facilities within the EERA parties are utilized in an optimal manner. Plans for the coming planning period as well as status updates for the JP are presented to the JPSC for discussion and approval.



JPSC also receives applications from the JPMB for new participants. When an applicant has been accepted by the JPSC the Participant or Associated Participant shall sign the Joint Programme Letter of Intent (LoI) and the EERA Declaration of Support (DoS) to become a member. The applicant should sign the LoI for the Joint Programme to join but only once the DoS, when it joins the first JP. That application and approval procedures may vary between the different EERA Joint Programmes. Interested organizations are therefore always advised to contact a member of the EERA secretariat or the Joint Programme Coordinator to enquire about the Joint Programme's procedures.

The involvement in a JP is based on a voluntary basis and the participants contribute to the writing of Description of Work (DoW).

Each JP is independent in its internal decision (such as the amount of fee<sup>84</sup> chosen by the JP Steering Committee). The JP coordinator is responsible for reporting on the progress of the JP to the ExCo for the communication and information exchange with other relevant non -EERA bodies (JTY-EEI-EIT-SETIS ... ), for coordinating the writing DoW of the JP, (see figure Annex 1.3).

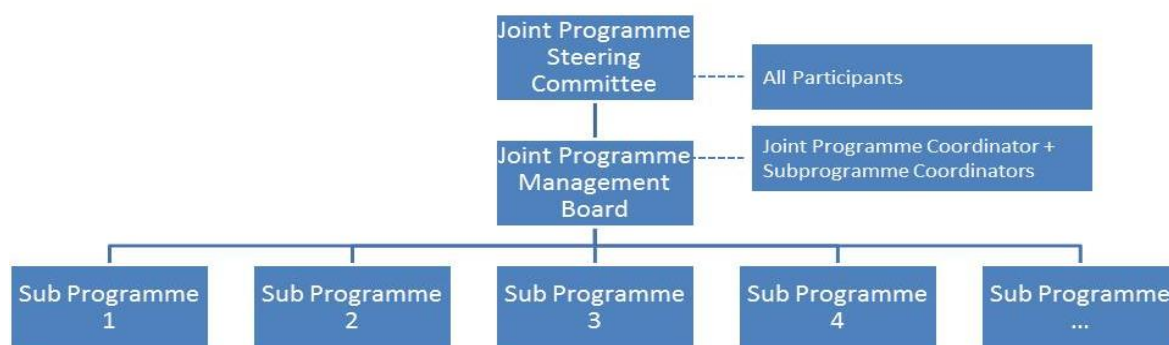


Figure Annex 1.3: A sketch of the EERA Joint Programme structure.

Source: [www.eera-set.eu/index.php?index=17](http://www.eera-set.eu/index.php?index=17)

Joint Programme Name	JP Coordinator & Country	Number of participants/ associates	Number of European Countries	Committed man years/years	Date of launch
Solar Photovoltaic	CEA-INES - France	33	19	149	June 2010 Madrid
Wind Energy	DTU Wind Energy - Denmark	37	14	200	June 2010 Madrid
Smart Grids	ENEA - Italy	27 (19 members 8 associates)	16	117	June 2010 Madrid
Geothermal	GFZ - Germany	30	12	400	June 2010 Madrid
Carbon Capture and Storage	SINTEF - Norway	49	19	371	November 2010 Brussels
Materials for	KIT - Germany	26	13	198	November

<sup>84</sup> The EERA Governance rules state that whether and how fee are institutes is up to the discretion of the JPs. The rationale for this is that PJs can decide for themselves what activities are required to turn their programme into a success, and to what extent the added value of these activities justify a fee. This large degree freedom for the JPs has resulted in different fee amounts across Joint Programmes, and different kind of cost categories that are covered by the fees. The categories covered by JP fees are: promotion & dissemination, meeting costs and labour costs of programme officers (JPC+SPCs).

Nuclear					2010 Brussels
Bioenergy	VTT - Finland	29 (17 members, 12 associates)	14	180	November 2010 Brussels
Concentrated Solar Power	CIEMAT - Spain	21 (17 members 4 associated)	Not available	125	November 2011 Warsaw
Ocean Energy	University of Edinburgh - UK	13	8	38	November 2011 Warsaw
Smart Cities	Austrian Institute of Technology - Austria	64	16	212	November 2011 Warsaw
Advanced Materials and Processes for Energy Application	CEA-INAC – France	40	11	401	November 2011 Warsaw
Energy Storage	KIT - Germany	39	16	430	November 2011 Warsaw
Fuel Cells and Hydrogen	ENEA – Italy	20 (16 full 4 associates)	11	157	November 2011 Warsaw
Economic Environment and Social Impact	Tecalia - Spain	28	14	193	April 2013 Brussels
Shale Gas	TNO – the Netherlands	24 (16 full 8 associates)	15	18	April 2013 Brussels

Table Annex 1.1: List of Joint Programmes with details about the number of organizations involved. Some JPs largely differ from other in terms of institutional investments and mainly depends on the complexity of activities, emergency issues, geographical coverage or date of launch. Data have been extracted from [www.eera-set.eu/](http://www.eera-set.eu/) on July 2013.

## EERA: PROS AND CONS

The SET-Plan can be partially compared to JPI Oceans in terms of the approach to Joint Programming. The main difference is that SET-Plan is mainly governed by research stakeholders, while JPI Oceans involves in many activities high-level decision makers as well as an integrated approach including different stakeholders (as an example, in the Strategic Advisory Board).

Nevertheless, SET-Plan aims also at stimulating the demand for innovation by providing support for setting the necessary technical standards, for public procurement of innovation and for improving the regulatory frameworks.

In the framework of the EERA, the actions are mainly driven by a bottom-up approach, where the investments have been mapped and coordinated but where a commitment by funding organizations is not included in the process and often forwarded for hunting for external funding.

The mapping exercise conducted within EERA is massive and a well organized network of people and organizations has been built, facilitating a common definition of priorities, a true exchange of practices and the launch of joint programmes. EERA has truly led the way in creating a true European Research Area in the energy sector.

The approach for the definition of priorities and goals of JPI Oceans, as well as those of other JPis, differ largely from the SET-Plan since they address societal challenges and much more complex systems. So, the Joint Programmes within the EERA are mainly “thematic” and in some extent in line with a established approach of the research community.

The risk of the EERA seems that, in a long-term perspective, some planned or wished activities which require a consistent funding can be delayed or dismissed due to a not constant dialogue and intervention with/by the funding agencies. At the moment the progress in JPs strongly depends on the active participation of the participants.

In this context, many JP have produced some concrete results such as the use of the ERA-NET Plus instrument to coordinate national funding demonstration projects. The EC has encouraged the Steering Group of the SET-Plan to expand this approach. The message of the EU Commissioner of Research and Innovation is to “collectively move from setting agendas to full implementation, including also the support through Horizon 2020, but the main funding for implementation must come from Member State programmes, which should be aligned with the agreed European level priorities” (see figure Annex 1.4). “This is about bringing together energy research and innovation funding so that we can provide the support from basic research to technology development to market uptake. In Horizon 2020 we have done exactly this, by integrating the energy research activities with the innovation activities that are currently under the Intelligent Energy for Europe programme”.

This suggests that Horizon 2020, which indeed focuses research and innovation towards the largest societal challenges, will strengthen the participation of EERA members in EU-funded research and innovation actions, with the aim of supporting the implementation of the SET-Plan (mainly in the challenge “Secure, Clean and Efficient Energy”).

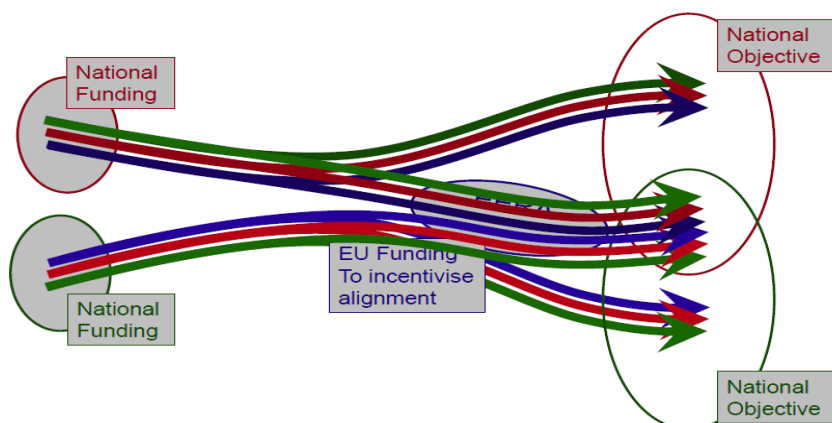


Figure Annex 1.4: The suggested process for the implementation of EERA, where the main funding should come from national investments and whose programmes, which should be aligned with the agreed European level priorities, can be facilitated through EC instruments. Courtesy of Dominique Mazière, CLORA Journée thématique “Alliance européenne de la recherche énergétique EERA: une structuration progressive de la recherche énergétique en Europe”, 27 November 2012.

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## ANNEX 2:

### THE ANALYSIS OF THE JOREP

#### ABSTRACT

We analyzed the final report of the Joint Open Research Programmes (JOREP) FP7 project in order to better understand some aspects of European joint programming, in particular the definitions and the approach to the evaluation of the process from the point of view of a well recognized European consortium. We remark that the use of wording “joint programming” is in this context not one-to-one linked to the “Joint Programming Initiatives” but mainly to jointly funding research groups. I do believe that it is important to make a clear distinction in the next future between the wording in order to avoid possible misunderstanding between different processes.

In this document, for sake of simplicity, we use some relevant figures and tables from the referenced articles. We also contacted directly the coordinator of JOREP for clarifications and discussion.

#### LIST OF TOPICS

Abstract
Introduction
JOREP definition of Joint Programming and descriptors
EU scenario of joint programming (mainly as joint funding)
Motivation of joint programmes
Types of impacts related to joint research funding
Impacts of joint research funding
Conclusions from JOREP
References

#### INTRODUCTION

JOREP is a FP7 project funded by EC in FP7 from June 2010 to the end of 2012, whose aim was to support the development of an infrastructure suitable for systematic and long-term data collection on open and joint programming in Europe (including definitions, typologies and classifications as well as procedures for data collection). A data collection on the 11 European countries involved in the consortium of the project for the period 2000 to 2009, followed by an in-depth quantitative analysis of the development of open and joint programming in these countries, have been provided.

At the end, the results of JOREP are mainly focused on the aspect of joint funding (in particular for the year 2009). The final JOREP dataset includes 99 programmes, 44 of which are European initiatives and 45 bilateral programmes. They consider the resulting coverage quite good, even though a number of small-scale national schemes might have been disregarded. Concerning European initiatives, while coverage for 2009 is quite accurate, the perimeter is changing rapidly as several initiatives were started after 2009 (or some existing initiatives have launched calls only after 2009). For data not limited to 2009, see Lepori et al. 2011.

JOREP conceptualization of joint programmes is based on a representation of public research funding organized in four functional layers - namely policy, funding bodies (agencies, ministries, European Commission), performing organizations (including universities) and research groups – and characterized by two main allocation modes, institutional and project funding (Lepori 2011). These four entities represent different functions in research funding and are organizationally separated, with few exceptions (such as the case of national organizations acting as both funding agencies and research performers, like the Academies of Sciences in some Central and Eastern European Countries, Lepori et al. 2009, and organizations like the CNRS in France, Theves et al. 2007).

Project funding identifies resources directly allocated by a funding agency to a research group or an individual for research activities limited in time and scope (Lepori et al. 2007); joint programmes in the definition adopted by JOREP are a subset of project funding (see below). Accordingly, JOREP does not consider other forms of internationalization of research funding, like joint research infrastructures and cooperation at the level of performers.

Joint programmes are defined as public research funding programmes for which at least one of the key functions (mission, submission and selection, funding decisions, contracts) is shared among more than one country.

It should be noted that competitiveness does not represent the main criterion to define project funding versus institutional funding. Hence, a research-funding programme is defined as an organizational setting able to distribute project funding to research groups and involving the following functions:

- An explicit goal and mission statement, including the objectives to be reached.
- A statement of scientific priorities or perimeter concerned and a description of the type and mode of research expected, included in the call for proposals.
- A procedure and set of rules for submitting proposals, as well as for their evaluation and selection.
- A dedicated budget related to the programme.
- The procedures for establishing and managing the contract, including follow-up and reporting.

The main criteria for identifying project funding – distinguished from institutional funding – are:

- a) the organizational separation between funding agency and beneficiary,
- b) funding is limited in time and
- c) resources are allocated directly to research groups instead of universities or research organizations;
- d) procedures for contract management, including follow-up and reporting.

It is then important to list some general exclusions, which are implied by this definition:

- Programmes for the exclusive financing of mobility and meetings are not included, as the definition requires research activities to be supported (i.e. through salaries). This excludes the large number of purely networking schemes managed by national agencies.
- Programmes managed only by the European Union (EU Framework programmes), as well as programmes managed by the EU with an individual country (EU structural funds).
- Programmes supporting joint development and exploitation of infrastructures.
- Research cooperation agreements among research organizations.

Moreover, only programmes in which at least one JOREP country participates are included.

