

Toolbox of current and novel alignment modalities and instruments

Task 4.3, ERA-LEARN2020 Project

Contractor: AIT

Lead contributor: INRA

Key contacts: Susanne Meyer and Michael Dinges



Horizon 2020 Call: H2020-INSO-2014

Proposal number: SEP-210134170

Deliverable 4.2- Toolbox of Alignment Modalities

Due date of deliverable: December 2016 (M24)

Actual submission date: September 2017 (M33)

Dissemination level: Wider public

Lead contractor for this deliverable: AIT

Contributors: INRA, MIUR, UNIMAN

Authors: Susanne Meyer, Michael Dinges, Anna Wang

Contributors: Madeleine Huber, Caroline Lesser



Table of contents

1. Introduction.....	4
1.1 Background.....	4
1.2 Objective.....	4
1.3 Methodology	5
2. Toolbox of Alignment Modalities.....	5
2.1 Research planning phase.....	7
2.2 Research and innovation strategy.....	9
2.3 Research funding and implementation phase.....	14
2.5 Research evaluation and monitoring phase.....	22
2.6 Capacity building of researchers, policy makers, practitioners.....	25
2.7 Research infrastructure and data.....	27
2.8 Research dissemination, uptake and implementation.....	31

1. Introduction

1.1 Background

In December 2008, the Council of the European Union endorsed the concept of “Joint Programming” to promote the pooling of national research efforts to make better use of Europe's public R&D resources. The rationale is that the vast majority of public R&D budgets in Europe are still managed at the national level.¹ Joint Programming is a **strategic process** whereby EU Member States and Associated Countries ought to agree on common visions and Strategic Research Agendas (SRA) to address major societal challenges that cannot be tackled at the national level only.

The practical implementation of Joint Programming relies on the **alignment of existing or planned national (and regional) research and innovation strategies, programmes, activities, and funding**. In fact, the European Research Area and Innovation Committee’s High Level Group for Joint Programming (“Groupe de Programmation Conjointe” or GPC) notes that “*alignment is the key to successful joint programming*”².

In 2014, the GPC defined alignment as follows:

“Alignment is the strategic approach taken by [EU] Member States to modify their national programmes, priorities or activities as a consequence of the adoption of joint research priorities in the context of Joint Programming, with a view to implement changes to improve the efficiency of investment in research at the level of Member States and the European Research Area.”

In 2016, the GPC extended the alignment definition to encompass both research AND innovation activities, highlighting that “*promoting alignment of national, regional and European strategies, programmes and activities for research and innovation with the strategic research and innovation agendas developed as the results of the JPP*”³ is one of their main activities. Alignment thus aims to structure both research and innovation efforts of EU Member States (and Horizon2020 Associated Countries) to help establish a single European Research Area (ERA) and tackle societal (global) challenges more effectively.

Within the ERA-LEARN2020 Project, the following Tasks have been undertaken to conceptualise alignment and help research funding organisations, research performing organisations, and individual researchers operationalise it:

- Development of a mutual understanding of what “alignment” means and elaboration of a Typology of different (joint) actions and instruments that can facilitate the practical implementation of alignment across the research and innovation programming cycle (Task 4.1);
- Identification and analysis of good practices in this area via the conduct of case studies (Tasks 4.2, 4.3 and 4.4); and
- Elaboration of a SWOT (strengths-weaknesses-opportunities-threats) analysis of alignment actions and instruments used in Europe (Task 4.5).

1.2 Objective

The ERA-LEARN2020 Task 4.1 [Report](#) highlights the following key barriers to alignment at national level:

- Lack of common understanding of what alignment means and how it can be achieved
- Insufficient inter-operability between national rules/procedures for funding and executing research
- Weak in-country coordination and consultations on strategic research priorities
- Lack of sufficient national funding to support transnational coordination and joint programming
- Difficulty to show concrete results from alignment of research and innovation in the short-term

¹ Currently, about 88% of the 27 EU Member States’ R&D expenditures (GBOARD) is committed to national research.

² ERAC-GPC 1305/1/14/REV1, 30 October 2014

³ 6214/16 RECH 21

To support efforts to promote alignment and overcome these barriers, this report synthesises the lessons learned from the [case studies](#) that examine current and novel alignment modalities (Tasks 4.2 and 4.3). It is presented as a practical “Toolbox”, laying out what the alignment action/ instrument entails; the key benefits and weaknesses of such an action; and the success factors that need to be taken into account to ensure effective implementation and impact on alignment. The toolbox has been developed in parallel to a consolidated Alignment Typology (Excel table), which can be found [here](#). Compared to the original Alignment Typology table (published in 2015 as part of Task 4.1⁴), this new version includes: 1) a stronger emphasis on alignment in the uptake of research evidence, demonstration, and upscaling activities (in order to take into account the extended GPC definition of alignment); and 2) additional examples for each of the actions listed.

This Toolbox is mainly targeted at research programme owners and managers. Guidance material specifically targeted at *policymakers* (e.g., Ministries of Research) is also being developed via the “**Mutual Learning Exercise on Alignment and Inter-Operability of Research Programmes**” (MLE). This exercise issued recommendations that help promote improved buy-in and ownership for alignment at the country level as well as enhanced national communication and coordination (e.g., across all relevant ministries and government agencies). In addition, the MLE examined the (financial) resources and other pre-conditions needed at the country level to effectively participate in joint programming and alignment (e.g., strong political commitment, dedicated budget for JP activities) and looked at ways to make national funding rules and procedures more inter-operable (or harmonised). Its recommendations are available [here](#).

1.3 Methodology

The Toolbox is based on information from the ERA-LEARN2020 cases studies on [current](#) and [novel](#) alignment modalities prepared by INRA and AIT (available [here](#) and [here](#)). It has benefitted from useful suggestions from scientific experts, funders, and policymakers involved in various public-to-public research partnerships (e.g., JPIs, ERA-NETs, Article 185 Initiatives). Their suggestions were collected during two ERA-LEARN2020 Workshops (Sept. 2015 and Nov. 2016) as well as via email and face-to-face consultations.

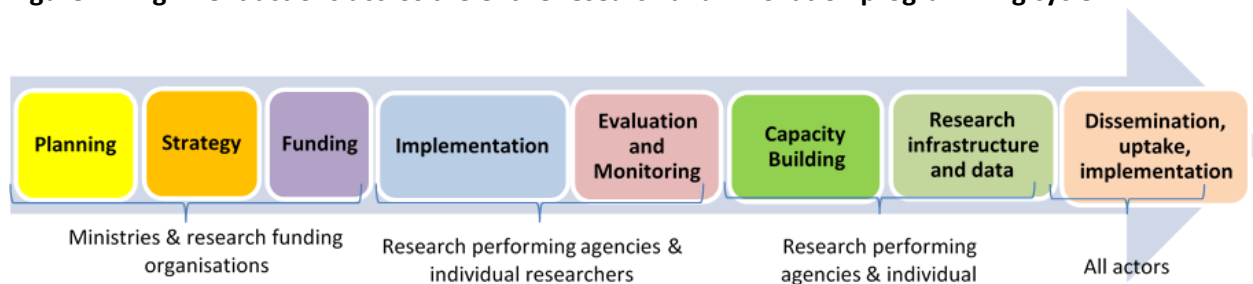
2. Toolbox of Alignment Modalities

There are a variety of actions and instruments currently in use in Europe that promote and facilitate the practical implementation of alignment of national research and innovation strategies, activities, and resources. Such joint actions can in fact occur at **any stage** of the research and innovation programming cycle (see Figure 1 below). They are not mutually exclusive but rather **complementary** to each other. In addition, such actions can rely on specific (financial) instruments. Some benefit from EC co-funding and are provided by the EU Framework Programme for Research and Innovation (e.g., ERA-NETs Cofund and European Joint Programme Cofund), others are mainly financed by participating EU Member-States and H2020 Associated Countries (e.g., Knowledge Hubs, and Thematic Annual Programming Networks that allow to synchronise national calls for research projects).

