Performance indicators of JPIs in the evaluation framework of GPC: lesson learnt from JPI Oceans

Pier Francesco Moretti

National Research Council of Italy

pierfrancesco.moretti@cnr.it

27 February 2017

INDEX

1. ABSTRACT

Implementation of trans-national joint actions can reflect some aspects of the joint programming process.

JPI Oceans launched pilot actions to test new modes of cooperation and these have been analyzed in terms of drivers, involvement of stakeholders, management and impacts. In the context of the evaluation framework proposed by the GPC, it seems that many aspects of the joint programming initiatives, as they were initially promoted by Member States in terms of coordination, reducing fragmentation, increasing efficiency and test the structuring of the European Research Area, are probably not properly addressed in contexts external to the JPIs community.

1. INTRODUCTION

The so-called “second wave” of Joint Programming Initiatives (JPIs) has tabled in the European Union scenario a bunch of Member States driven strategic platforms, whose main goal was the coordination of national research programmes to tackle societal challenges. From 2012 we therefore faced 10 JPIs as a test of the capacity of countries to structure the EU research system at strategic and funding levels, within the process of achieving the European Research Area (ERA).

One of the main tasks of these JPIs, in their initial phase, was to demonstrate their difference from an instrument as the ERANETs, whose ultimate aim was the coordination of national programmes but limited through funding joint calls. Indeed, JPIs can adopt different typologies of actions.

In the framework of the projects JPI to co-work and CSA Oceans, JPI Oceans has developed its fit-to-purpose approach (see figure 1 and Moretti 2014), where the main message, agreed with the other JPIs, is that the alignment of national systems can be obtained through different typologies of joint actions, spanning from structuring/enabling one to policy measures (see also the JPI Oceans toolkit on http://www.jpi-oceans.eu/types-actions). In this context, an evaluation framework has been introduced both for the process and for the projects (Remøe 2014).

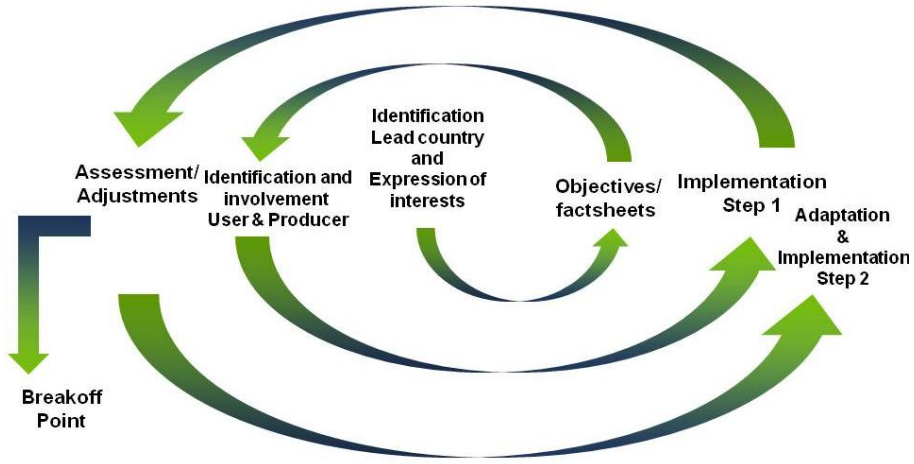


Figure 1: a schematic view of the successive steps within the fit-to-purpose and adaptive approach, as adopted by JPI Oceans.

The complexity of the process and the diversity of joint actions are strongly related to the activities addressed by the ERA-related groups of the Council of the European Union, named ERAC (European Research Area and Innovation Committee) and GPC (Groupe de haut niveau pour la Programmation Conjointe). The first mainly addresses the interoperability of national systems, in terms of rules and funding procedures, the second addresses the joint programming in its comprehensive meaning. The GPC is represented by the EU Member States and Associated Countries and can be considered therefore the ultimate common reference for the JPIs.