In this context, JOREP is addressing some of the Framework Conditions for Joint Programming addressed by ERAC-GPC, that is mainly joint funding, peer review and evaluation. Foresight, IPR and dissemination are embedded but not deeply analyzed.

In this regard, some aspects are addressed by JOEP to support the development of specific **descriptors** to characterize programmes:

- the processes integrated at the supranational level,
- the organizational forms of integration,
- the management of the funding,
- the actors involved and their role.

Even if restricted to the aspects reported above, JOEP illustrates the **complexity** of the topic to be investigated. A distinctive **lack of empirical research** which could provide a basis for constructing the categories for data collection and impact analysis is also reported.

JOEP has developed three main methodological components for data collection:

- A suitable definition and operationalization of the joint programmes perimeter;
- A set of descriptors on main organizational characteristics;
- Definitions for systematic collection of data on funding flows.

Descriptor	Type	Category	Content
Programme identifier	Numeric code	Programme level	A numeric code identifying the programme
Name of the programme	Free text	Programme level	Official name of the programme or/and its translation in English
Programme start year	Closed list	Programme level	Year of the official act creating the programme
National participation	Closed list	National level	Yes/No for each country
Year of participation	Closed list	National level	Year when the country signed the official participation act (even when funding started later)
Main programme changes	Free text	National level	Free text to specify changes in national status, rules, etc.
National role	Closed list	National level	Full participation, limited participation
Establishing authority	Free text	Programme level	The authorities which established the programme
Participating agencies	Closed list	Agency level	List of all international and European funding agencies that fulfil a programme function
Agency function	Closed list	Agency level	Identification of the functions of each agency
Programme duration	binary	Programme level	Limited/periodic/regular
Project duration	Closed list	Programme level	Less than 2 years, 2-4, more than 4
Research topics	Closed list	Programme level	NABS, FP7 sectors, OST DISC
Beneficiary sectors	Closed list	National level	Frascati sectors
Selection criteria	Scale	Programme level	Scientific quality and relevance
Submission procedure	Binary	Programme level	Sinle entry point/multiple submission



Mode of integration	Closed list	Programme level	Agency/coordination/delegation/independent selection
Funding model	Closed list	Programme level	National pot/Common pot/National pot with additional EU funding
ERA partner list	List	Programme level	List of countries
Non-ERA partner list	List	Programme level	List of countries
ERA category	Closed list	Programme level	ERA programme/non-Era programme

Table Annex 2.1: list of descriptors for joint programmes.

JOEP, within its definition of joint programming, has proven that the proposed data provide original and relevant insights into joint programmes and their development through time.

Data on funding flows are not available in public budgets, but need to be collected via dedicated questionnaires presented to European and national funding agencies.

## RESULTS OF JOINT PROGRAMMING (MAINLY AS JOINT FUNDING)

In Europe, financial data show that the European Space Agency (ESA) alone accounts for about 80% of the total budget of joint programmes in the dataset; while ESA does represent a prime example of European collaboration in a domain in which national states would not have a sufficient critical mass of resources, it is not related to the new integration policies launched within the European Research Area. Moreover, this model – based on very homogeneous and well-connected international research communities able to steer national policies towards strong forms of integration – is applicable to big science, like space, astronomy, physics, fusion research, but not to other domains of science and technology characterized by higher fragmentation.

After ESA there have not been other examples of fully-integrated programmes promoted by the National States.

**Excluding ESA, the total funding volume of joint programmes is set to 0.86% of research funding in the concerned countries;** while this is indeed a sizeable amount, it remains rather limited if compared to national budgets. The level of concentration of budgets in few programmes remains very high, also excluding ESA. Among the 95 programmes in the dataset, 15 had no budget at all in 2009, thus being essentially symbolic in nature. **On average, European initiatives are much larger than bilateral programmes** – excluding ESA, they account for 86% of the budget.

Looking at the mode of integration: most programmes are characterized by coordination through some kind of **temporary committee** managing the project evaluation and selection specifically for that programme; a stronger form of integration through the establishment of a supranational agency with a permanent status is found only in a minority of programmes, but these are by far the largest – including ESA, Eureka, COST, Art. 185 Initiatives (AAL, EMRP), and Joint Technology Initiatives (ARTEMIS, ENIAC).

Thus, there is a strong connection between modes of institutionalization on the one hand and size of the programme on the other hand. The other two modes of integration, namely independent selection by national agencies and delegation of all functions to a national agency (lead agency agreements) characterize a relatively small number of programmes.

The funding model shows that National States are not willing to delegate decisions concerning budget to supranational agencies, as the low number and limited budget share of real common pot programmes confirms – ESA with its very large integrated budget remains an exception. In fact, two

main models emerge, namely national pot for most programmes and national pot plus EU contribution for the largest programmes with a supranational agency; this model characterizes all large European initiatives, with the exception of Eureka and of the European Science Foundation.

Finally, the prevalence of the single entry-point method indicates that, even when the budget is not integrated, **calls for proposals, submission and, most likely, evaluation are managed centrally** at the programme level rather than at the national level. Integration of these programme functions characterizes the vast majority of programmes.

The same picture emerges when considering the relative importance of scientific excellence vs. relevance in project selection: about 1/3 of the programmes are solely oriented towards excellence and for 3/4 of them excellence is more important than relevance, but 2/3 of the total budget of joint programmes is allocated to programmes in which relevance is more important than excellence (the large share of programmes for which excellence is not important is largely due to the presence of Eureka).

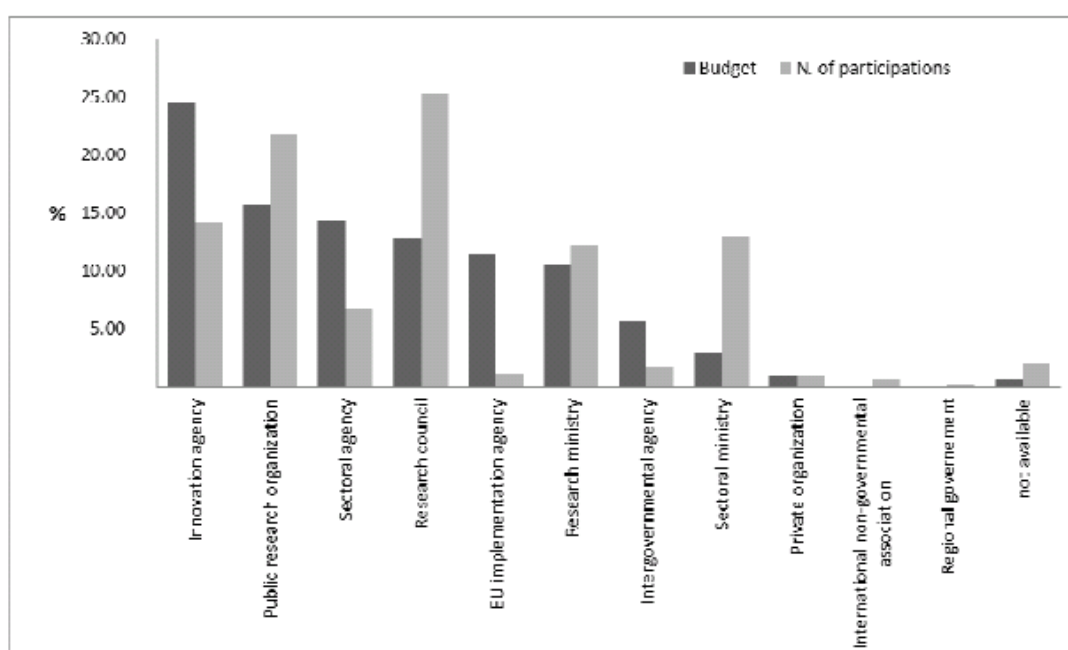


Figure Annex 2.1: Participation to joint programmes by types of agencies (number and volume of funding).

As figure 10.2 indicates, there are some quite distinctive patterns of agency participation. First, **national funding agencies** are much more important than European ones –in terms of both frequency of participation and volume of funding managed –, whereas **regional agencies play only a marginal role**. This largely matches the current structure of joint programmes, since a rather large number of national agencies are involved in each of them.

## MOTIVATION OF JOINT PROGRAMMES

Public research programmes, including the joint programmes, should be seen as policy instruments, i.e. tools through which States pursue a policy objective. It means that they are able to represent the main goals of a national government and the actual strategies the different actors involved, both national and supranational, put in place in order to pursue them. Analyzing joint programmes is a

way to shed light on the national policies and strategies for trans-national research activities, in the case of both European initiatives and national ones.

One interesting aspect to investigate in order to understand the reasons behind participation in joint programmes and their implementation is the nature and types of actors involved and the role they play in the different phases of programme design and management. **Motivations and rationales as well as impact are also affected by the role the key actors play; a multi-layered and multilevel research funding system allows for the presence of a constellation of actors**, which in the case of joint programmes is supposed to be more complex than in the case of national ones. Joint programmes in fact involve different National States; moreover, in most cases they require the interplay between the national level and the European level.

Thus, two main questions arise when the perspective of National States and the actors' role are concerned:

- a) why (under what conditions) do National States decide to initiate or participate in joint programming,
- b) how is the process of participation implemented and which are the key actors involved?

The JOREP mapping exercise highlights major differences among countries, which concern: their participation in joint programmes, the decision to undertake joint instead of bilateral collaborations, the level of agencification, and the role played by the State in funding allocation decisions. It also indicates that national participation in joint programmes reflects national governance characteristics of the research funding system and national patterns of internationalisation of research.

The exercise also shows that European initiatives and bilateral programmes clearly play two different functions in the internationalisation of research systems: the former strengthen networks of ERA countries around a core group of countries (UK, DE, FR, NL), the latter help individual ERA countries to connect with the rest of the world with no or very limited improvement of European-level bilateral cooperation.

The scenario shown in Figures Annex 2.3 and 2.4 is "honestly" reported by JOREP as possibly not complete. Some observed differences might be related to JOREP's coverage of joint programmes, which excludes cooperation agreements involving large public research organisations (PROs). In countries like France, Germany, Spain and Italy, where PROs account for a significant share of public research activities', this might result in lower figures.

Nevertheless, some clear indications emerge:

- The number of participations indicates variations among the countries for what concerns their interest in developing bilateral projects based on national programme initiatives vs. European initiatives;
- Germany emerges as the country in which joint initiatives are more numerous, both national ones and European ones;
- When funding volume is analyzed (and ESA is not included), the balance among the countries changes, since Spain and France take on a prominent role, due to the large amount of resources devoted to Eureka;
- The average investments in joint programmes as percentage of GBAORD by smaller JOREP countries (CZ, CH, DK, NL, NO) are equivalent to the average investments by the largest JOREP countries (DE, ES, FR, IT, PL, UK) (respectively 0.93% and 0.96%, when excluding ESA). In greater detail, it can be noted that the share of participation in bilateral vs. European initiatives also differs from country to country. Switzerland and Norway allocate a rather large portion of their budget to bilateral initiatives, which is probably due to the fact that they are not EU member States. On the contrary, the UK, the Netherlands, Italy, France, and the Czech Republic spend most of their joint programmes budget on European initiatives.

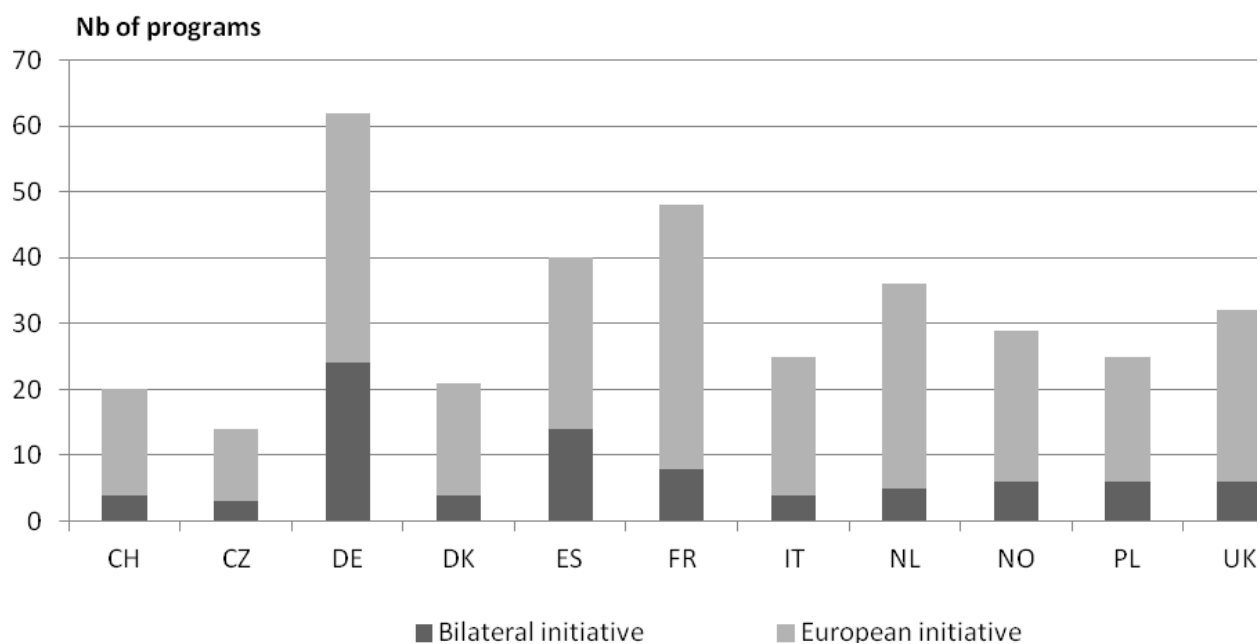


Figure Annex 2.2: Number of participations to bilateral and European initiatives programmes, by country, in 2009 (ESA included, N total=95)