The consolidated “Alignment Typology” identifies **29 alignment actions and instruments** currently in use by various European public-to-public research partnerships along the entire research and innovation programming cycle (see Figure 1). Alignment actions can be undertaken in research fields where there is already a wealth of national and EU research as well as in areas where research is still relatively scarce. In the first case, alignment actions will help structure the *existing* research landscape; in the latter case, alignment actions can help spur *new* joint research, where needed, that is more efficient and coordinated.

⁴ ERA-LEARN 2020 (2015) : Deliverable 4.1 Deliverable 4.1- Report on the Definition and Typology of Alignment. https://www.era-learn.eu/alignment/definition-typology/D4.1_ReportontheDefinitionandTypologyofAlignment_INRA_final_Nov2015.pdf

Figure 1. Alignment actions across the entire research and innovation programming cycle



The **choice** of the specific alignment action or instrument to be used during the research funding and implementation phases will in fact often depend on several factors, such as:

- **The research area concerned** (e.g., volume and level of consolidation of already funded research; EU value-added vs. national value-added);
- **The level of ambition of P2P members** (e.g., degree of political commitment for alignment, mutual trust amongst countries; past history of cooperation); and
- **National (institutional) features in P2P members** (e.g., ability to make national funding rules interoperable; ability to commit a certain share of national funding to transnational research; the share of competitive vs. institutional funding in the national research budget).

In any case, an important pre-requisite for successful alignment of national research strategies and activities is the development of a **common Strategic Research (and Innovation) Agenda (SRIA)** that is 'owned' by all participating countries and reflects financial, scientific, and end-user/stakeholder priorities. The SRIA is the common base on which participating countries collectively agree on areas of cooperation and joint research and innovation actions to be carried out.

The remainder of this report provides information about the possible use, benefits, challenges, and key factors of successful implementation for each of the 29 actions identified in the Typology table.

2.1 Research planning phase

Joint research planning is the first step towards alignment along the research and innovation programming cycle. Research planning includes a structured and systematic analysis of (1) societal, economic, or environmental developments and new challenges to be addressed; (2) research needs and gaps for the concerned challenge; and (3) existing research at national and European level. Research planning performed using a common transnational approach enriches the research planning stage as such and makes it more efficient.

The tables below indicate the main (joint) actions and instruments that can be used for jointly planning the research to be performed and outlines (1) when this joint action might be used, (2) the benefits for the main actors, (3) the key challenges when performing the actions, and (4) the key success factors for implementation.

Table 1: Joint Foresight as a tool for jointly planning research activities in P2Ps

Joint action no. 1	Conduct of joint foresight
Short description	Joint foresight for a concerned challenge is used when the future development is uncertain and more information is needed for P2Ps to address the challenge. The forward-looking activity aims for a structured analysis of future developments, builds a common strategic vision on how to address these, and identifies possible future common strategic research topics. P2Ps can perform joint foresight for the concerned challenge or they can merge existing foresight studies to suit their needs.
Benefits	<ul style="list-style-type: none"> • Facilitates the implementation of other alignment actions (at strategic, operational, and financial levels) • Promotes networking and the development of a common vision about future (scientific) challenges amongst various countries
Challenges	<ul style="list-style-type: none"> • Challenge in identifying and engaging adequate experts across countries • Encountering and respecting structural differences in national programmes' orientations • Time-consuming and costly exercise (in case of own foresight exercise)
Key success factors	<ul style="list-style-type: none"> • Follow a dedicated and properly coordinated foresight exercise: (1) conduct own foresight for the challenge addressed or (2) make use of existing foresight reports and build on these • Receive support from foresight experts when setting up and implementing the foresight process • Organise consultations amongst experts • Feed the results into the P2P joint mission, vision paper, and/or Strategic Research (and Innovation) Agenda
Learning material	<ul style="list-style-type: none"> • The EC Joint Research Centre 'For Learn' provides an Online Foresight Guide: http://forlearn.jrc.ec.europa.eu/guide/0_home/index.htm • Foresight Platform: http://www.foresight-platform.eu/community/forlearn/what-is-foresight/ • Free Foresight Training by ERA-LEARN 2020 Project once a year: https://www.era-learn.eu/events • ERA-LEARN 2020 JPI Oceans case study: https://www.era-learn.eu/joint-activities/foresight-and-common-vision

Table 2: Joint Mapping of research as a tool for jointly planning research activities in P2Ps

Joint action no. 2	Conduct of joint mapping of existing research
Short description	<p>Mapping is an activity that aims to identify and map ongoing and planned national research programmes and identify possible research gaps, or synergies, among participating countries. A joint mapping can be used if future developments of the concerned challenge are identified and a common vision is built, but the research needs or respective strategic research priorities on transnational level still need to be identified based on existing national strategies and programmes. A joint mapping of regional, national, and European research strategies and programmes enables P2Ps to identify where alignment of national research programmes adds value and how national activities could complement each other.</p>
Benefits	<ul style="list-style-type: none"> • Provides a common mapping methodology to JPI/P2P member countries • Promotes transparency and information-sharing on national research strategies and activities; provides an overall picture of national research activities and allows to identify research gaps and potential synergies • Informs decision-makers of potential transnational strategic priorities and, as such, helps avoid duplication of research • Promotes networking amongst experts (including research experts, policy-makers, and other stakeholders of various countries)
Challenges	<ul style="list-style-type: none"> • Difficult to reach a common understanding about the exact scope of the joint mapping exercise • Challenge to collect homogenous mapping data, e.g., due to the interdisciplinary scientific scope of a JPI, the diversity of funding agencies and national research programmes, and the variable involvement of participants • Rapid obsolescence of mapping results
Key success factors	<ul style="list-style-type: none"> • Clearly define the exact scope (well-defined common theme or joint action to be implemented) and objectives before starting it • Identify appropriate actors to be invited to participate in the mapping (e.g. programme managers in research funding organisations, research performing organisations, individual scientists, non-governmental stakeholders) • Give clear instructions to participants so as to ensure they provide accurate, complete, and comparable information • Rely on appropriate, time-efficient, and complementary mapping tools (e.g. questionnaire / workshop results complemented by a desk study) • Rely on an inclusive and interactive mapping process in order to promote trust-building and commitment amongst all participating agencies/countries • Ensure effective procedures to take account of mapping outcomes in joint strategic and operational P2P documents (e.g. SR(I)A, Implementation Plan, scoping of a new joint action) • Renew mapping activity before any SR(I)A update and/or before a specific joint action is undertaken
Learning material	<ul style="list-style-type: none"> • Guidance about mapping: https://www.era-learn.eu/manuals-tools/participating-programmes • ERA-LEARN 2020 case study on FACCE JPI Joint Mapping Meetings • Water JPI Mapping Exercise: Mapping water RDI in EU and associated countries

2.2 Research and innovation strategy

Joint research and innovation strategies (SRIA) in P2Ps are a way to define what challenges the countries want to address in a joint way and what research priorities the countries have in common. For JPIs, the development of a SRIA is a “compulsory” (European Commission, 2008) alignment action. Alignment actions in the research and innovation strategy phase of the programming cycle lays the foundation for deeper alignment in later stages, making joint actions more effective and impactful. The tables below present the actions and instruments available for alignment during the research and innovation strategy phase and identifies their respective benefits, challenges, and key success factors for implementation.