In 2016, GPC has proposed an evaluation framework for the joint programming, mainly focused on the process of alignment of national programmes. This framework is usually addressed to evaluate JPIs and adopts some indicators, as shown in figure 2, which can be sometimes misleading of the peculiar characteristics of some JPIs and of the different typologies of actions, other than joint calls, which can be adopted. In this regard, from the very beginning, some of the main goals of JPIs were identified in reducing fragmentation, avoiding unnecessary duplications and structuring the European research area in its complexity.

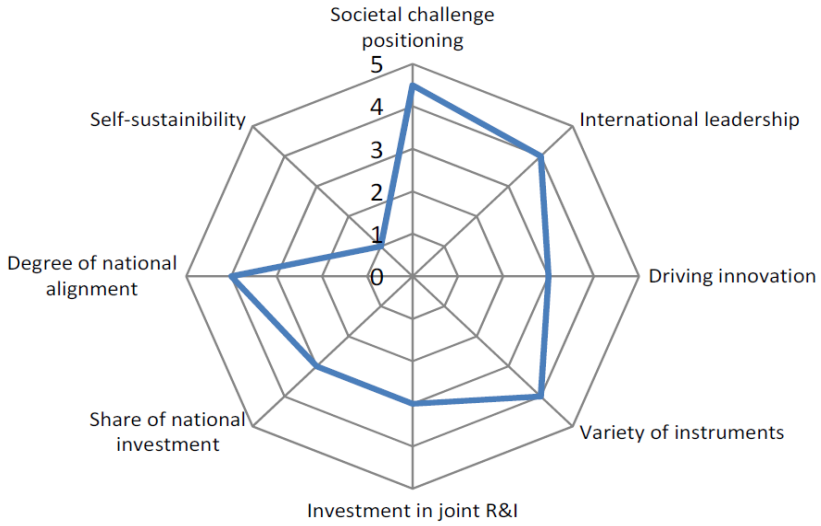


Figure 2: the spider diagram introduced by the Expert Group of GPC, where some performance indicators have been introduced for the evaluation of Joint Programming. The blue curve is a simulation.

2. SCIENCE DYNAMICS AND THE ROLE OF JPIS IN COORDINATING NATIONAL RESEARCH LEVELS

It is well known that research is developed and performed by people. The cooperation between researchers investigating the same topic results in a sort of social network which is usually referred as a "research field" (Nedeva 2013, Lepori 2011). A research field can be described as an ensemble where ideas and experiments build a community linking people and infrastructures, where curiosity or a desire to solve a problem are the main drivers. While curiosity is mainly associated with a bottom-up approach, problem solving, including the fulfilling of legislation requirements, can indeed be driven by a top-down approach. Research fields require investments to support the people and the necessary infrastructure, which in turn link funders and research organizations to the utility of knowledge (Nedeva 2013).

In this scenario, we can therefore identify the national research levels as constituted of policy makers, funding organizations, performing organizations and research teams. These levels interact in different ways accordingly to drivers and objectives (see figure 3).