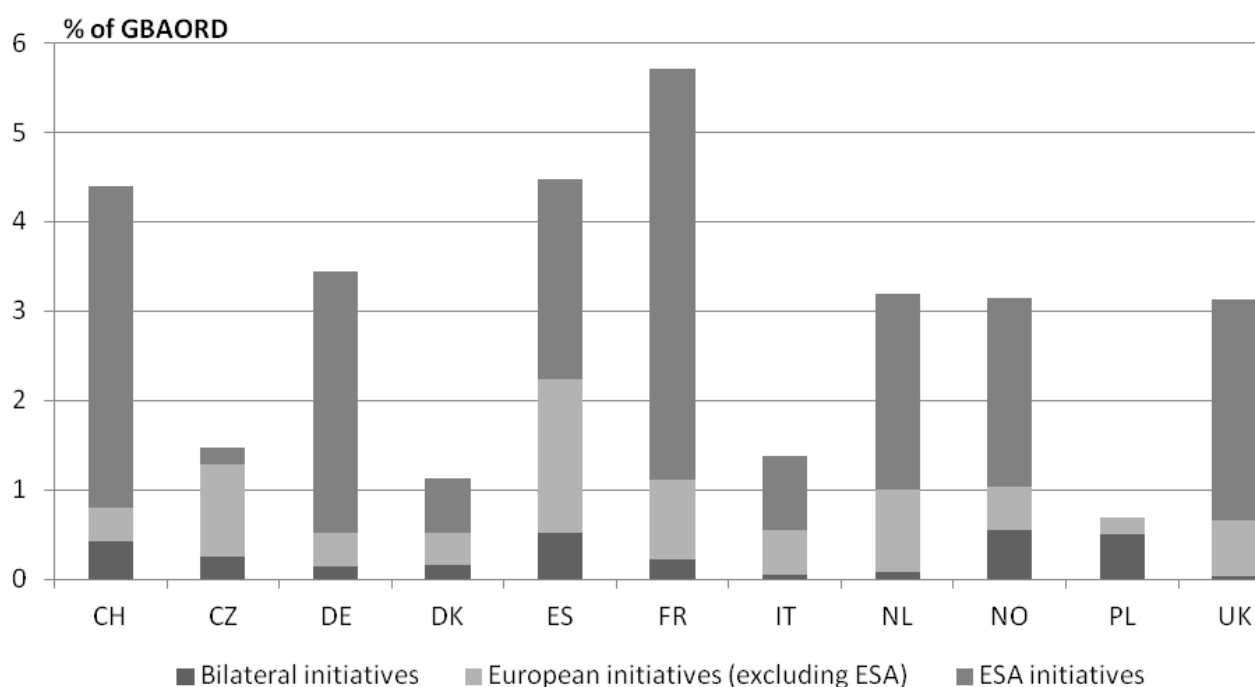


Figure Annex 2.3: Total funding volume to joint programmes by country as a percentage of GBAORD, including ESA, in 2009 (ESA included, N total=95). Remarks: the data on the budget allocated to ESA in Poland is not available.

Moreover, according to the collected **interviews**, **programmes with strong EC involvement are seen as engines of growth.**

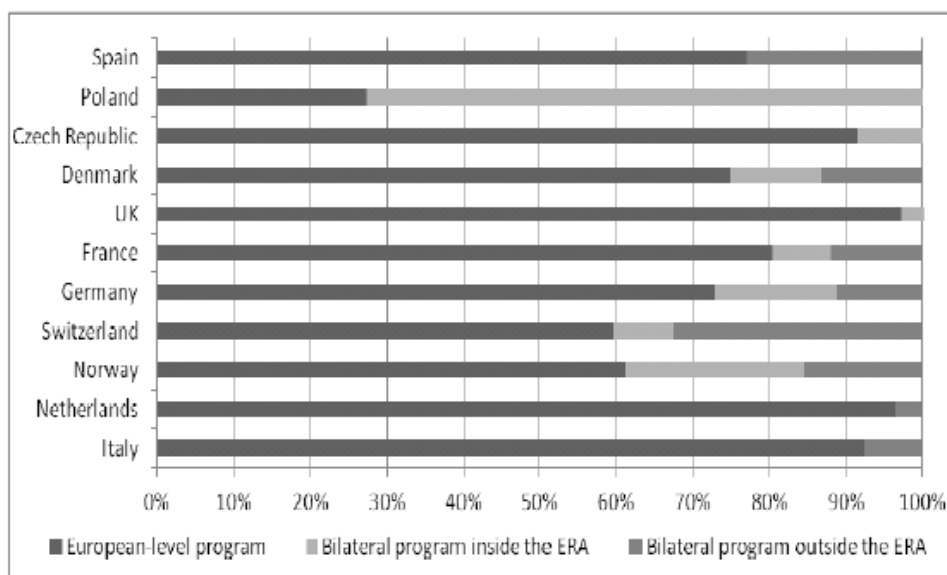


Figure Annex 2.4: Participation by country to different types of programmes in 2009 (volume of funding) (ESA excluded, N total=94)

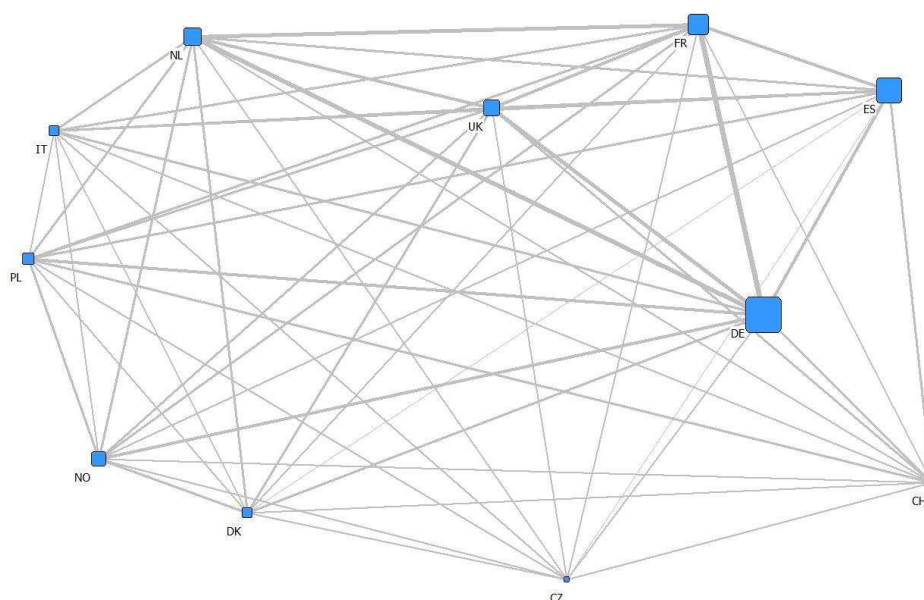


Figure Annex 2.5: Common participation to joint programmes (Source: designed with UCINET from JOREP data. ESA included, N total=95)

## TYPES OF IMPACTS RELATED TO JOINT RESEARCH FUNDING

First result of the analysis is that programme budgets are highly **skewed**; therefore, some missing data might have a greater impact on the analysis than expected.

Before setting out the methodology for the study and its empirical strategy conducted by JOREP, it might be useful to list these key assumptions:

- Policy instruments are shaped through a complex process during which the motivations, interests, and expectations of different stakeholders are negotiated.
- This is a political process involving power and influence.

- Dominant and expedient motivations are reflected in policy rationales, which are explicitly or implicitly reflected in policy documents.
- Understanding the practices of a policy instrument is problematic without understanding the compromises that had to be made during negotiation and the interests that had to be accommodated.
- Without understanding the core practices of policy tools, capturing their impact is problematic.
- In its strictest sense, **impact is the difference made by a specific policy instrument that is clearly and causally attributable to said instrument** (at least in part).

**Besides the great efforts it requires, attribution of impact in research funding is logically and practically impossible because of the great variety of funders and multiplicity of influences;** thus, shifting attention to co-attribution is potentially more fruitful in analytical and empirical terms.

As for the actors' expectations about the intended and/or expected impact, it should be underlined that they can – and indeed often do – diverge; moreover, whether the **intended impact of a research funding programme is realized or not depends on whether the intentions of the funders and of the beneficiaries coincide.**

The impact of a research funding programme is realized through the impact of the projects that it supports. Nevertheless empirical investigations show that a relatively small portion of projects achieves most of the impact of a programme.

Thus, two different approaches can be outlined. Empirically, the study of impact can focus on **measuring and attributing differences**, or on **un-packing** the social process through which this change is achieved. In the latter case, impact is seen as the **opportunities that were intended, the opportunities that were created, and the opportunities that were interpreted and mobilized.** While this study will look at all the aspects above, its emphasis will be on the latter.

Cost reduction	Overcoming high fixed start-up and operating costs of large research infrastructures Reducing programme management cost Facilitating access of industry to public research support
Improve coverage (geographical and sectorial)	Enabling pan-European public research programme optimization Facilitating the coordination of different research programmes as well as horizontal policy coordination Facilitating joint public-private strategic research agendas
Innovation rent	Promoting scientific excellence by enlarging the competition space Promoting cross-border project collaboration (which promotes scientific excellence)
New fields	Addressing challenges jointly

Table Annex 2.2: Categories of expected benefits of joint programming.

	Intended	Unintended
Expected	Straight runs	Collaterals
Unexpected	Long shots	Accidentals

Table Annex 2.3: Types of impacts.

Expectations regarding intended and expected impact (“straight runs”) and intended and unexpected impact (“long shots”) can be identified through the stated objectives of policy and research funding schemes. Whether or not these intentions are realized depends, on the one hand, on whether they are supported by the core practices and communicated clearly and, on the other hand, on how they are interpreted and used by the potential beneficiaries. Whilst “straight runs” are intended and

expected, “long shots” are effects that are intended but cannot be expected to occur with any level of certainty within a set timeframe.

Unintended and expected impact (“collateral”) is the “collateral damage” that actors expect but cannot avoid because there are many social influences at play which the policy or funding scheme cannot control.

Finally, unintended and unexpected impact (“accidentals”) is very interesting as a possibility but difficult to measure. It can, however, be captured if an empirical object is studied exhaustively.

JOREP suggests that it is possible to capture all the different types of impact by linking together: the **opportunities** that open and joint programmes intend to provide (as stated in their objectives), the opportunities they actually provide (i.e. the signals they send through their selection practices and accountability processes), the opportunities they are perceived by (potential) beneficiaries to provide, and the opportunities that are actually mobilized by the beneficiaries.

**Most studies concerning impact start from the assumption that impact is a clearly attributable change or difference.** Consequently, they focus on measuring change/difference and on attributing this to specific policy influences or social actions. **Another possible approach to the study of impact is to work under the assumption of potential rather than actual change.** In this case, the research focus is not on measuring difference directly and on attributing it, but on describing and understanding the mechanisms that generate said difference - in the potentially affected object(s) - and linking it to a specific policy. In this case, specific policies, policy actions, and social actions are seen as sets of opportunities, as these are perceived and enacted by a variety of participants in the social process. In principle, these opportunities can generate different outcomes - what these outcomes are depends on the way in which opportunities are enacted and perceived.

**The approach proposed by JOREP is based on the two major rationales that can explain the internationalization of research funding. One is ‘normative’ (achieving a political aim), the other is ‘problem solving’** (i.e. addressing issues faced by knowledge dynamics).

JOREP outlines at least two consequences for the overall analysis deriving from these remarks:

- a) In the **policy-oriented framework**, the focus is the measure of dynamics at work. Is internationalization growing? At which speed? Does it extend research fields? In which fields is this more intense? Which are the most productive instruments? What explains their adoption?
- b) In the **knowledge dynamics framework**, the focus is on: What triggers the need to move to the EU level (science dynamics per se, technology and industry arrangements, societal issues)? Is this a shared feature, or does it relate to different national situations (mostly in terms of critical size, but not only)? What are the processes through which these objectives are framed and implementation structures created (in particular what explains the selection of particular instruments)? What are the institutional constraints / levers for such evolution? Is it easier in “euro-compatible” institutional arrangements, in which the intermediate layer is made of strong and independent (quasi) funding agencies?