Joint action no. 3	Adoption of common strategic research and innovation priorities
Short description	Agreement on common strategic research and innovation priorities within a joint SRIA builds the basis for P2Ps to define their strategic and research activities and ensure commitment for implementation. It builds on joint foresight and mapping as well as nationally identified priorities and ERA/H2020 priorities. National coordination is a pre-condition for strategic alignment on transnational level.
Benefits	<ul style="list-style-type: none"> • Key prerequisite to achieve greater alignment of national research and innovation strategies, required base for further alignment at operational and financial levels • Encourages participating countries to modify their national R&I strategies and programmes as a consequence of the adoption of joint R&I priorities in a specific field • Adopting a trans-disciplinary approach to SRIA development helps reduce research fragmentation and promotes a more systemic approach to addressing complex societal challenges (i.e., challenge-oriented strategic research agenda core themes instead of discipline-oriented ones) • Relying on an inclusive approach allows to foster high involvement and leadership of participating countries and strong ownership of achieved outcomes (i.e., content of the SRIA), which is key for the success of a P2P • The SRIA elaboration process contributes to strengthening interactions within the P2P decision-making body and across the overall P2P structure as a whole
Challenges	<ul style="list-style-type: none"> • As the development of an SRIA is time-consuming and complex, P2P members need to ensure the manageability of its operation: e.g., it may be useful to appoint a small Task Force made up of select Governing Board members and some other experts to take the lead in this process • Challenge to trigger genuine national ownership and national priorities, as several Ministries and agencies need to be consulted within each country • Challenge to optimally involve all key players in the SRIA elaboration process • Effective alignment takes time (especially at strategic/policy level), and needs to be supported by adequate (financial and institutional) means. • Adequate financing needs to be earmarked for joint programming and transnational R&I joint actions within national research budgets ('glue money')
Key success factors	<ul style="list-style-type: none"> • Clearly define the objective and the scientific scope of the SRIA • Involve the relevant national and European actors, in particular research funding organisations, to jointly develop a common long-term vision that relies on a strong sense of trust, inclusiveness and ownership • Empower all members to lead the SRIA elaboration process results in strong long-term commitment • Prior national coordination is essential. Requires that each participating

	<p>country has identified its (consolidated) national R&I priorities, its topics to be addressed at EU level, and the ones at national level (via national in-country consultations). National representatives within the P2P decision-making body that contribute to the development of the SRIA should represent the views of their country (not their agency).</p> <ul style="list-style-type: none"> • Clearly distribute responsibilities among P2P governing bodies and ensure effective communication between them • Secure appropriate resources in terms of funding support (i.e., at national levels and/or via EC co-funding) and time required from members to effectively design and steer the SRIA elaboration process • Involve non-governmental actors (scientific experts and stakeholders) through a participatory approach • Collectively agree on joint strategic objectives that rely on an integrative approach, especially if dealing with a research area that focuses on a broad systemic issue, hence avoiding further fragmentation of research • Develop in parallel or in a second step (i) a practical implementation plan (see action no. 4) and (ii) a new/ revised P2P governance model in order to support the effective implementation of the SRIA
Learning material	<ul style="list-style-type: none"> • ERA-LEARN 2020 case study on JPI Climate's Strategic Research and Innovation Agenda • ERA-LEARN 2020 case study on the Process towards a Common Position on Alignment in Austria • Strategic Research (and Innovation) Agendas of all 10 JPIs (MYBL, Climate, AMR, Oceans, JPND, Water, Urban Europe, HDHL, FACCE, Cultural Heritage)

Joint action no. 4	Adoption of a common strategic implementation / action plan
Short description	<p>Plan that outlines joint research actions at operational and financial levels (e.g., ERANETs, knowledge hubs, research alliances, sharing of research infrastructure and data). The development and agreement of a common strategic implementation plan of the SRIA ensures that concrete actions and instruments are defined and developed to research the strategic objectives. The development of an implementation plan also calls for concrete commitment of resources for the implementation of the SRIA.</p>
Benefits	<ul style="list-style-type: none"> • Facilitates alignment of research programmes, activities and infrastructures at operational and financial levels • Allows for variable geometry: each member can choose in which joint action it wishes to participate, in light of its national priorities and funding capacity. • Allows for smart specialisation across participating member states
Challenges	<ul style="list-style-type: none"> • Difficult to trigger genuine national ownership and national priorities, as several Ministries and agencies need to be consulted • Difficult to lead and/or finance joint actions due to the problem of interoperability of national procedures and rules for funding research • Potential under-representation of less research-intensive countries could weaken the benefits of alignment at the European level
Key success factors	<ul style="list-style-type: none"> • Develop a transnational action or implementation plan that explains how the participating country will implement the SRIA (linked to the national research and innovation strategy) • Identify the right instruments (in a collective manner) to implement the SRIA (calls, innovation actions, fast track activities, research

	<ul style="list-style-type: none"> infrastructure, networking activities, etc.) Share responsibilities for implementation among the different bodies and stakeholders with P2Ps (e.g. Governing Board, Management Board, Scientific Board, Stakeholder networks, etc.) Ask for detailed financial and in-kind commitment of countries and bodies for the implementation of the SRIA Organise consultations to agree on who does what for when
Learning material	<ul style="list-style-type: none"> FACCE JPI Implementation Plan 2016-2018 JPI HDHL Implementation Plan 2016-2018 Water JPI Implementation Plan 2017-2019

Joint action no. 5	Conduct of joint stakeholder consultations
Short description	Experience shows that the the SRIA benefits from stakeholder consultation instead of being a developed by scientific experts only. Stakeholders could be regional, national and European policy makers, scientific expert(s) (organisations), industry, end-users/applicants, civil society and respective networks. Stakeholder consultation ensures a) that the needs/demand of end-users are taken into account in the SRIA and b) that commitment among all groups of stakeholders is generated to implement the SRIA.
Benefits	<ul style="list-style-type: none"> Analysis of the demand side for research Mobilisation of stakeholders for implementation activities derived from the SRIA Increased relevance and impact of joint research actions on stakeholders and users
Challenges	<ul style="list-style-type: none"> Difficult to identify the different stakeholder groups and their interests and engaging them by a variety of means in the P2P process Challenge in the capacity and time of stakeholders to interact and actively participate
Key success factors	<ul style="list-style-type: none"> Requires target group specific approaches: Broad societal challenges have a high variety of stakeholders which are often only interested in a part of the agenda and the expectations/ interests are different Identify the target stakeholder groups and select dedicated channels for communication and knowledge transfer Organise regular consultations with them during the foresight, SRIA development, implementation, and dissemination phases Transfer stakeholder consultation processes for the SRIA into permanent stakeholder involvement processes/platforms for any future activity
Learning material	<ul style="list-style-type: none"> ERA-LEARN 2020 case study on Water JPI: https://www.era-learn.eu/publications/other-publications/annual-summary-report-on-good-practices-in-the-implementation-of-jpis ERA-LEARN 2020 case study on JPI Urban Europe: https://www.era-learn.eu/publications/other-publications/annual-summary-report-on-good-practices-in-the-implementation-of-jpis BiodivERSA Stakeholder Engagement Handbook: http://www.biodiversa.org/702

Joint action no. 6	Cooperation between P2Ps
Short description	Cooperation between P2Ps during the development phase of research priorities is needed if P2Ps address similar challenges. Such cooperation can

	lead to various joint activities across P2Ps
Benefits	<ul style="list-style-type: none"> Structuring the ERA Common positions and actions of JPIs/P2Ps addressing a grand challenge Exchange of good practices re. operational modalities (e.g., re. call implementation)
Challenges	<ul style="list-style-type: none"> Time consuming exercise Common positions are mostly very general If joint funding (e.g., of projects) is planned, the harmonisation of timing between P2Ps can be difficult
Key success factors	<ul style="list-style-type: none"> Joint strategic decisions and strategic exchange (e.g. on internationalisation, widening activities, valorisation of results, self-sustainability of JPIs etc.) Exchange of information on ongoing and forthcoming work Cooperation among ministries and funding agencies Conduct of joint actions Joint exploitation of scientific results for market-based innovations Dedicated time resources for exchange
Learning material	<ul style="list-style-type: none"> FACCE JPI and BiodivERsA ERA-NET joint call: https://www.faccejpi.com/Research-Themes-and-Achievements/Biodiversity-and-ecosystem-services/Joint-call-with-BiodivERsA PLATFORM project that promotes mutual learning across bioeconomy ERA-NETs: http://www.era-platform.eu/ WaterWorks2015 ERA-NET Cofund between Water JPI and FACCE JPI : https://www.faccejpi.com/Research-Themes-and-Achievements/Climate-Change-Adaptation/ERA-NET-Cofund-with-Water-JPI JPI HDHL, JPI Oceans, FACCE JPI efforts to coordinate on Food & Nutrition security: https://www.faccejpi.com/FACCE-JPI-Home/FACCE-JPI-News/Food-Nutrition-security-COLLABORATION-FACCE-JPI-JPI-Oceans-AND-JPI-HDHL