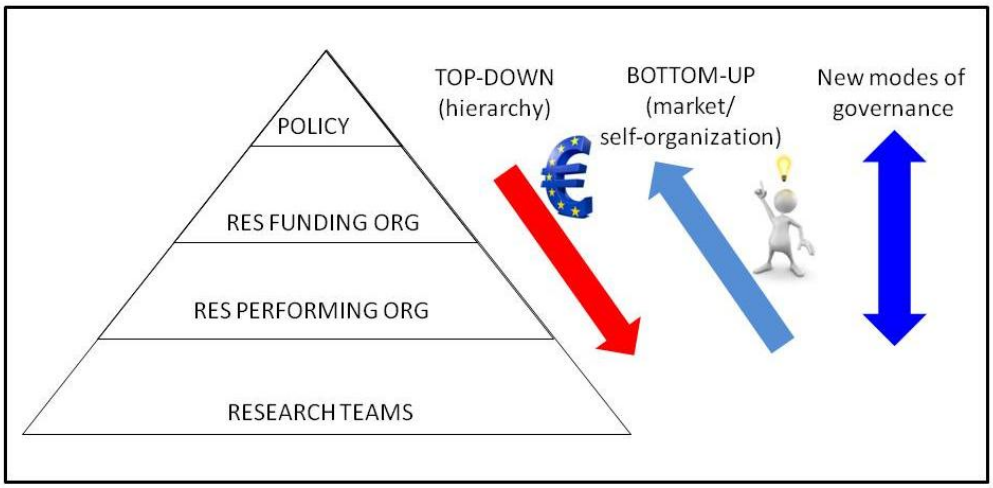


Figure 3. a graphic representation of the research levels (policy makers, research funding organizations, research performing organizations, research teams) and the governance approaches: the top-down approach can be considered as ruling the process when funds are the dominant element, while the bottom-up approach when ideas are driving the process. In practice, the complexity of stakeholders and issues to be addressed when tackling societal challenges requires a mixed-mode governance, and JPIs can represent a good example of this approach when adopting fit-to-purpose joint actions.

When dealing with trans-national cooperation, these national research levels require additional coordination and interactions resulting in joint programming and joint actions, that is, in a new mode of governance and joint implementation. This is exactly what JPIs are testing as mini-ERA, where governance and implementation are strongly linked each other and the stakeholders can play different roles accordingly to the typology of joint action. As an example, when dealing with joint calls, funders and research teams are mainly driving the system, while for infrastructures or research alliances, performing organizations are the major actors or for fulfilling EU directives, responsible public authorities and research teams are on stage.

In this scenario, JPIs offer a unique opportunity to test the effectiveness and efficiency of this such a complex structuring of the research system at EU trans-national level. For these reasons, it seem reasonable to evaluate JPIs for the specific characteristic in providing a platform for cross-links between the research levels, to reduce fragmentation and to provide unprecedented solutions. And for what has been said before, the process and the implementation are strongly interconnected.

3. AN ANALYSIS OF JPI OCEANS' PILOT ACTIONS IN THE FRAMEWORK OF GPC PERFORMANCE INDICATORS

JPI Oceans has launched some pilot actions as a test of cooperation between participating countries, in order to tackle some specific challenges (see http://www.jpi-oceans.eu/joint-actions-0). These actions have identified their specific objectives and developed their activities: they can be considered as a beta test for the effectiveness and efficiency of the fit-to-purpose approach and the interconnections between the research levels. Their drivers, activities and results have been analyzed in order to identify those aspects to be framed in the GPC evaluation framework and those which are considered relevant but do not fit any of the proposed performance indicators for JPIs.

3.1 ECOLOGICAL ASPECTS OF DEEP SEA MINING

Aim and objectives:

The JPI Oceans action 'Ecological aspects of deep-sea mining' aims at assessing the long-term impacts of polymetallic nodule mining on the deep-sea environment. Core of the action is the research project 'MiningImpact' which conducted three marine research campaigns in 2015 on the RV Sonne visiting several license areas and two Areas of Particular Environmental Interest (APEIs) in the Clarion-Clipperton Zone (CCZ) as well as the DISCOL benthic impact experiment in the Peru Basin.

The main objectives were to jointly analyse the long-term ecological consequences of deep-sea polymetallic nodule mining, to provide the knowledge base and inform the development of the international regulation regime of deep sea mining activities.

Analysis:

The main drivers for this action were the strategic interest (country licenses, industry, International Seabed Authority) and the opportunity of the use of the new German vessel (implying a relatively easy planning for access).

JPIO was recognized for its value in matching research and policy interests as well as providing a unique opportunity as a platform where high level governmental representatives and research teams can participate at equal footing.

In this context, the decision not to involve industry was adopted to give the results a major legitimacy and independence. Not to use EU instruments was also decided in order to have a fast response to the opportunity of the German vessel.

Due to the relative small excellent scientific community involved in such a topic, a selection of scientists at national level was conducted and invited to a conference to define a joint proposal (in 3 months, with a self-organization of the community to fulfill the policy requests and logistic boundaries): in practice, what is usually named as a knowledge hub, with a cooperative and transparent bottom-up approach.

The process involved a relatively low bureaucracy with a centralized manager and direct interaction with scientists. When some problems were reported, mainly in funding, the JPIO Management Board was asked for its intervention. The evaluation of the proposal was performed by few external experts appointed by Germany.