Research programmes are seen as funding mechanisms characterized by the following:

- a) These mechanisms aim to affect developments (strategy);
- b) These mechanisms involve three sets of actors which may, and indeed often do, have different intentions – political actors, implementation actors, and beneficiaries;
- c) Social practices play an essential role – for what concerns action as well as interpretation of meaning. The core practices of any funding mechanism revolve around **selection, funding rules, and accountability**. Correspondingly, **research programmes provide a platform for complex social interactions creating the potential for a variety of outcomes. These potential outcomes (effects, impact) can be explicated. Specific outcomes (impact) are largely unpredictable and can be only loosely attributed to specific (however complex) social influences.**



Each research funding programme can be seen as a funding mechanism embodying **four kinds of opportunities, namely ‘intended opportunities’, ‘provided opportunities’, ‘perceived opportunities’ and ‘mobilized opportunities’**.

## IMPACTS OF JOINT RESEARCH FUNDING

The interviews and **survey from beneficiaries of funding** were developed in order to collect evidence on three issues related to the impact of joint and open programmes:

- **Modifications** to any of the objectives that can be at least partially attributed to specific joint or open programmes (or to the existence of such programmes in general).
- Beneficiaries’ **perceptions** of the opportunities offered by joint or open programmes.
- Ways in which the opportunities have been **mobilised** by the beneficiaries.

The analysis highlights different motivations triggering participation, depending on programme typologies (for instance, funding and implementation of cross-boundary activities for integrated programmes and coordinated programmes, and the chance to include a more international network of partners for collaborative and open programmes).

Generally, **funding is not the main motivation to apply**, nor is the chance to carry out high-risk activities and improve industry-academic collaborations. The same holds true for the opportunity to develop or access new specialised equipment. Also, the fairer and more transparent assessment of proposals emerges as a weak motivation, confirming that the participants have limited confidence and interest in evaluation procedures. Differently, cross-boundary and cross-disciplinary collaborations appear to be important motivations for participation, as well as the opportunity to enter or to extend international networks of partners.

Programmes typology	Integrated	Coordinated	Collaborative	Open	Total
Opportunities					
Monetary resource	15.1%	36.8%	5.9%	29.8%	20.3%
Funding duration	18.9%	5.6%	5.9%	8.5%	11.2%
Risk-taking	21.2%	26.3%	24.2%	29.8%	25.2%
Cross-boundary (geographic or intellectual)	58.5%	68.4%	79.4%	83.0%	71.9%
Industry-academic collaboration	59.6%	5.3%	0%	2.1%	21.7%
Partner network size	39.6%	26.3%	44.1%	72.3%	49.0%
Internationality of partners	40.4%	63.2%	73.5%	21.3%	44.7%
Specialised research equipment access/development	43.4%	31.6%	8.8%	29.8%	30.1%
Dissemination/IP	26.4%	10.5%	8.8%	4.3%	13.7%
Bureaucracy	45.3%	42.1%	36.4%	55.3%	46.1%
Fairness/transparency	19.2%	31.6%	30.3%	34.0%	27.8%

Table Annex 2.4: Perceived opportunities BEFORE the programmes (% YES answers). To be noted the 11.2% of funding duration, the 13.7% of dissemination/IP and the 71.9% of cross-boundary.

**TABLE 12.** Mobilised opportunities AFTER the programmes (% Yes answers)

Programmes typology Opportunities	Integrated	Coordinated	Collaborative	Open	Total
Sufficiency of funding amount	73.1%	73.7%	88.2%	80.9%	78.9%
Sufficiency of funding duration	82.7%	63.2%	94.1%	55.3%	74.3%
Pace of funding release	42.3%	73.7%	82.4%	97.9%	72.4%
Acceptability of bureaucracy levels	62.7%	78.9%	94.1%	100%	83.4%
High risk research/technology development	44.2%	63.2%	29.4%	68.1%	50.7%
Use of funding to do cross-boundary activity (trans-national or cross-disciplinary)	96.2%	100%	97.1%	89.4%	94.8%
Use of funding to train new PhDs/young researchers	54.9%	84.2%	73.5%	93.6%	74.8%
Use of funding to start new industry-academic collaborations	88.7%	26.3%	3.0%	4.3%	36.2%
Use of funding to move into a new field/market	73.6%	52.6%	38.2%	59.6%	58.8%

Table Annex 2.5: mobilized opportunities AFTER the programmes (% YES answers). To be noted the 94.8% of cross-boundary and the lowest % for industry-academic collaborations.

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## CONCLUSIONS FROM JOREP'S ANALYSIS

### DEFINITIONS

Project funding identifies resources directly allocated by a funding agency to a research group or an individual for research activities limited in time and scope: joint programmes in the definition adopted by JOREP are a subset of project funding.

Joint programmes are defined as public research funding programmes for which at least one of the key functions (mission, submission and selection, funding decisions, contracts) is shared among more than one country.

A research-funding programme is defined as an organizational setting able to distribute project funding to research groups and involving the following functions:

- An explicit goal and mission statement, including the objectives to be reached.
- A statement of scientific priorities or perimeter concerned and a description of the type and mode of research expected, included in the call for proposals.
- A procedure and set of rules for submitting proposals, as well as for their evaluation and selection.
- A dedicated budget related to the programme.
- The procedures for establishing and managing the contract, including follow-up and reporting.

The main criteria for identifying project funding – distinguished from institutional funding – are:

- a) the organizational separation between funding agency and beneficiary,
- b) funding is limited in time and
- c) resources are allocated directly to research groups instead of universities or research organizations;
- d) procedures for contract management, including follow-up and reporting.

It is then important to list some general exclusions, which are implied by this definition:

- Programmes for the exclusive financing of mobility and meetings are not included, as the definition requires research activities to be supported (i.e. through salaries). This excludes the large number of purely networking schemes managed by national agencies.
- Programmes managed only by the European Union (EU Framework programmes), as well as programmes managed by the EU with an individual country (EU structural funds).
- Programmes supporting joint development and exploitation of infrastructures.
- Research cooperation agreements among research organizations.

Moreover, only programmes in which at least one JOREP country participates are included.

### DATA SAMPLE

Data have been collected from the 11 European countries (9 Member States and 2 Associated Countries) involved in the consortium of the project for the period 2000 to 2009. At the end, the results of JOREP are mainly focused on the aspect of joint funding (in particular for the year 2009). The final JOREP dataset includes 99 programmes, 44 of which are European initiatives and 45 bilateral programmes. They consider the resulting coverage quite good, even though a number of small-scale national schemes might have been disregarded. Concerning European initiatives, while coverage for 2009 is quite accurate, the perimeter is changing rapidly as several initiatives were started after 2009 (or some existing initiatives have launched calls only after 2009).

The 9 Member States involved account jointly for the 74% of the 2009 FP7 budget.

For data not limited to 2009, see Lepori et al. 2011.

### BUDGET AND PARTICIPATION

In quantitative terms, the roughly 100 joint programmes identified by JOREP accounted for 3.4% of the public research funding in the considered countries, but only **0.9%** excluding the European Space Agency.

While the budget for joint programmes strongly increased in the 2000-2009 period, they still represent quite a limited share of public research funding in the considered countries and, in terms of funding volume, are much smaller than other transnational initiatives like the European Framework Programmes (excluding ESA, the **total budget of joint programmes was about 10% of the FP budget in 2009**).

As a **matter of fact, most joint programmes are quite small, and often of symbolic value, or they involve limited forms of cooperation, while most of the budget is allocated to few programmes**: besides ESA, these include Eureka and COST, 2 Joint Technology Initiatives (ARTEMIS and ENIAC), 2 Art. 185 Initiatives (AAL and EUROSTARS), 4 ERA-NETs, and 3 bilateral programmes. **Time series confirm that the joint programme environment is highly selective and that growth in terms of funding volume is concentrated in a small number of programmes**. About half of the programmes are European-level initiatives, while the rest are mostly bilateral programmes, but the former group covers most of the budget (with few exceptions, bilateral programs are quite small).

European initiatives and bilateral programmes clearly play two different functions in the internationalisation of research systems: the former strengthen **networks of ERA countries around a core group of countries** (UK, DE, FR, NL), the latter help individual ERA countries to connect with the rest of the world with no or very limited improvement of European-level bilateral cooperation.

Moreover, **programmes with strong EC involvement are seen as engines of growth**.

## ORGANIZATION

In terms of organisational characteristics, some relevant features emerge. **Most programs are characterized by light modes of coordination based on joint committees, but the few programmes which have established a supranational agency make up most of the budget**. Using a national pot (funding remains at the national level and is allocated to national performers) is by far the prevalent mode of funding, but most larger programmes – those with a supranational agency – are characterised by a substantial share of additional European funding. As a matter of fact, **programmes with a supranational agency and EU additional funding are exactly those which display the most significant growth in their budget**. Further, joint programmes can be broadly divided into three groups in terms of their research topic: technological programmes (EUREKA, JTIs), programmes oriented towards specific policy domains (most ERA-NETs), and science-oriented and general-purpose programmes, supporting research collaboration in most scientific domains.

These patterns lead to the identification of a small number of organisational types of programmes, which in turn can be related to underlying representations of how to manage European integration and to specific constellations of actors.

**Funding agencies are increasingly moving as independent actors within the supra-national policy space, contributing to the designing of joint programming and to the creation of links among countries. In this respect, research councils seem to play a key role**. The presence of consolidated research funding practices and high levels of mutual trust allow countries to move towards transnational research programming, adopting coordinated or integrated research funding schemes rather than building a joint supra-national funding agency (as in the case of the ESF).

Overall, the evaluation and assessment of joint programmes should focus on analysing differences in participation among European countries in order to determine the reasons that lead to participation with or without funding.

## IMPACTS

**A programme can be expected to achieve its ‘intended’ effects if there is a high level of congruence between ‘intended’ and ‘provided’ opportunities, i.e. if its tools are coherent with the results it tries to achieve**. Moreover, the impact produced is linked to how correctly the beneficiaries perceive the opportunities provided by the programme, and what they actually achieve through their actions. This framework allows detecting any discrepancies between **opportunities provided and perceived and provides information on the trade-off between beneficiaries’ perceptions and results**.

Trans-national research per se is a dimension perceived as providing much added value, mainly linked to the ability to develop high-quality research within the global scientific community and across disciplinary boundaries, although the programmes might not actually be so different from the national ones. Moreover, rather than funding, it is integration of the submission procedures, selection and evaluation criteria that is considered a critical issue of joint and open programmes to make them different from other national schemes.

Besides the above-mentioned aspects, the attribution of results is still a problematic issue and the use of measures of impact is rather limited. **JOREP exploration shows that the analyzed programmes are not strong enough and their signals are not unique enough to be able to bring about changes in the nature of knowledge and productivity through their grants. They are very useful as part of a set of policies, but have little influence individually. According to some recent exploratory studies, bibliometric analyses might provide some insights into the scientific impact of the programmes.**

Four key messages emerge from the above motivations and impact analysis:

- Programmes do not supply distinctive signals: attributing empirical effects to specific conditions of the programmes is difficult even when typologies;
- In terms of advocacy, the programmes are different voices joined together, which can influence the decision-making process and modify the effects of public policies and funding allocation;
- **Emphasis should be shifted from programme evaluation to whether the programmes are able to create the conditions for change; this investigation would provide useful knowledge for policy designing and implementation;**
- More research on generative mechanisms of opportunities is needed.

In terms of **data to be collected**, JOREP's recommendations deal with the three critical components of the dataset developed, namely the perimeter, the descriptors and, finally, data on funding flows.

a) **Perimeter of joint programmes.** The construction of a list of joint programmes is a central requirement for data collection, also including financial data. Like in JOREP, the list should be constructed by integrating the list of European Initiatives (provided centrally) with bilateral programmes identified by national experts; information on which countries participate in which European Initiatives is critical in order to reduce the burden of data collection at the national level. Thus, JOREP recommends compiling a list of all European-level joint programmes including the following information: the name of the programme, the list of participating countries and, for each country, of participating agencies. As a second priority, national experts in each country should include the bi- and multilateral programmes they consider relevant.

This list should be adopted as official reference for all data collection activities at the European and national levels and be updated yearly.

b) **Descriptors on organisational characteristics.** The set of descriptors developed in the project proved to be very useful to analyse the landscape of joint programmes; moreover, developing closed lists of choices (integrated with remarks) has provided significant advantages in terms of comparability of data. Hence, it is strongly advised to maintain and extend the set of descriptors to all joint programmes in the European Research Area; given the fact that organisational characteristics are rather stable in time, the descriptors could be updated every 2 or 3 years rather than yearly. **The experience of JOREP shows that, while there are no main problems in the collection of descriptors, collecting national-level information requires a well-designed organisational structure with a central unit – taking care of the European-level descriptors, of quality control, and of the merging of data into an integrated dataset– as well as national experts.** Moreover, as for multi-annual data collection, issues regarding programmes demography need to be carefully taken into account and a suitable notation has to be introduced into the dataset.

c) **Data on funding flows.** JOREP has proven the feasibility of collecting data on the budgets of joint programmes, but it has also confirmed that, **since budget decisions are often delegated to funding agencies, this information cannot be collected in a reliable manner** from public budgets (the main

data source for GBAORD statistics). It is hence recommended to collect this information from national funding agencies through a dedicated questionnaire, detailing for each agency the programmes in which it participates (based on the common programmes list). Furthermore, data on European contributions should be collected directly by Eurostat. It is advised to provide a simple breakdown of public and private beneficiaries, as this is relevant to understand programme functions and easier to implement than a breakdown based on the Frascati sectors.