Joint action no. 7	Cooperation between a P2P and a Public-Private Partnership (PPP)
Short description	Cooperation between P2Ps and PPPs enables P2Ps to address the demand and research needs of end-users/applicants from the very beginning. Additionally, alignment of thematic priorities and instruments for implementation can ease the way of transforming research results into practice later on.
Benefits	<ul style="list-style-type: none"> Structuring the ERA and supporting the Innovation Union Increased visibility and impact of P2Ps (uptake of research results) Common positions/voice and actions of all P2P/PPP addressing a grand challenge
Challenges	<ul style="list-style-type: none"> Time consuming exercise Common positions are mostly very general
Key success factors	<ul style="list-style-type: none"> Joint strategic decisions and strategic exchange (e.g. on internationalisation, widening activities, valorisation of results, self-sustainability etc.) Exchange of information on ongoing and forthcoming work Conduct of joint actions Joint exploitation of scientific results for market-based innovations Dedicated time resources for exchange

Learning material	<ul style="list-style-type: none"> • JPND engaging with the Innovative Medicine Initiative (IMI) to align scientific priorities with the pharmaceutical industry: http://www.neurodegenerationresearch.eu/initiatives/jpnd-alignment-actions/industry-partnership/
<hr/>	
Joint action no. 8	Cooperation with non-EU/non-Associated countries
Short description	The cooperation with non-EU/non-Associated countries is of advantage if the societal challenge addressed is global and an alignment of strategic research priorities between European and non-European countries provides synergies and benefits for European P2Ps (e.g., because duplication of research is avoided, research needs/themes are oriented towards global challenges to widen the impact of research, etc.)
Benefits	<ul style="list-style-type: none"> • Alignment at global level • Enhanced visibility of P2Ps on the international scene • Increased potential of P2Ps to have impact on global research and policy agendas • Exchange/ communication of possible solutions with non-European countries
Challenges	<ul style="list-style-type: none"> • Reaching agreement within the P2P on the priorities of internationalisation might not be easy • International cooperation is time consuming as the R&I landscape of third countries needs to be understood • International cooperation of P2Ps needs strong cooperation with other European initiatives and the European Commission in some aspects
Key success factors	<ul style="list-style-type: none"> • Exchange of information on ongoing and forthcoming work • Development of common research priorities • Conduct of joint actions • Joint exploitation of scientific results for market-based innovations • Build on existing bilateral relations of European and non-European countries • Have dedicated financial and human resources available to develop international cooperation • Agreement of P2P Members on what and to what extent international cooperation should be developed
Learning material	<ul style="list-style-type: none"> • JPI HDHL's international collaboration strategy: http://www.healthydietforhealthylife.eu/images/documents/IP_2016.pdf • FACCE JPI's Institutional Partnership with the Global Research Alliance on Agricultural GHG: https://www.faccejpi.com/FACCE-JPI-Home/FACCE-JPI-News/FACCE-JPI-partners-with-GRA • Joint call between JPI Urban Europe and the Belmont Forum: http://jpi-urbaneurope.eu/calls/sugi/

2.3 Research funding and implementation phase

There are a multitude of actions and tools available to promote alignment of national research programmes and activities across countries/organisations during the research funding and implementation phase. These include the set-up of cross-border networks of researchers, or of research funding and/or performing organisations, the organisation of transnational calls for research proposals, as well as the establishment of integrated joint research programmes and research centres. Some actions are more targeted at building trust and a sense of community across borders, and at facilitating networking and knowledge-sharing amongst researchers (and follow a bottom-up approach), while others aim to establish a consolidated, transnational and long-term research programmes or research centres (being more top-down).

Joint action no. 9	Set-up of a network of national (and EU) research funding organisations
Short description	A network of research funding organisations allows to align priorities in national research programmes, funding strategies and instruments in a long-term perspective
Benefits	<ul style="list-style-type: none"> • Facilitates trust-building amongst national research funding organisations. • Allows to put in place a centralized funding management system (e.g., “real common pot”) hence strengthening financial alignment across participating countries. • Promotes greater efficiency thanks to centralized programme coordination and management procedures • Strengthens capacity of EU research funding organisations thanks to networking, knowledge exchange and outreach • Increases visibility at EU/ international level
Challenges	<ul style="list-style-type: none"> • Need to carefully manage network membership in order to maintain the relevance of its strategic focus for its members (i.e. common research priorities) and keep the network's operation efficient • Challenge to maintain networking activities over time • Difficulty to effectively raise awareness on inter-operability issues regarding national eligibility criteria in order to possibly overcome them
Key success factors	<ul style="list-style-type: none"> • Implement an efficient governance structure that enhances exchange of information on ongoing and forthcoming work amongst funding partners • Implement networking activities for trust-building • Facilitate mutual learning and exchange of best practices regarding funding and management procedures, e.g., in view of setting up a series of joint calls/programmes • Develop joint calls/fund joint projects, including via the establishment of a joint mechanism for joint call management, joint call secretariat, joint peer-review process, similar funding contracts, joint monitoring mechanisms for projects, joint reporting requirements • Develop a funding model that is adapted both to networking/mutual learning and joint research activities • Enhance the financial commitment of participating countries: this can for instance be achieved by adopting a “fair share” model, which estimates “reasonable” national contributions according to national budgets and constraints
Learning material	<ul style="list-style-type: none"> • ERA-LEARN 2020 case study on the network for Humanities in the European Research Area (HERA) • Nordic Research Councils in the Humanities and Social Sciences: http://www.nos-hs.org/ • Global Research Council : http://www.globalresearchcouncil.org/

Joint action no. 10	Coordination or synchronisation of national calls for research proposals
Short description	Coordination or synchronisation of national calls financed by national research funding organisations and evaluated nationally, yet according to some identical criteria. In the case of a JPI, such calls are expected to be in line with the JPI Strategic Research Agenda core themes
Benefits	<ul style="list-style-type: none"> • Coordination can facilitate the “clustering” of project results and as such help increase their visibility • Coordination/ synchronisation can help avoid duplication hence having cost- efficiency effects • Coordination helps avoid the problem of inter-operability between national rules for funding and executing research
Challenges	<ul style="list-style-type: none"> • “Light” alignment (coordination only)
Key success factors	<ul style="list-style-type: none"> • Identify national calls in participating countries that focus on complementary / related topics, and that could be brought together into a cluster or network (e.g., Thematic Programming Network). • Peer-review national proposals on the basis of common deadlines and criteria • Bring regularly together national project managers in order to exchange on interim and final results as well as on research methods • Appoint a Coordinator who can manage and animate the selected cluster of national projects • Request that national project managers disseminate and valorize their resp. scientific project findings in a collaborative manner, e.g., by organising joint dissemination events and by drafting joint publications with other members of the cluster/ network.
Learning material	<ul style="list-style-type: none"> • FACCE JPI Thematic Annual Programming (TAP) Soil: https://www.facejpi.com/Research-Themes-and-Achievements/Sustainable-intensification-of-agriculture/TAP-Soil

Joint action no. 11	Organisation of a joint transnational call for research proposals
Short description	Implementation of a joint call for proposals open to all eligible applicants from a partner country that leads to the funding of transnational research projects by call partners (Fully financed by Member-States or Co-funded by the EC via the ERA-NET Cofund tool). A joint transnational call can also be organised by two or more P2Ps on topics of mutual interest.
Benefits	<ul style="list-style-type: none"> • Helps coordinate national research funding and projects in a selected area • Co-funding with the EC has a leverage effect on Member State financing • No need to set up a separate, dedicated legal entity • Allows research cooperation with non-EU countries • Increases the research capacity of European researchers • Enlarges the professional networks of researchers • Helps achieve efficiency gains and operational alignment thanks to common management and coordination procedures and delegation of responsibility • ERANET Cofund allows to finance other joint activities (e.g., training, sharing of facilities, other joint calls without EU co-funding) • Joint knowledge transfer and dissemination of results
Challenges	<ul style="list-style-type: none"> • Requires compliance with and synchronisation of a variety of national rules and procedures (inter-operability issue)