The total budget in terms of Investments and funds accounts as 6.2 million cash, 3.5 million in-kind, 3.5 million for the infrastructure (the vessel). The balance is mainly from Germany.

It has been reported that, in absence of this JPIO action, many countries would have not contributed with own activities: in this case, we assisted to a variable geometry from participating countries but not associated to national interests (licenses). This is mainly due to the high motivation from the policy (top-down) and scientific communities (bottom-up).

Impact:

The action and its research project 'Mining Impact' are expected to improve our understanding of deep-sea ecosystems and the impact of mining thereon. The project has not only attracted interest from the G7 Science Ministers in their Communiqué from October 2015, but it is also delivering input into the development of the international Mining Code (set of regulations for the exploitation of polymetallic nodules in the deep seabed beyond the limits of national jurisdiction), which the International Seabed Authority is in the process of negotiating. At the 22nd Session of the Authority in July 2016, Mining Impact presented these results in order to ensure that the international deep sea mining regime is built on a solid scientific basis and the best available knowledge.

Scientists involved in the project also published, on the journal “Nature”, the results from the recent research campaign , demonstrating that polymetallic nodule fields are hotspots of abundance and diversity for a highly vulnerable abyssal fauna.

Main aspects for evaluation of the process (in bold, the aspects fitting GPC indicators):

High motivation (bottom-up vs top-down)
High efficiency
Scientific impact (publication on Nature)
Political attention (G7 + integrated EU scientific advise)
EU voice in **international** context (scientifically and politically)
Positioning in the societal challenge as EU/JPIO

Share of national investments (Infrastructure)
EU scientific evidence to support policy makers
Unique opportunity provided by JPIO and new vessel
Multi-disciplinary approach and PhD student involvement
Indirect training of researchers into regulatory issues

3.2 INTER0CALIBRATION OF THE EU WFD

Aim and objectives:

The JPI Oceans action for the Scientific Inter-calibration exercise for the EU Water Framework Directive (WFD) coastal and transitional waters in the North-East Atlantic aims at reducing fragmentation (of comparison calculation efforts) and increase efficiency in relation to the Water (and Marine Strategy) Framework Directive.

Analysis:

The main drivers for this action were well know since 2004, as the need for a structured, effective and efficient platform for supporting fulfillment of policy obligations.

JPIO has been recognition as a neutral platform with the high-level participation of Member States and a fit-to-purpose approach including a strong research/policy interaction.

A common pot through an external agency, trusted by the funders, has been used, with Belgium taking the administration burden and a MoU signed.

The financial contributions from the competent authorities were independent of the national interests: 300 keuro (accounting for 32 months personnel) for 3 years have been invested to involve the scientists to provide the solution, as a sort of tender.

A bouquet of scientist, from a restricted community of experts, was proposed by JPIO to the funders (national authorities) for the selection, as a sort of "service oriented knowledge hub". The action in fact brought together scientific expertise to perform required analyses in the most cost-efficient way, reducing fragmentation and testing a mechanism for joint funding from environmental authorities of nine member countries, surpassing the traditional model of joint calls, to obtain the performance improvements.

JPIO has been recognized as a fortunate opportunity since 004 to tackle this challenge, with a flexible and efficient approach.

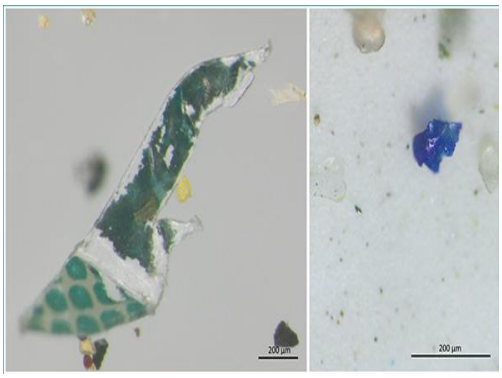
Impact:

The intercalibration action will enable a long-term dialogue between environmental authorities and the scientific community of member countries to solve remaining scientific challenges jointly. Furthermore, as comparable environmental assessments are of crucial importance for industry, research on scientifically sound and comparable environmental assessment can be a competitive advantage for Europe.