Issue	Recommendations	Action
<b>Problem of attribution</b>	Programmes do not supply unique signals: one must be aware of this when attributing empirical effects to specific conditions of the programmes	More research on generative mechanisms of opportunities is needed in order to unpack the emergence of unexpected results
<b>Communication</b>	Programmes pursuing expected impact with adequate practices and clear communication in order to allow correct interpretation and use	Selection practices and accountability processes becoming key elements of programme organisation and assessment
<b>Beneficiaries</b>	Take into account that different beneficiaries have different perceptions of programmes opportunities when programmes are designed and implemented (e.g. as to risk-taking activities, cross boundary and collaboration opportunities)	Beneficiary surveys and surveys involving key programme officers to be developed on a regular basis
<b>Evaluation</b>	The emphasis of programme evaluation shall be on how much programmes are able to create the right conditions for change, thus whether they allow beneficiaries to do 'things better' rather than to do 'better things'	Evaluation Reports should be largely distributed to beneficiaries and stakeholders in order to become "living documents" for future impact analyses. Differences among participation by European countries deserve more attention
<b>Open programmes</b>	Policy shift from 'open programmes' to 'openness of programmes' as a signal of the country's strategy toward international networking of national research teams	Participation of non-national partners is an opportunity that programmes must provide; misuse of the opportunity must be considered when programmes are designed

Table Annex 2.6: Recommendations for motivation and impact analysis from JOEP.

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## ANNEX 3:

### THE ANALYSIS OF FUNDING SCHEMES

#### DEFINING FUNDING MODALITIES

JPI Oceans aims to solve societal challenges also through coordinating national research programmes. This implies addressing the diversity of funding schemes which in turn are for the great majority defined, financed and implemented on a Country base (and the percentage of nationally funded research is reported at 85% of the total funding for research, see ERAC-GPC 1311/10).

The complexity and variety of types and modalities of funding suggest that the selection and identification of common funding models which are applicable in different contexts require an analysis of several aspects and circumstances. This annex gives a description of the general scenario in Europe, mainly based on the

study “Modalities for R&D funding: a comparison of EU Member States” (Caves et al. 2009), in order to support the decisions to adopt actions for joint calls, research alliances, joint public procurements or any other action which can imply substantial investments to be jointly focused to reach common objectives.

Cave et al. makes a preliminary description on types of actors involved in R&D (see figure Annex 3.1), on the basis of the level of proximity to research performance – funders, intermediaries, performers - and objectives - public or private<sup>85</sup>. The study of Cave et al. seems old (1999) and limited to the Europe of 15 Member States. Nevertheless, the messages and the description of the complexity of the system is still modern and even if some changes and recommendations for changes occurred, the barriers against the completion of the European Research Area in terms of funding are still there. We will also report the example of a successful change in a funding modality in a Member State which will dramatically and positively impact on joint funding, but the way towards a European trans-national common and efficient funding scheme, not linked to the European Commission, seems to be longer to achieve.

<sup>85</sup> The OECD standard classification does not distinguish intermediaries.

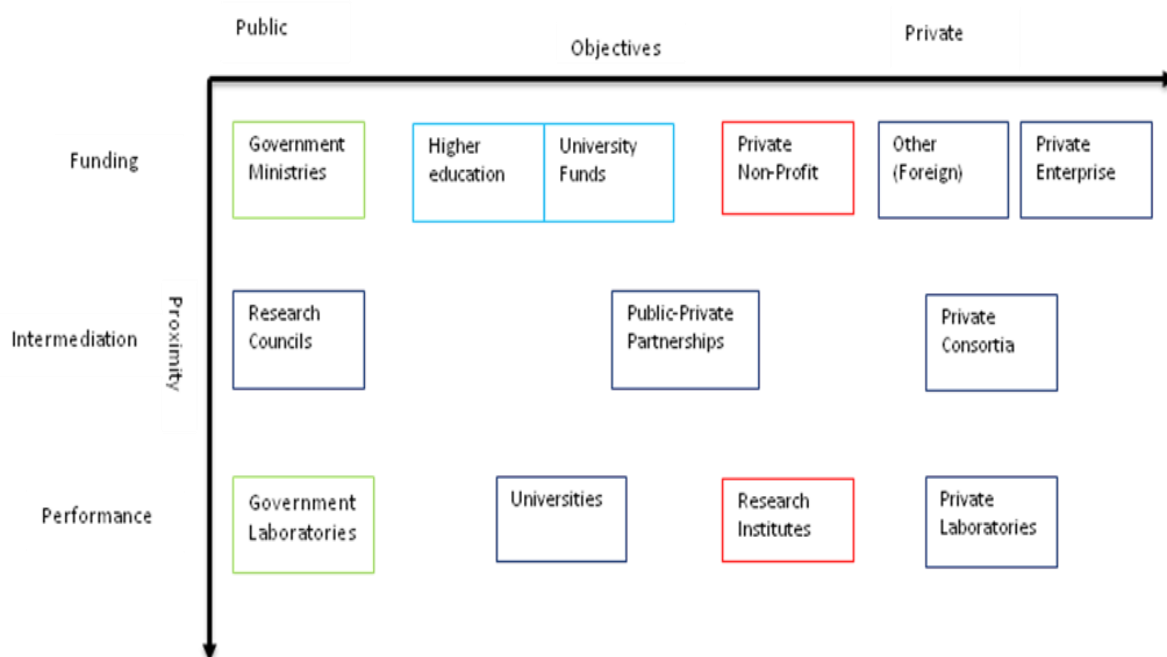


Figure Annex 3.1: From Cave et al. 1999: A sketch of the different players and their level of proximity to research performance and objectives. The categories are defined as follows: Higher education, own funds of the University sector; University funds, general government allocations for University teaching and research; Private non-profit, private non-profit foundation supporters; Private, private for-profit enterprises; Other, include foreign for profit, NGO, supranational funding resources, i.e. EU resources; Government laboratories, research facilities under direct control of government ministries and/or that conduct the great majority of their work for ministerial clients (Frascati “Government” sector); Universities, Institutions of higher education combining teaching and research functions (Frascati “Higher education” sector); Research institutes, Private not-for profit research institutions with a mix of government and no-government clients (Frascati “Private non-profit” sector); Private laboratories, Privately owned research establishments operating for profit and/or predominantly for private enterprise clients (Frascati “Business enterprise” sector).

Funding organizations can adopt different funding modalities in terms of instruments used to provide support, of coordinating institutions and allocation of responsibilities among them, and the nature of commitment with intermediaries and performers. The instruments/modalities for funding the research, independently from the objectives, are not homogeneously distributed between countries and many times they depend on the historical organization of the research system. Nevertheless, some trends show as some countries prefer non-institutional funding towards block grants to increase sustainability and continuity, while in other cases institutional support (for intermediaries and performers) are being replaced with contractual approaches aimed at raising oversight and accountability.

Cave et al. identifies intermediate organizations as pivotal actors in many States, but facing a changing role in response to budget pressures and public demands for more accountability, especially the Research Council system. Other types of intermediary ease the cooperation among different R&D entities, acting as an instrument for increasing connections between publicly supported research and industry.

Finally, at the level of performing organisations, several publicly supported research organisations are being privatised, implying that with a decrease in government R&D investments, Universities can be interpreted as main public performers.

Though data can be collected in order to provide a basis for comparing funding modalities and their evolution (as Cave et al. did), data are often not consistently available, basically due to definitional problems. The main difficulty is to commonly define and measure institutional funding and contract-mediated funding, as well as to compare and aggregate data collected among different types of actors – funders, performers and intermediary.

For this reason, we decided to slightly change the classification of funding models proposed in Cave et al. from a two criteria approach (control/orientation and competition) to a two aspects approach (instruments/objectives and procedures) which is more in tune with the approach of the framework conditions for JPI Oceans.

The research scope and mainly suggest the instrument/modality of funding.

These modalities can be summarized in:

1. General Funding – the part of research financed by ministries of education to performing organizations, often used for both teaching and research, and where research content and conduct are left to the performing institutions. In this case funds are allocated as a block grant to the performing organizations, then reallocated among projects, different expenditure categories, centres, with no further consultation but with reporting to the funding organization;
2. Programmes – funds are allocated to call for proposals specifying the subject (oriented research), e.g. project level funding; other ministries or funding organizations can be involved.
3. Calls for proposals/tenders for oriented research– funding within defined focus areas or objectives, involving the highest degree of client control, and typically project based funding in support of the funding agency’s specific policy responsibilities.
4. Non-oriented research funds, where bottom-up (free) proposal are funded through calls where research subjects or methods not specified, entailing client approval,

The second dimension, procedures, refers to market-like mechanisms to allocate research funds and select and motivate research performance. Three typologies can be identified:

1. Non-competitive: recipients are selected by an independent evaluation of the proposed research, on the basis of merit, past performance or broader socio-economic objectives. The category refers to funding mechanisms operating with no explicit comparison of candidates and in some sense can be associated to a sort of “hunting” the excellence.
2. Competitive homogeneous funding: proposals compete to conduct essentially identical research, with project selection usually based on explicit scoring rules.
3. Heterogeneous funding: competitive selection procedure that do not compare “like with like”, with successful rate depending on number and strength of simultaneous contenders ( e.g. “free proposal”).

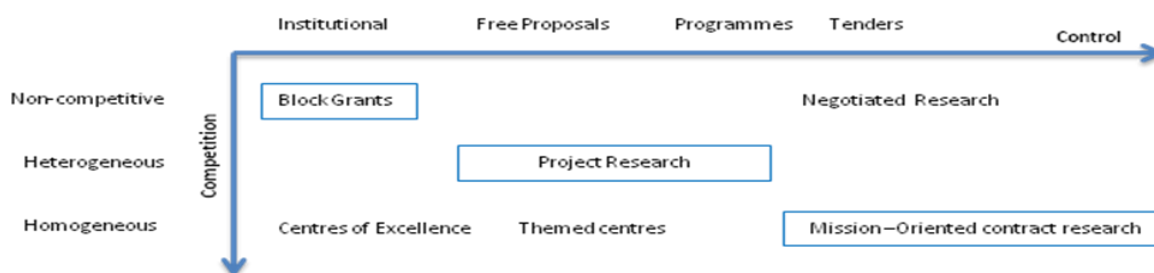


Figure Annex 3.2: From Cave et al. 1999: A sketch of the control and competition dimensions. The figure shows that most of the funding are along the diagonal (bordered text). Shifting to the right side control of research moves from the performer to the funder. This approach described by Cave et

al. as control and competition has been proposed in this annex as instruments and procedures. \*“Themed centres” are defined as research groups selected by competition to follow a specific agenda with long-term financing.

Cave et al. report also that options concerning research orientation, priorities and conduct are increasingly left to research performers. Nevertheless, despite the increase of apparent autonomy in favour of performers, funding organizations are demanding greater accountability, in response to budget pressures and implementation of strategic R&D policy. This control does not seem to necessarily involve research topic selection or the use of contract as opposed to institutional funds.

Cave et al. observe also that competition is primarily used to allocate scarce resources, secondarily to select best candidate(s), and infrequently as an instrument for providing incentives.

Concerning the competition, the study points out some connections among the effects of economic forces, use of competitive mechanisms and the positioning on the market of research at publicly support research institutions. In this case, the study analysed four countries: Denmark, Germany, the Netherlands and the United Kingdom, characterised by a specific national systems of innovation. The analysis pays particular attention to two phenomena: forces leading to the use of competitive mechanisms, and the evolving mix of institutional and contract funding; specific instances of competitive mechanisms and the predominance of competitive contracting.

On competitive funding, trends and disparities address three aspects: the motivation for introducing the competition; the mechanisms of competition; the effects.

Regarding the motivations, the study mentions resource rationing, candidate selection, performance incentives, value for money, separation of performers and funders and risk transfer.

The mechanisms for competition can consist of: screening of individual project proposals based on peer review process; selection of tenders following scientific merit criteria; reallocation of institutional funding for Higher education based on the evaluation of past performance; head-to head competitions for research equipment/infrastructure funding on an institutional or regional basis; extended mechanisms in which a few bidders are provided limited support to finance the development of ideas, preliminary work and proposals.

Effects could be extremely broad as vary with mechanism and context. They include: concentration of research resources and agendas; increased attention to intellectual property rights; closer cooperation between public and private entities; increased research labour mobility; higher proportions of contract researchers among University personnel; spill over effects on teaching and knowledge diffusion.