	<ul style="list-style-type: none"> • Challenge for applicants to respect and respond to the different national requirements of transnational joint calls (low attractiveness of calls) • Low awareness of the network's management rules can lead to confusion • ERA-NET Cofund: additional administrative burden • ERA-NET Cofund: Variations in the financial support received by selected applicants originating from countries outside the Eurozone • Some funding agencies face limitations in funding transnational research (quota) • Challenge to turn this action into a longer-term activity: Difficulties include securing the human and financial resources and agreeing upon a longer term strategy for launching calls
Key success factors	<ul style="list-style-type: none"> • Rely if possible on the existence of a (pre-existing) network of research funding organisations • Decide on a common objective and principles of cooperation via an MoU • Develop a model for call management and call implementation (e.g. lead agency principle, rotating call secretariat, etc.) • Clearly define and communicate the scope of the call and provide clear guidelines to applicants regarding scientific expectations • Agree on common funding rules depending on the profile of funders (virtual, real or mixed mode) and clearly discuss them in order to identify legal barriers at national level and be able to tackle them in advance to the call process • Agree on joint project monitoring and joint project reporting requirements • Align national funding streams to the joint calls • Implement a centralised management (and contracting) structure. (Rotation of call/programme management structures amongst partners, e.g., Lead Agency Procedure, could be set up). • Ensure stakeholder engagement: when relevant, involve non-academic stakeholders in project and knowledge exchange activities. Specific guidance is needed for project applicants and project reviewers. • Effectively disseminate project outcomes
Learning material	<ul style="list-style-type: none"> • ERA-LEARN 2020 ERA-NET Cofund: Guidelines & Practical Documentation: https://www.era-learn.eu/manuals-tools/p2p-in-h2020/practical-documentation • ERA-LEARN 2020 case study on the ERA-NET Plus Infravation (use of real common pot) • ERA-LEARN 2020 case study on ERA-NET Cofund ERA4CS (combines joint calls with mobilisation of institutional funding) • ERA-LEARN 2020 case study on the alignment of national AAL programmes • ERA-LEARN 2020 case study on the DACH Agreement (Lead Agency Procedure)
Joint action no. 12	Establishment of an integrated joint research programme
Short description	European research performing institutions develop a common and integrated research programme on a topic of mutual interest. Fully financed by Member-States or Co-funded by the EC (European Joint Programme Cofund/ EJP).
Benefits	<ul style="list-style-type: none"> • Promotes long-term and comprehensive transnational programmatic

	<p>collaboration</p> <ul style="list-style-type: none"> • Alleviates the administrative burden related to the management of individual ERA-NETS • Generates critical mass in terms of overall budget, maturity and degree of integration • Can lay the ground for the establishment of a permanent transnational legal structure and/or an Article 185 initiative
Challenges	<ul style="list-style-type: none"> • Need for a dedicated Coordinator who is willing to take the operational and administrative burden • Need to convince Scientific Directors of research performing organisations (programme manager) and the respective ministries (programme owner) to join an EJP • Setting up an EJP is time-consuming
Key success factors	<ul style="list-style-type: none"> • Alignment of institutional funding of research performing organisations, e.g. within a research alliance • Alignment of research strategies across the participating European research performing organisations • In case of co-funding with the EC (i.e., ERA-NET Cofund in-kind, European Joint Programme Cofunds, etc.): Need to convince the EC of the European value-added of this programme
Learning material	<ul style="list-style-type: none"> • ERA-LEARN 2020 EJP Guide : https://www.era-learn.eu/public-to-public-partnerships/european-joint-programme-cofund-ejp-cofund • ERA-LEARN 2020 case study on ERA-PLANET: https://www.era-learn.eu/alignment/novel-alignment-modalities/ERALEARN2020_T43_Casestudyno2_ERAPlanet_20160823.pdf • ERA-LEARN 2020 case study on ERA4CS: https://www.era-learn.eu/alignment/novel-alignment-modalities/ERALEARN2020_T43_Casestudyno2_ERA4CS_20160921.pdf

Joint action no. 13	Establishment of a strategic, long-term integrated joint research programme via an Article 185 Initiative
Short description	Set up of a common long term research programme jointly by several EU Member States and/or Associated Countries. Enables the EC to participate in research programmes undertaken jointly by Member States, including participation in the structures created for the execution of these programmes. Lasts approx. 10 years. Applicable to research programmes of relevance to EU policy objectives (incl. topics not linked to H2020); with a critical mass of participants involved
Benefits	<ul style="list-style-type: none"> • Most suited to respond to large-scale, common European challenges that require the mobilisation of a specific scientific community • Long duration and substantial budget (thanks to the mobilisation of significant national and EU funding) which enables high sustainability • Political tool that allows for "deep" alignment at strategic, financial and operational levels • Achieves critical mass, research excellence and increased research capacity in view of addressing grand societal challenges • High visibility on the international scene as a European reference
Challenges	<ul style="list-style-type: none"> • Requires approval by the European Parliament and the European Council ('co-decision') • Challenge to build enough trust and commitment from countries in order to set-up an Article 185 initiative that relies on a long-term vision

	<ul style="list-style-type: none"> • Complex and time-consuming grant applications • Challenge to bridge different institutional structures and procedures (size of participating institutes; years of operation; links to Ministries, etc.) • Challenge to effectively motivate researchers to adopt a transdisciplinary, innovative approach when addressing complex research issues • Difficulty in effectively involving less research-intensive countries due to the high financial engagement necessary
Key success factors	<ul style="list-style-type: none"> • Build on a pre-existing network among key research partners (e.g. previous ERA-NETs to test the launch of large joint calls, CSA to prepare the set-up of an Article 185) • Develop a common strategic research agenda (see joint action no. 3) • Establish a strong, centralised, clearly defined and legally binding governance model through clear voting procedures and allocation of responsibilities and a good balance between EC and national contributions • Develop the willingness to pool (significant) amounts of national (financial and/or institutional) resources over time (virtual common pot or real common pot for funding joint research) • Establish a central programme management structure that can support grant application and reporting activities, and set up a centralised and independent evaluation system • Develop dedicated dissemination and uptake instruments for effective impact on end-users by (i) involving them in joint research projects and (ii) involving project participants in end-user communities' activities. • Develop dedicated instruments for capacity building, focusing in particular on (i) facilitating knowledge transfer and (ii) encouraging effective researchers' mobility
Learning material	<ul style="list-style-type: none"> • ERA-LEARN 2020 Guide on Art. 185: https://www.era-learn.eu/public-to-public-partnerships/art-185 • ERA-LEARN 2020 case study on the European Metrology Research Programme (EMRP) • Eurostars (Joint Programme between EC and EUREKA): https://www.eurostars-eureka.eu/

Joint action no. 14	Establishment of a network/alliance of research performing (and funding) organisations
Short description	A network amongst research performing organisations (including Centres of Excellence and universities) can help align in-kind and project-based funding in order to spur more effective utilisation of existing resources when funding is directly provided by research performing organisations
Benefits	<ul style="list-style-type: none"> • Allows for strategic and operational alignment across research performing organisations (and related research funding organisations if involved in the alliance) • Can facilitate smart specialisation hence triggering cost-efficiency • Builds critical mass and enhances capacity building of researchers and cross-fertilisation of ideas • Allows for operational alignment among research performing organisations • Complements financial alignment e.g. ERA-NETs with only in-cash funding; can be very relevant for countries with limited financial resources available for transnational research activities