Main aspects for evaluation of the process (in bold, the aspects fitting GPC indicators):

Unique platform (trust, high level representatives from + scientific expertise, neutrality)
Efficiency (and defragmentation): very low cost\transaction costs
"Indirect" impact on **societal challenge** (i.e. on agriculture…)
National alignment and inter-authority interaction
Sustainable structuring of the action
Multi-disciplinary
Support to policy

3.3 ECOLOGICAL ASPECTS OF MICRO-PLASTICS



Aim and objectives:

The action aims to take stock of, evaluate and improve current methods for microplastic research. Given the relatively recent emergence of microplastic research, there is a lack of harmonised and validated research methodologies for the quantification and qualification of plastic particles from selected matrices (sediment, biota and water column). The pilot action seeks to assure and control the quality of current assessment methods with the aim of developing robust and cost-effective research methods and protocols, and ultimately, comparable and validated microplastics data.

Furthermore, the pilot action aims to improve our understanding of the impacts of microplastics. While several studies have already demonstrated harmful effects of plastic particles, the (eco-toxicological) impacts on organisms, populations and ecosystems are still understudied. The action aims to explore the risks associated with plastics in the marine environment, inter alia, by further examining the mechanisms of how plastic particles are taken up and passed along the trophic chain, thus potentially entering the human food chain.

Analysis:

The main drivers for this action were the policy obligations (linked to MSFD indicators), the recognition as an emergent issue in the scientific community, the awareness of the civil society for the macro-plastic challenge.

Experts were appointed by Member States, and mainly confirmed via an additional bibliometric study, funded by Norway and conducted in parallel to refine the selection.

The EU FP7 project named CSA Oceans 1 conducted also a foresight exercise for the identification of the priorities to be addressed and the JPIO Management Board decided to adopt a joint call as the more appropriate instrument in the preliminary phase, mainly due to the not yet “structured” community in this domain.

The joint call focused on three of the five priorities identified by the CSA Oceans 1 foresight exercise.

The financial contribution (approximately 8 million euros) was mainly balanced at national level, including also high flexibility and effectiveness of the approach in funding (national contributions were in some cases increased in order not to stop the ranking list).

The four funded projects were selected also in terms of complementarity with other EU activities and one of them (Baseman) was selected as the "structuring" one, as the interlaboratory study, and evaluated through a balance between excellence and impact.

Impacts:

In the scientific and environmental points of view, it is expected that the pilot action will enable the standardization of the methodologies for the identification and quantification of micro-plastics in the marine environment. Moreover, it will improve the validation and harmonisation of research methodologies and protocols for microplastics research, providing a structuring effect through the interlaboratory network, while increasing the capacity to identify, quantify and understand the effects of microplastic particles in the marine environment.

In a wider and political context, the action has not only attracted interest from the G7 Science Ministers in their Communiqué (October 2015) accordingly to the aspect of marine litter, but its results will feed directly EU, regional, and national authorities.

Main aspects for evaluation of the process (in bold, the aspects fitting GPC indicators):

Emergent issue
Support to policy
Positioning on societal challenge (public awareness)
Political attention (G7) and international leadership
Sustainable structuring of the action
Multi-disciplinary
Adoption of many instruments
Share of national investments (scientific and structuring outcomes)

3.4 MULTI-USE OF INFRASTRUCTURE FOR MONITORING IN THE NORTH SEA

Aim and objective:

The action aims at conducting joint monitoring activities in the North Sea associated to indicators identified by EU directives, to be added to current (fish stock) monitoring programmes. The objective was to develop pilot studies to test the feasibility and efficiency on current monitoring activities. The overall approach of the pilot action was directed towards three components: (1) setting up integrated monitoring surveys, (2) enhancing integration of monitoring efforts and (3) promoting data sharing and integrated information systems.

Analysis:

The main drivers for this action were the policy obligation and the challenge of Member States to maintain the highly cost use of infrastructures in a period of financial cuts of the budgets. The action took advantage of using established initiatives for sharing infrastructures and joint campaigns (ICES etc.), while integrating additional measurements to support an indicator not covered before.