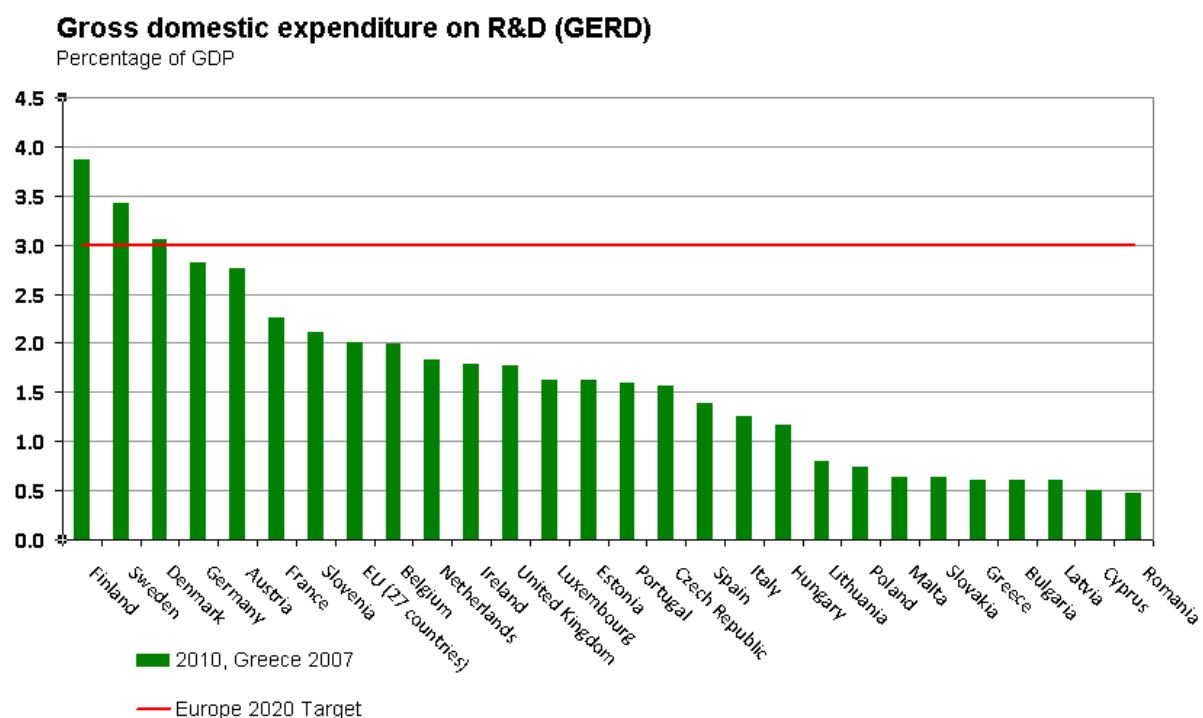


Figure Annex 3.3: Gross domestic expenditure on R&D (GERD) per Country: A sketch of the R&D intensity per country, based on the EUROSTAT 2010 data. The red line represents the EU target of reaching the 3% R&D intensity, by 2020. EUROSTAT web portal source.

The most recent EUROSTAT data confirm that the business sector plays, at EU aggregate level, the chief role in financing R&D, with a percentage of funds of more than half of the gross domestic expenditures on R&D (53,9% in 2010), while the Government expenditures stand for just over one third in 2007 (33,2%) to slightly increase to reach the 34,6% in 2010. Some EU countries show an opposite trend, with the Government financing half or more of the total expenditures, namely Cyprus (68,3% in 2010), Poland (60,9%), Romania (54,4) and Slovakia (49,6)<sup>86</sup>.

<sup>86</sup> Data available at [epp.eurostat.ec.europa.eu/statistics\\_explained/index.php/R\\_%26\\_D\\_expenditure](http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/R_%26_D_expenditure).

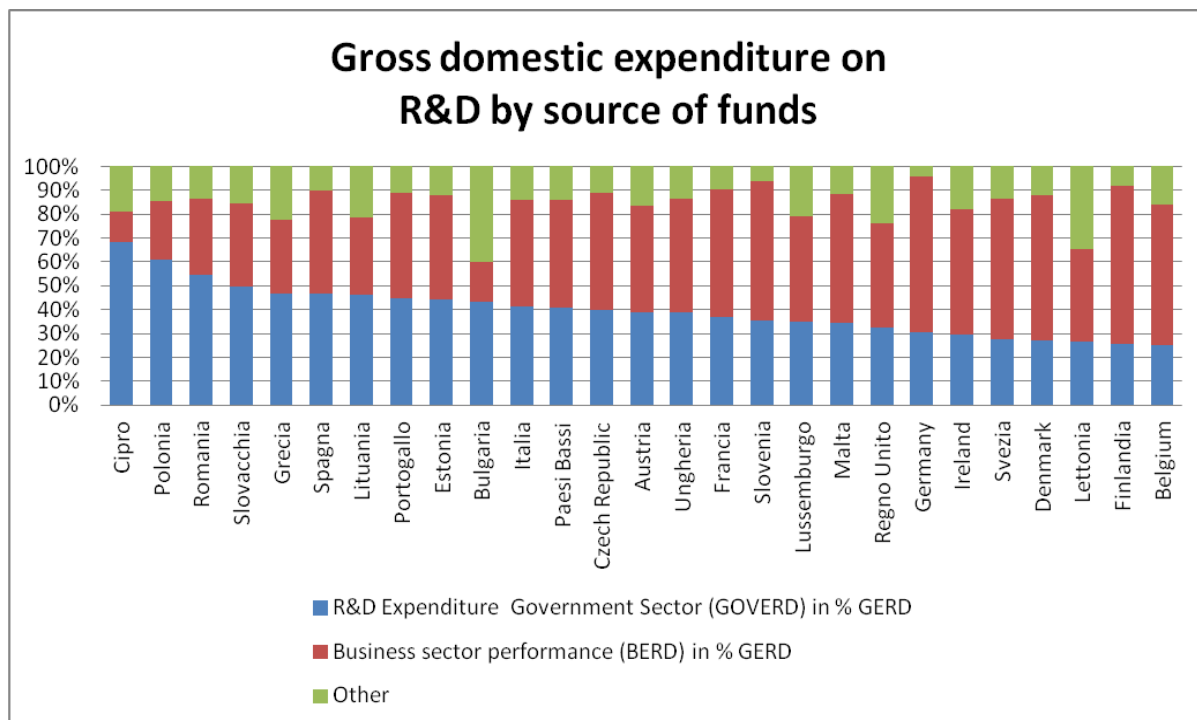


Figure Annex 3.4: Gross domestic expenditure on R&D (GERD) per Country by source of funds (% GERD). A sketch of Gross domestic expenditure on R&D by source of funds based on 2010 data. The figure shows per country the percentage of GERD by the two main sectors, Government and Business sector. The item “Other” includes higher education expenditure in R&D (HERD), private non-profit and expenditure abroad.

## FUNDING MODALITIES

The distinction between institutional and project-based funding has been used for a long time, but recently becoming less effective and less clear due to an increasing number of hybrid funding mechanisms. Cave et al. already identified some emerging trends, in particular the growth in contract length and size that gives some project-oriented support an institutional character, and competitive allocation of infrastructure funding that increasingly connects funding to specific projects. Examples are: institutional grants merged with contracts, contracts explicitly tied to researcher’s institutions and institutional funding arrangements, contracts having the institutional characteristic of loose control, or grants with several contractual characteristics<sup>87</sup>, such as the explicit review of past performance, client involvement in the agenda setting process and mandated forms of competitive allocation. These new forms made it difficult to simply classify flows of funding as purely institutional or contract-based, as well as aggregate and compare collected data. As a result, it is hard to categorize measurable flows of funding with distinct type of control mechanism and to find a useful definition of competition/procedure for allocation of funds that can be related to funding flows. Easier would be to analyze the flows and mechanisms through the instruments used to fund but this can only partially support the strategy for adopting an action by the Management Board of JPI Oceans.

<sup>87</sup> This type of contracts are defined by prof. Paul David “grantracts”.

Gulbrandsen 2011, concerning the criteria of control and stability, introduces the concept of core funding versus project base and user controller funding<sup>88</sup>. Core funding is used for activities at the initiative level, ensuring implementation and access to resources, while project-base funding is frequently based on a short-term perspective instead of supporting long-term planning. A critical aspect of funding research is the balance between core and project funding. A sufficient core funding is often difficult to obtain, while frequently project contributions and in-kind make long term planning more difficult. Many case studies show that voluntary and in-kind contributions can be useful for guaranteeing funds relatively speedily, but may hamper the shaping of long-term and coherent strategies. A key challenge is to find ways to scale up funding while maintaining accountability, efficiency and co-ordination. Consequently, it is crucial to strike a balance between mandatory core funding and allowing for more flexible in-kind and project funding.

Gulbrandsen mentions several models of funding and underlying principles, including common pot, just retour, framework regulated project collaboration, mixed contributions in terms of financial and in kind contributions<sup>89</sup>. The analysis of case studies reveals that it is difficult to pick up one single best funding and spending model, as options and solutions seem strictly depend on the context, the global challenge concerned, the asymmetries in capacity as well as on the nature of the collaborative effort. Furthermore the appropriate balance between core and project funding seems to be fundamental for flexible approaches and to reach solutions that most often involve various trade-offs, for example between broad accountability and efficient decision making process, between inclusiveness and efficiency in the priority-setting process. The issue of funding and spending for research and development cooperation should be integrated in broader context, namely the discussion concerning the governance dimensions in order to facilitate implementation.

Due to the variety of principles and mechanisms, funding models can be divided on the basis of similar schemes: money follows people/money follows research activity, common pot schemes, opening of national research programmes.

Regarding funding models based on common pots, the European Research Area Committee - Group de Programmation Conjointe (ERA-GPC) in the Voluntary Guidelines on Framework Conditions for Joint Programming in Research distinguishes among real common pots, virtual common pots and mixed mode<sup>90</sup>.

Real Common pots imply that countries put together their national contributions into a call budget which is centrally administered and provides funding for successful proposals regardless the nationality of the applicant and results in transnational flows of funding. It is based on the peer review process and funding is allocated to the selected best research proposals. Examples of real common pot can be found in the European Young Investigator Awards scheme, within the framework run by EUHORCs (European Heads of Research Councils) and the European Science Foundation (ESF), in several initiatives of research collaboration supported by the Nordic Council of Ministers, and the Seventh Framework Programme.

In virtual common pots countries contribute for their own national participants in transnational research project proposals, following national regulations and with no need to establish a common set of funding rules. In this model there is not transnational flows of funding and it is mainly used in the ERA-NETs schemes and in the "Lead Agency" Scheme.

The mixed mode combines elements of the real and virtual common pots, including the selection of proposals on the basis of a joint ranking list while preserving the "juste retour" principle. Using part

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<sup>88</sup> Gulbrandsen, Funding and Spending in Science, Technology and Innovation for Global Challenges (STIG), OECD workshop (Oslo, 18-20 May 2011).

<sup>89</sup> Gulbrandsen, starting from the idea that funding and spending are "context sensitive and path dependent", finds it difficult to identify best practice models in funding and spending schemes, as each one shows advantages and drawbacks.

<sup>90</sup> Voluntary Guidelines on Framework Conditions for Joint Programming in Research 2010, European Research Area Committee – Group de Programmation Conjointe (ERA-GPC).



of the budget as real common pot, some divergences between national funding contributions and requested budgets for successful proposals can be balanced. The mixed mode is commonly used in ERA-NET Plus actions.

Starting from the idea that the JPI's are "voluntary based" driven, the selection of the funding model shall be made taking into consideration the complexity of the challenge to be solved, the countries and systems involved, as each model shows advantages and disadvantages.

The real common pot model implies a high degree of trust among the participants and a good deal of political commitment. Following the ranking list procedure, and managed independently of national consideration, represents a strong way to support scientific excellence. But it is complex and difficult to set up, requiring an agreed system to determine contributions and eligible costs, and in some cases clashing with national interests, implying the possible exclusion of some actors on the basis of national legislation<sup>91</sup>.

The virtual common pot closely depend on national structures, on consistency and coordination between participating national processes and structures. The scheme is compatible with independent financial planning by funding bodies and the procedure is simplified by the fact that funding are within national borders. Nevertheless main problems may rise when the lack of synchronisation of applicable rules, programming cycles and budgets obstruct efficient cooperation. Furthermore, there can be potential conflicts between funding the "excellence" and available national contributions, and some proposals approved may not be funded.

The mixed mode (or balanced common pot) requires sufficient political commitment in a long term perspective, but its approach is more flexible than the real common pot. The selection of proposals following the ranking list with compensatory mechanism based on a common topping-up model made the mixed mode approach a more practical solution under many circumstances. Nevertheless a method to avoid distorted exploitation of the system should be defined.

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## FLOWS OF MONEY AND PORTABILITY OF GRANT

In the field of researchers driven research funded under national funding agencies schemes, there are two main types of mechanism to facilitate cross-border collaboration: money crosses borders, money does not cross borders. The money crosses borders can be implemented through different schemes: money follows researchers; money follows research line; Common Pot. Virtual Common Pot and Lead Agency Procedure imply that money does not cross borders.

Focusing on the flow of money, two are the schemes: money follows research activity (or the cooperation line scheme) and money follows people.

The "money follows people" approach implies that researchers moving to a different country during the course of an ongoing project are allowed to take with them the research funding, that could be used within the new research institution according to the original terms and objectives of the grant. The "money follows people" principle is driven by the idea of facilitating the mobility of scientists while preserving existing research initiatives, and bridging the gap until researchers' applications for grants in a new country has been successful. This scheme has been implemented by the EUROHORCS<sup>92</sup> member organisations and similarly applied within the European Research Council

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<sup>91</sup> The ERA-GPC underlines the difficulties often faced by funding agencies in justifying expenditure of national resources outside the country and reports examples of members of national parliaments raising the issue of "exporting taxpayers" money and national courts of auditors voicing concerns about "loosing control" of national public research funding. Voluntary Guidelines on Framework Conditions for Joint Programming in Research 2010.