	<ul style="list-style-type: none">• Increases impact on European policies due to its status as reference network of research performers• Increases the international visibility of participating research performing organisations
Challenges	<ul style="list-style-type: none">• Diverging financial inputs by various national institutions• Institutional alignment is easier to motivate and perform in research performing organisations with strong national basic funding• Challenge to bridge different institutional structures (size of participating institutes; years of operation; links to Ministries, etc.) and rules• Influence on research agendas of research performing organisations is limited to specific parts• Need for networking activities in order to keep members involved and achieve a common understanding among the research community• A strict virtual common pot only based on in-kind funding of research performing organisations can be restrictive in the selection and funding of joint research projects• Challenge to outreach towards excellent research performers that are not members of the alliance and non-research performers (e.g. industry, cities, civil society)
Key success factors	<ul style="list-style-type: none">• Develop a common strategic vision and agenda among network members• Ensure strong commitment of research performing organisations both at the level of researchers and Scientific Directors• Establish a streamlined governance model on the basis of consensus that gives the alliance flexibility and efficiency in strategic and operational decision-making, and that takes into account the diversity of research performing organisations• Set up a flexible funding model for joint research and competitive funding mechanisms with robust peer-review procedures• Secure funding (in-cash and/or in-kind) for the operation of the alliance (coordination and management)• Carefully manage the alliance's membership: openness across Europe vs. highly selective for scientific excellence, peer-to-peer collaboration, balanced decision-making processes and manageable size. Choosing a mode of selection may be beneficial (e.g., new members nominated by national ministries, members recommending other research performing organisations, etc.)• Ensure dissemination and outreach to end-users: develop strong interactions with highly visible, more political and /or more innovation-oriented initiatives in order to ensure high impact
Learning material	<ul style="list-style-type: none">• ERA-LEARN 2020 case study on the Network of Centres of Excellence in Neurodegeneration (CoEN)• ERA-LEARN 2020 case study on ERA-PLANET (ERA-NET Cofund): https://www.era-learn.eu/alignment/novel-alignment-modalities/ERALEARN2020_T43_Casestudyno2_ERAPlanet_20160823.pdf• ERA-LEARN 2020 case study on the European Energy Research Alliance (EERA): https://www.era-learn.eu/alignment/novel-alignment-modalities/ERALEARN2020_T43_Casestudyno1_EERA_final20160614.pdf• JPI Urban Europe: Urban Europe Research Alliance (UERA): http://jpi-urbaneurope.eu/stakeholders-partners/uera/

Joint action no. 15	Establishment of a Joint Research Centre
Short description	Establishment of a new common research performing organisation that is shared amongst several countries
Benefits	<ul style="list-style-type: none"> • Helps avoid duplication and promotes synergies • Increases the international visibility of EU research • Contributes to networking and capacity building of researchers and to cross-fertilisation of ideas • Scientific excellence and mutual learning • Complements financial cooperation ; can be very relevant in the case of limited financial resources for transnational activities
Challenges	<ul style="list-style-type: none"> • Long preparation phase • Financial commitment of partners is difficult to reach
Key success factors	<ul style="list-style-type: none"> • Establish a legal entity • Define a common work plan with long-term commitment by all partners • Conduct joint research • Develop a strong science communication and dissemination strategy
Learning material	<ul style="list-style-type: none"> • Joint Institute for Innovation Policy: http://www.jiip.eu/dweb/ • European Research Council: https://erc.europa.eu/

Joint action no. 16	Set-up of a network of individual researchers
Short description	Network supporting transnational research cooperation and capacity building among individual researchers, engineers and scholars across Europe.
Benefits	<ul style="list-style-type: none"> • Fosters inter-disciplinarity and enlarges researchers' professional networks • Facilitates the coordination and pooling of already (nationally) funded research activities in a specific field, thus allowing for cost-efficiency • Enhances European research excellence thanks to the pooling of ideas amongst researchers and the collective generation of new knowledge • Enhances European research capacity thanks to capacity building activities; especially beneficial for less research-intensive countries • Stronger visibility and impact on European and international policymaking
Challenges	<ul style="list-style-type: none"> • Application of national rules for funding and executing research can trigger: <ul style="list-style-type: none"> (i) interoperability issues (e.g. funding periods, access to funding for travelling or for carrying out research); (ii) time-consuming double reporting; (iii) lack of a centralised decision-making body (which makes it difficult to coordinate the scope of the network's work) • Difficulty to significantly enhance data sharing, e.g. due to legal barriers on intellectual property rules • Challenge to sustain the network over a long period of time (e.g. 10 years), due to limited and diverging national funding contributions
Key success factors	<ul style="list-style-type: none"> • Clearly delineate the scope of the network and related activities (i.e., define a common work plan that can be adapted over time) • Centralise the selection process of partners to ensure a balanced network consortium with all the required expertise (when a multidisciplinary network is aimed at) • Put in place a balanced governance structure that takes account of the desire for "ownership" of scientists and the need for flexibility • Secure long-term funding for networking and coordination tasks

- Develop an adapted funding mechanism for the participation of researchers in the network (e.g., partial real common pot, balanced in-kind and in-cash funding for new research activities if desired)
- Ensure the efficient management and coordination of activities (e.g., appoint a coordinator)
- Carefully manage the number of participating researchers in order to keep the network efficient and manageable
- Avoid artificial structural barriers (e.g., double reporting, national administrative rules)
- Elaborate a strategy to increase visibility and dissemination
- Design a strategy for capacity building and data sharing.

Learning material

- ERA-LEARN 2020 case study on the [FACCE JPI Knowledge Hub MACSUR](#)
 - [JPI HDHL Knowledge Hub DEDIPAC](#)
 - [JPI HDHL Knowledge Hub MaNuEL](#)
-

2.5 Research evaluation and monitoring phase

The evaluation of policy interventions for research is as important as the research planning and research strategy phase. A common approach towards a research strategy (like in the JPIs) calls for a common approach towards monitoring and evaluation of the instruments used and joint actions conducted to gain evidence on the performance of P2Ps towards their objectives and the expected impact. Alignment of research monitoring and evaluation in P2Ps can be performed at two levels: network level and project level.

Joint action no. 17	Development of a common framework for monitoring, evaluation and impact assessment for the whole P2P network
Short description	For regular monitoring and evaluation of the progress of the P2P network to gain information whether the P2P performs towards the objectives and impacts agreed on in the Strategic Research Agenda. A common framework for monitoring, evaluation, and impact assessment represents an agreement on the objectives and expected impact of P2Ps among all participating countries where all countries are committed to its development and ensuring its implementation.
Benefits	<ul style="list-style-type: none"> • Helps develop a common understanding of the objectives and impacts of the P2P • Supports the design, selection and adoption of specific joint actions with P2Ps to reach the objective (strategic steering of P2Ps) • Supports national delegates to argue and justify their participation in P2Ps
Challenges	<ul style="list-style-type: none"> • Regular monitoring and evaluation is expensive • Challenge to agree within P2Ps that monitoring and evaluation is a priority (in comparison to other joint actions) • Impact of P2Ps is difficult to measure as they should contribute to tackle societal challenges and no standard method can be applied
Key success factors	<ul style="list-style-type: none"> • Design a common framework for monitoring, evaluation and impact assessment for each P2P with smart performance indicators • Design a participative process to develop the framework to ensure commitment and implementation of the framework • Take into account national expectations towards the framework • Ensure that an implementation plan to conduct monitoring, evaluation and impact assessment is developed • Ensure financial as well as human resources for the development of the framework as well as its implementation (it is long-term and expensive)
Learning material	<ul style="list-style-type: none"> • ERA-LEARN Guide for Impact Assessment 2016, https://www.era-learn.eu/publications/other-publications/guide-for-p2p-impact-assessment-1 • ERA-LEARN 2020 case study on FACCE JPI's approach to Impact Assessment • ERA-LEARN 2020 case study on JPND's Evaluation Framework