A strong interministerial interaction and between funding bodies and scientists was showed. Various cruises were carried out. The process of organizing the pilot, the needs (budgets, equipment, time) and the limitations (vessels, crew, permits) was of more interest than the actual data collected at sea.

The exercise is lacking a robust economic analysis, and as a consequence the chance to scaling up. Probably, the action suffered by delays due to many changes of the personnel in charge of the management.

Impact:

The information and collected experiences were a useful input for the project of DG Environment to be able to calculate costs and design an efficient integrated monitoring programme.

Main aspects for evaluation of the process (in bold, the aspects fitting GPC indicators):

Support to policy
Share of national investments (infrastructures**,** division of labour)
Efficiency

4. CONCLUSIONS

Joint actions conducted by JPIs are showing some aspects of the process of joint programming. In fact, the implementation somehow reflects priorities, commitments and management.

These actions could indeed introduce structuring effects or also show transformative impacts.

Therefore, what should be investigated, and evaluated, in joint programming, are the counterfactual implication of the JPIs and those aspects associated to their peculiarity too, even if some impacts are difficult to be quantitatively measured.

JPIO, as many other JPIs, addresses complex systems, involving many ministries, research funding and performing organizations, experts, end-users and producers, in a mixed mode of governance.

JPIO launched some pilot actions to test new forms of trans-national collaboration and a fit-to-purpose approach, aimed to provide effective and efficient solutions.

In the context of the evaluation framework proposed by the GPC, it seems that many aspects of the joint programming process, as they were initially promoted by Member States in terms of coordination, reducing fragmentation, increasing efficiency and test the structuring of the European Research Area, are probably missing.

Through the analysis of JPIO pilot actions, the aspects in the following table were preliminary identified, at different level of relevance, for the evaluation.

Some of these aspects (as those underlined in the table) are clearly in tune with the drivers which justified JPIs to be launched, but they are difficult to be framed in evaluation criteria identified by GPC so far.

Main aspects for evaluation of the joint programming process as emerged from an analysis of JPI Oceans' pilot actions:

Support to policy
Efficiency/defragmentation
Societal challenge positioning
International leadership
National alignment
Addressing multi-disciplinarity

Sharing investments/infrastructures
Addressing emergent issues
Counterfactual
Variety of instruments and fit-to-purpose approach

5. REFERENCES

- Bertrand, E. & Niehoff, J., 2013, "Report on ERANET, ERANET Plus and JPIs and their joint calls", European Commission, on web at http://netwatch.jrc.ec.europa.eu/web/lp/learning-platform/publications/-/asset_publisher/3ckQuvd914e9/document/id/45597 .eu/uedocs/cms_data/docs/pressdata/en/intm/146065.pdf

- European Commission, 2016, Directorate-General for Research and Innovation, "Evaluation of Joint Programming to Address Grand Societal Challenges - Final Report of the Expert Group", available at https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwimqonz2qjRAhWCtBoKHfReDqwQFggcMAA&url=https%3A%2F%2Fwww.era-learn.eu%2Fpublications%2Fec-publications%2Fevaluation-of-joint-programming-to-address-grand-societal-challenges-final-report-of-the-expert-group%2F%40%40download%2Fpublication_file%2FJP_evaluation_final_report.pdf&usg=AFQjCNHX1KxU1g_mR-PcXeq352yds3wKjA

- Lepori, B., 2011, Coordination modes in public funding systems, Res. Policy, 40, 355-367

- Moretti, P.F., 2014, CSA Oceans deliverable D2.4 "Proposal for procedures for design and management of joint actions, available at http://www.jpi-oceans.eu/library?page=3

- Nedeva, M., 2013, "Between the global and the national: Organising European science", Research Policy, 42, 220-230

- Remøe, S.O., 2014, CSA Oceans deliverable D2.6 "Recommendations for selecting, evaluating, and monitoring different types of joint actions", available at http://www.jpi-oceans.eu/evaluation-actions-0