<sup>92</sup> European Research Funding and Performing Organisations, informal association established in 1992. The "Money follows researchers" agreement was signed on 2004 among the EUROHORC's members. EUROHORCS was dissolved in 2011 and its activities have been take over by Science Europe.

and European Partnership for Researchers. In the EUROHORCs procedure, researchers could bring with them a current grant provided that:

- “the grant can be continued within the term and objectives originally set at the new institution;
- the remaining period of the grant should be no less than six months;
- the consent of both institutions involved (relinquishing and accepting) must be sought;
- funds for personnel cost are to be spent according to local rates and scales;
- the question of equipment will have to be considered case-by-case: while funds for consumables/expendables can be transferred without a problem, major investments should
- normally remain with the granting organisation or the home institution;
- where results of commercial value are likely to be generated from the project, the two institutions should agree to formalise ownership and exploitation arrangements which recognise the contributions of the Investigator and any research staff employed on the project”<sup>93</sup>.

Similarly, the European Research Council (ERC) grant schemes and the European Partnership for Researchers grants allow the portability of funding. The Netherlands, with a strong internationalised research system, shows a growing trend in fostering the cooperation among its researchers and research organisations with EU partners and beyond. A practical example of portability of grant in the Dutch Rubicon programme<sup>94</sup>.

Under the “money follows cooperation line” process, parts of a project financed by one of the participating organisations can be implemented abroad. This mechanism is implemented by EUROHORCS and the DACH country association, bringing together research councils from Germany, Austria and Switzerland<sup>95</sup>.

This process sometimes opens the national funding programmes for applicants from other countries, thus strengthening cross-border cooperation, as for instance EUROHORCs.

Similarly, but with no cross-border flow of money, the “Lead agency” procedure foresees the evaluation of international projects by one agency, also responsible for the whole administration, while research councils fund the share of the projects that are being conducted in their respective countries. The partners of a multilateral project have to apply to one funding organisation while participating researcher are financed by their national funding organisations, which base their funding decision on the evaluation made by the lead agency.

EUROHORCs promoted this scheme, especially when involving a small number of countries willing to work together and devote responsibility of selecting the projects to one partner.

Science Europe, successor organization of EUROHORCs, concerning the issue of “money crossing borders”, reports that:

- This approach is preferred by large and/or scientifically strong countries;
- Fraction of RFO-budget crossing borders is larger for smaller countries than for bigger countries;
- The reciprocity is still an issue;
- Brain Drain is more likely from weaker to stronger countries;
- There may be legal obstacles for some countries;
- Is simple for applicants and for RFO.

The excellence could be further ensured by a real international and open competition among researchers.

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<sup>93</sup> This scheme, that countries could accept by signing a Letter of Intent, was been adopted by 24 organisations in 16 European countries. [www.eurohorcs.org](http://www.eurohorcs.org).

<sup>94</sup> [www.nwo.nl/en/funding/our-funding-instruments/nwo/rubicon/index.html](http://www.nwo.nl/en/funding/our-funding-instruments/nwo/rubicon/index.html).

<sup>95</sup> The DACH system is described in the following section.

The opening up of national research programmes to non-resident researchers is still a vexed question. This concept, in its wider sense, refers to the possibility of non-resident, of foreign-based research performers to participate in domestic R&D programmes, be they funded or not by these programmes<sup>96</sup>. The rationale at the base of the idea of opening national research programmes is the necessity to reach the highest degree of excellence in domestic research activities and complement domestic expertise with other complementary expertise coming from abroad. Allocating national funds to the best researcher, anywhere they locate, is meant to guarantee a more efficient use of research funds, raising at the same time the competition level and ultimately the quality of research. There can be different modalities to open up national programmes and conditions for participation of non-resident researchers. These modalities can vary from the mere acceptance of non-resident partners in research projects, without an explicit selection criterion, to the establishment of compulsory participation of foreign research performers and the allocation of a substantial share of the funds to them.

An analysis over 18 EU member states and EEA countries defines three types of rules governing the participation of non-resident to national R&D programmes: programmes that explicitly foresee the participation of non-residents; programmes that do not exclude non-residents explicitly; programmes that exclude non-resident research groups<sup>97</sup>. The first category was found in seven countries (Denmark, Germany, France, Luxembourg, Austria, The United Kingdom, Norway), representing 10% of all national R&D programmes. Within this category examples are the French National transport programme and the Austria's Kplus programme.

The European Commission distinguishes different categories of openness of Research and development programmes:

1. not open: programmes that do not allow non-residents to participate;
2. open for sub-contractors: programmes that allow funding for non-resident research performers as sub-contractors to a national partner;
3. open without funding: programmes that allow participation of non-resident research performers as partners or leaders without funding;
4. open for national priorities: programmes that allow funding for non-resident research performers when their activity is proved to strengthen national research;
5. open with budget ceiling: programmes where non-resident research performers are eligible for funding as a partners but below a financial ceiling;
6. fully open: programmes where non-resident research performers are eligible for funding as a partner and with no financial ceiling<sup>98</sup>.

Due to differences among countries, the existence of different types of programmes, there are no reliable estimation of the share of openness among national research programmes in Europe.

The Danish Business Research Academy conducted a survey among 71 research funding bodies in 27 European Countries on their international orientation and transnational coordination<sup>99</sup>. Following the results of the survey:

- 90% of the respondents participate in bilateral research agreements with funding bodies in other countries;
- 87% participate in multi-lateral initiatives with the EU;
- 60% provide grants for non-resident research participants;

<sup>96</sup> European Commission, Innovation Union Competiveness report 2011.

<sup>97</sup> Technopolis Limited UK, VDI/VDE-IT GmbH Germany, IKEY S.A. Spain, Logotech S.A., Greece, Cross-border Cooperation within National RTD Programmes, Vol. 1, January 1999.

<sup>98</sup> European Commission, Innovation Union Competiveness Report 2011, Analysis Part II: A European Research Area open to the world.

<sup>99</sup> European Commission, Innovation Union Competitiveness Report 2011, Analysis Part II: A European Research Area open to the world.

- 64% devote zero or less than 5% of their budget to non-resident participants;
- 23% wish to increase funding for non-residents;
- 37% do not or cannot fund non-resident participants;
- 39% cannot participate in common pots.

The survey reveals that almost all respondents agree in some way (“somewhat” or “strongly”) that transnational research coordination allows for joint policy responses to common challenges such as climate change, exploitation of complementary research strengths, increased mobility of researchers and sharing of knowledge and best practices in research funding. The survey concluded that, although research funders show some degree of transnational orientation, there is a significant proportion of research funders whose funds are not, or only limitedly, used for transnational research projects, contributions to common pots and non-resident research participants.

In order to define quantitatively the level of openness of national public research and development programmes within European Countries, a distinction can be made among: the number of programmes open, partially open or not among all R&D national public R&D programmes; the share of national funding directed to these programmes; the actual use of this funding by non-resident researcher performers. A recent review of R&D programmes in seven European countries shows that international collaboration in R&D is encouraged in several ways, including using EU-level instruments such as ERA-NETs or planning large infrastructures. Anyway the prevailing national approaches to ERA are to use EU-level instruments rather than opening up national funding sources to foreign-based research actors. The most common situation in the analysed countries is that of R&D programmes which are increasingly open to non-resident participants, but with funding restricted to actors based in the country. The principle “each agency funds those residing in the country’s is the prevalent rule.

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## GOOD PRACTICES

A practical example of Lead Agency process is the German, Austrian and Swiss funding organisations’ cooperation – DACH <sup>100</sup>. Three funding organisations, the German Research Foundation (DFG), the Swiss National Science Foundation (SNSF) and the Austrian Science Fund (FWF), agree that joint application by respective researchers are evaluated by a single organization, the Lead Agency, on the basis of its procedures. The funding decisions made by the Lead Agency are then accepted by the partners organisations, with no need for a double evaluation. The Partners’ organisations remain responsible for financing the project conducted in their respective country, according to their national guidelines.

The procedure implies that the role of Lead Agency is in principle up to the agency located in the country in which the requested funding amount is higher. Each Partner organisation, while acting as Lead Agency, will follow its own national rules for reviewing the projects. No additional budget is allocated for Lead Agency projects.

This process can be possible where a strong mutual trust exists among the organisations involved, especially in the partners organisations’ procedures, and where national selection systems, rules and quality standards are similar. Usually, due to the communication and coordination process among Partner organisations, the evaluation can last longer compared to ordinary procedures.

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<sup>100</sup> The DACH agreement was signed by the German Research Foundation (DFG), the Swiss National Science Foundation (SNSF), the Austrian Science Fund (FWF) in May 2008.

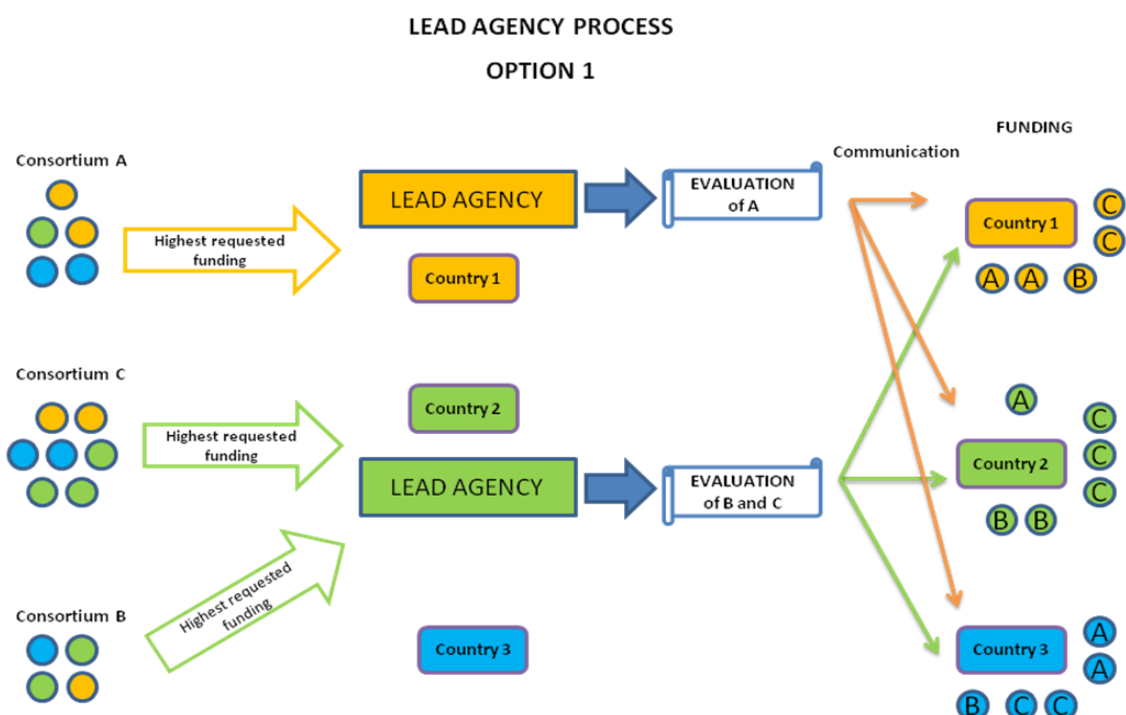


Figure Annex 3.5: A sketch of the Lead Agency procedure driven by the Consortium coordinator in the designation of the Lead Agency. The criteria for determining which organization will act as Lead Agency is based on the higher amount of funding requested. Country 1 and Country 2 will act as Lead Agency, while Country 3 will adopt the decisions made by the Lead Agencies.