Joint action no. 18	Perform a joint project monitoring
Short description	If P2Ps fund transnational projects, project monitoring needs to be aligned, including an agreement on indicators, reporting requirements, and a common approach to conducting project monitoring and coming to a joint assessment
Benefits	<ul style="list-style-type: none"> • Agreement on the objectives and expected results of the projects funded by all research funding organisations • Exchange, coordinate and align performance indicators for projects • Mutual learning on national views on monitoring and their reporting requirements • Agreement on common reporting requirements based on best practice of the countries • Make project results and impact visible to external audience
Challenges	<ul style="list-style-type: none"> • Harmonising national reporting requirements takes time and potentially needs a stepwise process • Coordination of project monitoring needs flexibility of research funding organisations to change their rules • The process needs the willingness to coordinate and harmonise the project monitoring for the benefit of the beneficiary of the project
Key success factors	<ul style="list-style-type: none"> • Design a common framework for project monitoring, evaluation and impact assessment with smart performance indicators • Design a participating process to develop the framework to ensure commitment and implementation of the framework • Take into account national expectations and national requirements for project monitoring • Ensure that an implementation plan to conduct project monitoring, evaluation and impact assessment is developed • Agree on, and develop a common reporting template or align around existing reporting method • Derive specific information on project monitoring that can be published in the call text to make requirements transparent to applicants • Derive specific information on project monitoring that can be put into the national funding contracts to ensure that information for project monitoring and evaluation will be available • Set up an IT tool with high safety standards to share information on project progress among all research funding agencies (project applications, budget transfers, reports of projects, deliverables, changes in the projects, monitoring data, etc.)
Learning material	<ul style="list-style-type: none"> • JPI HDHL list of key performance indicators: http://www.healthydietforhealthylife.eu/images/documents/IP_2016.pdf

Joint action no. 19	Coordination across JPIs/P2Ps to develop joint performance indicators
Short description	Coordination among JPIs (or other P2Ps) to agree on common objectives and expected impacts with respective joint performance indicators. Alignment of performance indicators among P2Ps should be used if it is of strategic interests among many P2Ps or groups of P2Ps (all JPIs, all ERA-NETs, all Art. 185)
Benefits	<ul style="list-style-type: none"> • Cost-efficient process • High visibility of JPI performance; stronger impact on the ERA

	<ul style="list-style-type: none">• Formal agreement of all JPIs to work in a specific direction (by agreement to common objectives, expected impact and indicators)
Challenges	<ul style="list-style-type: none">• Risk that common indicators do not mirror the actual progress and impact of JPIs, but only indicate pure numbers
Key success factors	<ul style="list-style-type: none">• Reach common agreement of all JPIs on common objectives and expected impacts• Reach common agreement on performance indicators valid for all JPIs• Make performance of JPIs (using the commonly agreed indicators) visible• Nominate a coordinator of this process that drives the process forward
Learning material	<ul style="list-style-type: none">• GPC Working Group on Measuring JPIs Progress and Impact

2.6 Capacity building of researchers, policy makers, practitioners

Capacity is broadly defined as the ability of individuals, institutions, and societies to perform functions, solve problems, and set and achieve objectives in a sustainable manner. Capacity building in research thus refers to the process by which individuals and organisations obtain, improve, and retain the skills and knowledge needed to perform specific research activities. In a broader sense, capacity building also includes the wider policy community and society, i.e., strengthening the capacity of policy and societal stakeholders to participate in political and socio-economic arenas in pursuit of specified objectives. On transnational level, a number of specific joint actions can be pursued to align capacity building of researchers, policy makers and practitioners at the European level.

Joint action no. 20	Joint training for researchers, policy makers and practitioners
Short description	Dedicated joint trainings can be used to build communities of practice for researchers, policy makers or practitioners from different countries. This includes exchange of experience and joint learning, which increases capacities and capabilities and ensures quick information flow. However, trainings can also be more indirect, e.g. within Funding Agency Working Groups where joint learning is facilitated and a community of practice for transnational calls is built.
Benefits	<ul style="list-style-type: none"> • Sharing of state of the art practices, methods etc. helps reach a wider audience • Harmonisation and standardisation of teaching material across Europe • Common development and agreement on new topics and activities
Challenges	<ul style="list-style-type: none"> • Common agreement within JPIs on the priority of training and target groups must be reached • Mobilisation of different target groups across Europe • High quality and acknowledged trainers are needed
Key success factors	<ul style="list-style-type: none"> • Joint training sessions, conferences and workshops • Develop or coordinate (academic) courses and summer schools • Excursions to best practice examples • Open national trainings for all European participants • Spend time, human and financial resources to strategically develop dedicated trainings and activities for capacity building • Online training formats are easily accessible
Learning material	<ul style="list-style-type: none"> • EC Innovative Training Networks (ITN): https://ec.europa.eu/research/mariecurieactions/about/innovative-training-networks_en • JPI Water and EIP Water joint webinar to train researchers on having more impact: https://www.eip-water.eu/online-training-research-implementation-market-and-impact

Joint action no. 21	Cross-border mobility of researchers, policy makers and practitioners
Short description	Mobility of researchers, policy makers and practitioners is one means to develop a common understanding for applied practices and facilitates learning and finally alignment of activities. Mobility of researchers can promote the establishment and implementation of joint R&I actions across countries, while mobility of policy makers and practitioners can help understand the policy- and decision-making processes in other countries (thereby facilitating future alignment and coordination activities).
Benefits	<ul style="list-style-type: none"> • Enhances community- and capacity building

	<ul style="list-style-type: none">• Facilitates cross-fertilisation of new research ideas• Facilitates coordination and standardisation of research methods• Can support the shared/joint use of research infrastructure abroad• Enhances understanding of policy making and practice in other countries for mutual learning and alignment
Challenges	<ul style="list-style-type: none">• Difficulty to align national eligibility criteria for traveling (researchers from some countries may not easily have access to financial resources for travel)• Mobility of policy makers and practitioners is unusual (in comparison to researchers), the advantages must be understood and the necessary national preconditions must be developed
Key success factors	<ul style="list-style-type: none">• Develop transnational mobility grants• Develop transnational mobility opportunities for policy makers and practitioners
Learning material	<ul style="list-style-type: none">• EC Research and Innovation Staff Exchange: https://ec.europa.eu/research/mariecurieactions/about/research-innovation-staff-exchange_en• Western University Western Staff International Exchange Program (WSIEP)• EC Erasmus+ staff mobility programme: http://ec.europa.eu/programmes/erasmus-plus/individuals_en#tab-1-0

2.7 Research infrastructure and data

Sharing research infrastructures (e.g., scientific equipment, scientific data archives and online databases) across borders has the potential to bring important cost-efficiency gains and can help lay the ground for additional alignment activities, such as standardisation of research methods, the launch of joint research projects and collective dissemination of research results.

Joint action no. 22	Transnational access to a specific national research infrastructure
Short description	One country puts a national research infrastructure at the disposal of researchers from one or several other countries
Benefits	<ul style="list-style-type: none"> • Easier to implement than the set-up of a new transnationally governed infrastructure: governance, funding and management processes are governed by one country only • Time-efficient, quick implementation possible • Cost-effective, especially for expensive infrastructure/equipment • Increased research capacity of countries with less financial resources: benefit from cutting-edge infrastructure/equipment • Standardisation of data collection and research methods • If there is a joint use of infrastructure by researchers from several countries simultaneously: <ul style="list-style-type: none"> - distribution of costs of the joint research project - integration of national research activities - community- and capacity-building at European level - increased potential for joint impact on international policy-making
Challenges	<ul style="list-style-type: none"> • Challenge to effectively ensure access to infrastructure for countries with funding limitations • Knowledge gap from less research-intensive countries to be addressed • Legal barriers for data sharing and re-use, e.g. some countries cannot use data that has been elaborated at transnational level for national purposes • Risk of representing an administrative burden for researchers who wish to access a research infrastructure from another country
Key success factors	<ul style="list-style-type: none"> • Rely on a strategic/networking platform (e.g. JPI) to: <ul style="list-style-type: none"> - raise awareness on benefits amongst Member-States - build trust and develop a common and integrated vision on research infrastructure amongst involved countries - link research communities with policy/stakeholders and match common interests • Requires long-term planning re. the transnational use of infrastructure • Motivate researchers to use infrastructure from other countries, e.g. by easing application procedures for crossborder access • Implement a compensation mechanism for the country providing the infrastructure: e.g. other countries can fund the operation of the infrastructure, provide staff/researchers/ equipment, also share their own infrastructure • Requires capacity-building for less research-intensive countries, e.g., integrate infrastructure sharing into a transnational mobility and training scheme • Ensure shared/open access to generated data and results
Learning material	<ul style="list-style-type: none"> • ERA-LEARN 2020 case study on JPI Oceans' Shared Research Vessel