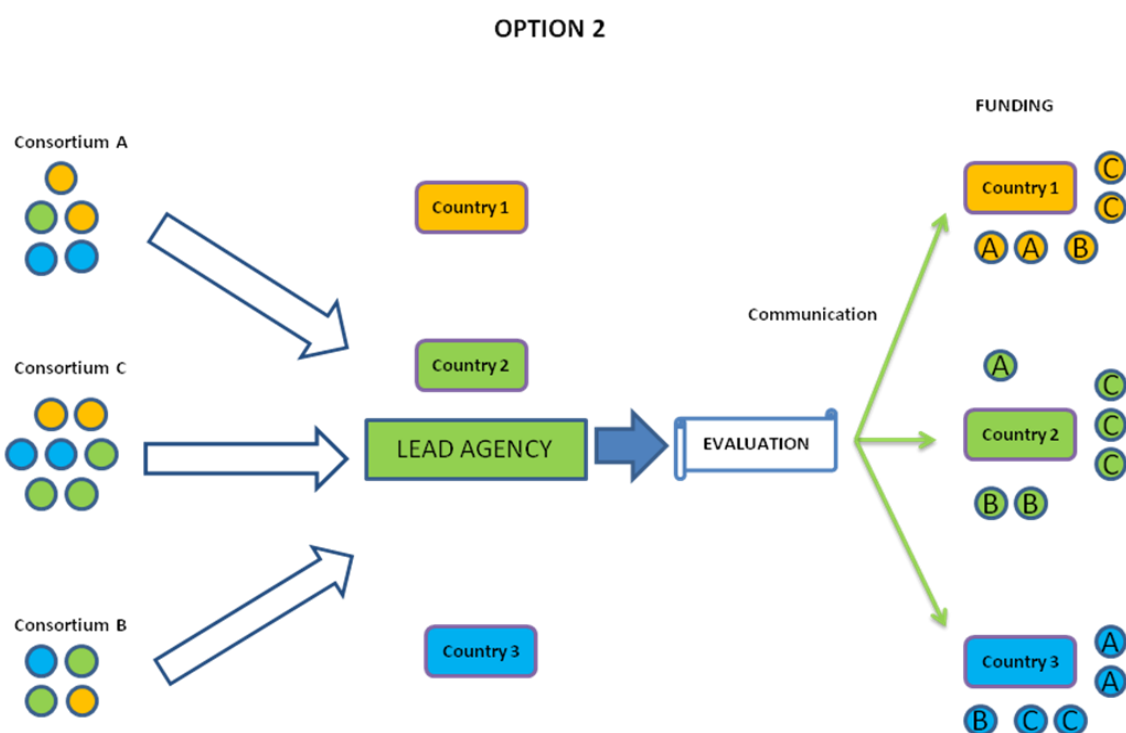


Figure Annex 3.6: A sketch of the Lead Agency procedure driven by funding organisations. Under this option all Consortia submit the projects to one single Lead Agency, responsible for both receiving and evaluating the projects. Which organization will act as Lead Agency shall be decided and communicated to the participants prior to the submission phase.

## ERA-NET SCHEME

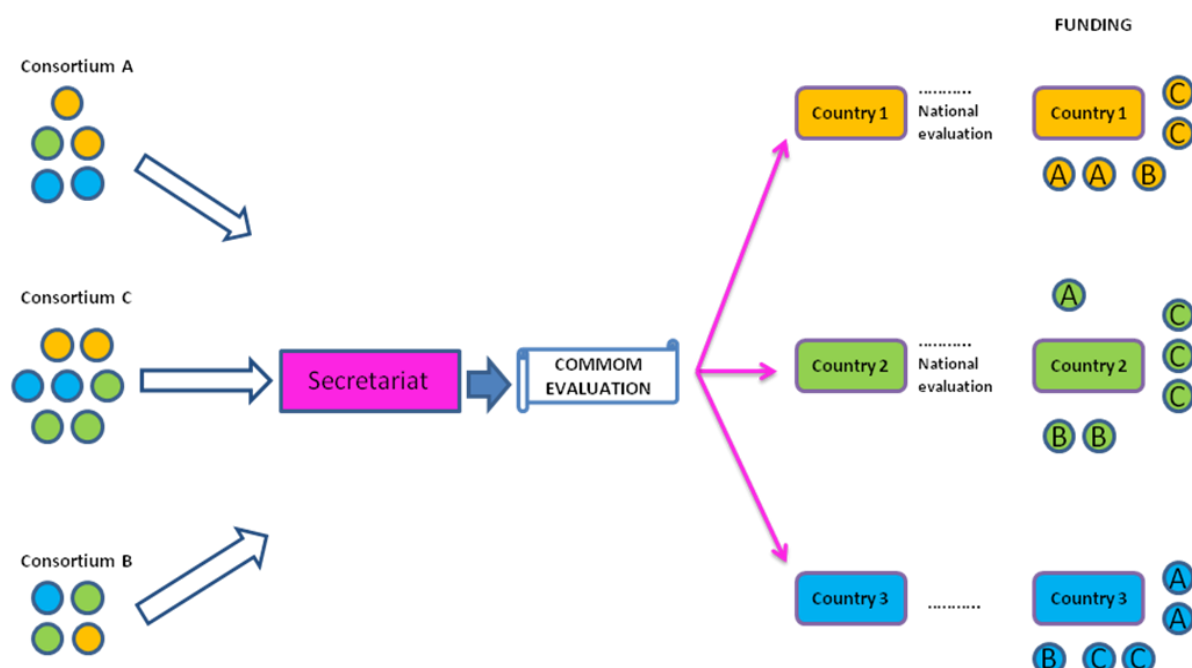


Figure Annex 3.7: A sketch of the ordinary procedure followed under the ERA-NET scheme. A secretariat is in charge of receiving and collecting all applications, while a panel of experts is responsible for the common evaluation of the projects. Each Country, before financing at national level the respective research activities, can, on the basis of respective national rules, foreseen a National evaluation.

In terms of simplifying procedures and avoiding those duplications which introduce administrative burdens and delays, an Italian recent law amendment illustrates the overcoming of the so called practice of the “double evaluation” of research projects already evaluated at EU level, in order to be financed and implemented at national level. Until 2012, research projects were evaluated by specific committees usually nominated by the Ministry for University and Research. The act adopted in 2012 (Decreto legge 9 febbraio 2012, n. 5<sup>101</sup>) in the field of simplification and development, including simplification in terms of international research and industrial research, specifies that the ex-ante evaluation of technical and scientific aspects of research projects co-financed by the European Union or under international agreements, is not required for projects already selected in the framework of EU programs or international agreements. This projects are eligible for funding provided the availability of national financial resources.

Furthermore “Modifications of projects, approved at EU or international level are automatically applicable at national level, provided they do not foresee any expenditures increasing”<sup>102</sup>.

## CONCLUSIONS AND RECOMMENDATIONS

The analysis shows the complexity affecting the definition and selection of funding schemes necessary to implement different types of actions. The JPI, focusing on three aspects of filling research gaps, support competition and support to policy, is facing the interaction of different subjects, different procedures, different funding modalities. The role of different actors at national

<sup>101</sup> The regulation modifies the act “Decreto legislativo 7 luglio 199, n. 297”.

<sup>102</sup> Article 30, 3-octies.

level, with research funding organizations, research performers, programme owners and managers is further complicated by the increasing role of Regions as actors in the field of research. In the framework of the smart specialization, multi-level governance mechanisms and synergies between funding instruments become essential. Due to complexity of actors, different activities and the scaling up of funding in case of global challenges, is important to find coordination mechanisms using the instruments already available trying to eliminate, wherever possible, those barriers associated to decisions which participating countries can adopt.

In this context, it is recommended to investigate the possibilities to adopt a “Lead Agency process” without the separate allocation of national funds to participants of the projects but including compensation procedures for the reimbursed costs among Countries.

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## LIST OF FIGURES AND TABLES

Table 2.1.1: An example of steps and/or actions which could be identified to reach such an objective.

Table 2.2.1: Preliminary classification of actions and instruments adopted/planned by JPIs as reported within the FP7 project JPI to co-Work.

Figure 2.2.1: The dynamic planning cycle for the Joint Programming process. Framework Conditions are now framed in six “arguments” (motivation/driver, vision/strategy, structure/system, management/implementation, outputs, adaptation), where the different aspects of an action are linked each other and should be taken into account when implementing each of them.

Figure 2.2.2: A matrix describing the Framework Conditions (columns) and typologies of actions (rows).

Figure 3.1.1.1: Schematic representation of a the components of D2.3.

Figure 3.1.1.2: Schematic representation of a possible governance structure for the implementation of joint calls.

Figure 3.1.1.3: Schematic representation of the call implementation process.

Figure 3.1.1.4: Schematic representation of the call for proposals using a two-step implementation process.

Figure 3.1.1.5: Schematic representation of a (virtual) common pot model with four funding partners.

Figure 3.1.1.6: Schematic representation of funding ties in a virtual common pot model.

Figure 3.1.2.1: A simplified sketch describing different processes using joint programming and funding to fulfill market or society demand.

Figure 3.1.3.1: Participation to European joint programmes (from 200 to 2009) by types of agencies (number and volume of funding) indicates that regional agencies play only a marginal role. Courtesy of the JOREP project.

Table 3.1.3.1: Total estimated allocations and EFR concentration in R&I and SMEs for the 2014-2020 financial period

Figure 3.1.3.2: Eligible areas in the Convergence Objective and the Competitiveness and Employment Objective, under the Cohesion Policy 2007-2013.

Figure 3.1.3.3: Classification of regions for the ERDF and the ESF for the period 2014-2020.

Figure 3.1.1.4: EU budget spent on maritime-related projects by maritime sector in the period 2000-2006 and 2007-2013, considering in the latter the projects approved until the 31<sup>st</sup> December 2008.

Figure 3.2.1: A sketch of the interaction within the Research Alliance and with JPI Oceans' Boards.

Figure 4.1.1: Sketch of the procedure for the implementation of Knowledge Hubs (as developed by JPI FACCE and JPI HDHL).

Figure 4.3.1: Sketch of a procedure for JPI Oceans to support the networking between the bilateral agreements in order to avoid duplications and create synergies through the adoption of common objectives, evaluation panels and supporting bridging activities between projects and participants independently funded at national level.

Table 4.3.1.1: procedure for supporting the networking of bilateral agreements in order to avoid duplications and to create synergies through the adoption of common objectives, evaluation panels and supporting bridging activities between projects and participants independently funded at national level. The same procedure could be adopted to promote networking between ERANETS.

Table 5.1.1.1: Review of actions by international Organizations. Source: SEAS-ERA report D5.2.1 [11]

Figure 5.2.1: Projects supported under FP6 and FP7 in the field of marine sciences.

Table 5.2.1.1: A sketch of the conditions for shared use of European research vessels (from Academy of Finland, European Strategy on Marine Research Infrastructure, 2003).

Table 6.1.1: Key analytical steps of the impact assessment. Source: European Commission, Impact Assessment Guideline, 2009.

Figure 6.2.1: A sketch of the six phases of a Foresight process.

Figure 7.2.1: Sketch of an organizational form for managing JPI Oceans Pilot Actions. Any proposer/Country of a Pilot Action has the responsibility for the elaboration and implementation of the proposal and acts as a hub for the other participating to the action.

Table 7.2.1: Information linked to involved persons (example).

Table 7.2.2: Information linked to supporting documents (example).

Table 7.4.1: Example of steps and/or actions which could be identified to the call objectives.

Figure 7.4.1 Comparison between standard peer review process for competition among proposals (top) and for cooperation towards one proposal (bottom, as Knowledge Hubs).

Figure 7.4.2: Sketch of structuring for addressing emergency issues.

Figure 7.5.1: CSA Ocean - Join Call sketch for the most comprehensive procedure: the knowledge community (organized in groups) is self-organizing to prepare preliminary proposals describing the in-kind contribution and the request of spending or funding.

Table 7.5.1: Evaluation and assessment process

Figure 7.5.2: Description of the main stages of the evaluation process

Table 7.5.3: Principles and criteria for evaluation.

Table 7.5.4: Scores.

Figure Annex 1.1: A sketch of the SET-Plan process.

Figure Annex 1.2: A sketch of the EERA governance (from [www.lneg.pt/download/4274/EERA\\_LNEG.pdf](http://www.lneg.pt/download/4274/EERA_LNEG.pdf)).

Figure Annex 1.3: A sketch of the EERA Joint Programme structure.

Table Annex 1.1: List of Joint Programmes with details about the number of organizations involved.

Figure Annex 1.4: The suggested process for the implementation of EERA, where the main funding should come from national investments and whose programmes, which should be aligned with the agreed European level priorities, can be facilitated through EC instruments.

Table Annex 2.1: list of descriptors for joint programmes.

Figure Annex 2.1: Participation to joint programmes by types of agencies (number and volume of funding).

Figure Annex 2.2: Number of participations to bilateral and European initiatives programmes, by country, in 2009 (ESA included, N total=95)

Figure Annex 2.3: Total funding volume to joint programmes by country as a percentage of GBAORD, including ESA, in 2009 (ESA included, N total=95). Remarks: the data on the budget allocated to ESA in Poland is not available.

Figure Annex 2.4: Participation by country to different types of programmes in 2009 (volume of funding)

Figure Annex 2.5: Common participation to joint programmes (Source: designed with UCINET from JOREP data. ESA included, N total=95)

Table Annex 2.2: Categories of expected benefits of joint programming.

Table Annex 2.3: Types of impacts.

Table Annex 2.4: Perceived opportunities BEFORE the programmes (% YES answers).

Table Annex 2.5: mobilized opportunities AFTER the programmes (% YES answers).

Table Annex 2.6: Recommendations for motivation and impact analysis from JOREP.

Figure Annex 3.1: From Cave et al. 1999: A sketch of the different players and their level of proximity to research performance and objectives.

Figure Annex 3.2: From Cave et al. 1999: A sketch of the control and competition dimensions.

Figure Annex 3.3: Gross domestic expenditure on R&D (GERD) per Country: A sketch of the R&D intensity per country, based on the EUROSTAT 2010 data.

Figure Annex 3.4: Gross domestic expenditure on R&D (GERD) per Country by source of funds (% GERD). A sketch of Gross domestic expenditure on R&D by source of funds based on 2010 data.

Figure Annex 3.5: A sketch of the Lead Agency procedure driven by the Consortium coordinator in the designation of the Lead Agency.

Figure Annex 3.6: A sketch of the Lead Agency procedure driven by funding organizations.

Figure Annex 3.7: A sketch of the ordinary procedure followed under the ERA-NET scheme.