Joint action no. 23	Coordination of a cluster of existing national research infrastructures for research implementation (ESFRI)
Short description	Put at mutual disposal several physical (nationally-owned) platforms to perform R&D. ESFRI, the European Strategy Forum on Research Infrastructures, promotes open access to research infrastructures. It supports a strategy-led approach to policy-making on research infrastructures in Europe and facilitates multilateral initiatives leading to the better use and development of research infrastructures, at EU and international level
Benefits	<ul style="list-style-type: none"> • Promotes cost-efficiency (sharing the operating costs) • Facilitates data-sharing and standardisation, as well as integrated data monitoring • Facilitates the launch of joint research projects and the alignment of national projects around a common strategic priority • Allows to share R&D and facilities' upgrading costs • Stimulates complementarity among RIs and the creation of a common access point to the pool of facilities for the scientific community • Helps strengthen a sense of community amongst concerned researchers
Challenges	<ul style="list-style-type: none"> • Securing funding at national level ("willingness to participate vs. willingness to pay") • Getting the most appropriate experts / countries involved • Need to agree on common rules for sharing research data, labs, etc.
Key success factors	<ul style="list-style-type: none"> • Identification of relevant national (experimental) infrastructures • Coordination between infrastructures (e.g., sharing of common measurement standards) • Agreement on operative procedures, rules and fees for use
Learning material	<ul style="list-style-type: none"> • ESFRI : http://www.esfri.eu/ • Infrastructure for Analysis and Experimentation on Ecosystems (AnaEE): http://www.anaee.com/

Joint action no. 24	Establishment of a new joint European research infrastructure facility
Short description	Establishment of a new joint infrastructure, e.g., laboratories, databases, archives, when there is a (strategic) need at EU level
Benefits	<ul style="list-style-type: none"> • Cost-effective, especially for expensive infrastructure/equipment • Increased research capacity of countries with less financial resources: benefit from cutting-edge infrastructure/equipment • Standardisation of data collection and research methods • Facilitates integration of national research activities • Enables community- and capacity-building at European level • Increased potential for joint impact on international policy-making
Challenges	<ul style="list-style-type: none"> • Challenge to effectively ensure the access to infrastructure for countries with funding limitations • Knowledge gap from less research-intensive countries to be addressed • Legal barriers for data sharing and re-use, e.g. some countries cannot use data that has been elaborated at transnational level for national purposes
Key success factors	<ul style="list-style-type: none"> • Raise awareness on benefits amongst Member-States • Build trust and develop a common and integrated vision on research infrastructure amongst involved countries • Requires long-term planning of transnational use of infrastructure (i.e. funding, management and governance for long-term operation) • Adopt a bottom-up approach that fosters strong involvement of

	<p>researchers in addressing operationalisation issues (i.e. allocation of project tasks according to available funding and expertise)</p> <ul style="list-style-type: none"> • Ensure shared/open access to generated data and results
Learning material	<ul style="list-style-type: none"> • ERA-LEARN 2020 case study on the NYU Center for Urban Science and Progress (CUSP) • European Organization for Nuclear Research (CERN) infrastructure • Central European Research Infrastructure Consortium (CERIC-ERIC)

Joint action no. 25	Open access to national scientific research outputs
Short description	Shared use of national/institutional databases or archives allowing the interoperability and/or access to each other's databases, scientific publications and other research outputs
Benefits	<ul style="list-style-type: none"> • Enhances access to and visibility of national research outputs, allows for transparency regarding the quality of research results • Supports the standardisation and interoperability of research outputs, and as such increases the potential for re-use by other researchers • Raises awareness of past and current research activities and related outcomes both at researcher and research policy levels: avoids duplication and supports efficient progress of research, can provide guidance on potential future research priorities and funding strategies • Facilitates uptake by end-users and as such increases return on investment in public funding • Can rely on flexible mechanisms: opening access to research data can be a gradual process, sharing of research outputs does not necessarily require formalised OA mechanisms (at least not from the start) and can be informally achieved amongst researchers
Challenges	<ul style="list-style-type: none"> • Possible tension between national privacy laws versus open data policies • Challenge to synchronise the timing and intensity in the implementation and alignment of OA policies and infrastructures across countries: requires strong political support at national and EU levels • Low financial commitment of countries regarding OA issues at this stage • Difficulty in bringing together all key players involved in OA due to the global ambition for OA and the diversity of stakeholder groups • Challenge to provide adapted OA services as OA needs are constantly evolving: need to continuously assess and re-adjust existing OA services and develop new ones when required • Challenge to adapt to new technological advancements regarding OA and to communicate effectively on the potential of OA services
Key success factors	<ul style="list-style-type: none"> • Develop the political willingness to share results across P2P member countries, promote the alignment of OA policies: e.g. develop a common framework for Open Access/Data management at JPI level or clearly state the adoption of an existing one such as H2020 OA guidelines • Promote the alignment of national and transnational OA infrastructures: e.g. the implementation of OpenAIRE-compliant infrastructures at institutional level and the use of the OpenAIRE platform allows for a centralised access to integrated research information, supporting re-use by researchers as well as research policy making. • Identify the research outputs that are suitable for Open Access based on the expected future use of research • Encourage researchers to use open access mechanisms: make open access an asset for their career, e.g. through rewards for researchers,

	<p>funding for OA in top-journals, etc.</p> <ul style="list-style-type: none"> • Secure sustainable funding (EC/national/via P2Ps) for research data management and open access publishing/archiving activities • Address data interoperability issues in order to effectively ensure the potential for re-use by other researchers: this requires the elaboration of common protocols and standards for data collection and management. • Develop a joint communication and dissemination strategy that seeks to showcase OA research outputs and promote the uptake of related research outcomes by end-users
Learning material	<ul style="list-style-type: none"> • OpenAIRE project: https://www.openaire.eu/ • ERA-LEARN 2020 case study on OpenAIRE • JPI Climate guidelines on Open Knowledge Policies

Joint action no. 26	Coordination, harmonisation and standardisation of scientific techniques, data and methodologies
Short description	<p>Coordination of scientific techniques and methodologies with different intensity levels:</p> <p>(i) coordination and calibration</p> <p>(ii) harmonisation/ standardisation of scientific data, techniques and methodologies around a common method</p>
Benefits	<ul style="list-style-type: none"> • Reduces fragmentation of scientific methodologies • Helps promote the most promising scientific methodologies as standards in Europe, which increases excellence • Helps generate comparable research results • Promotes networking amongst researchers working on the same topic • Can ultimately encourage programme cooperation and a greater number of co-publications
Challenges	<ul style="list-style-type: none"> • Coordination, harmonisation and standardisation increases the risk that scientific methodologies with high potential but less developed will not be chosen as the standard • Harmonisation and standardisation is time consuming • Harmonisation and standardisation may limit researchers' freedom
Key success factors	<ul style="list-style-type: none"> • Make the variety of scientific methodologies known via workshops and consultative meetings • Agree on a strategy and implementation plan (whether, how and to what extent) to coordinate, harmonise and standardise among the research performing organisations and stakeholders • Ensure dedicated human and financial means for coordination of scientific methodologies by P2P • Install a "facilitator" or "coordinator" to drive the process forward
Learning material	<ul style="list-style-type: none"> • ERA-LEARN 2020 case study on the Network of Centres of Excellence in Neurodegeneration (CoEN) • ERA-LEARN 2020 case study on the FACCE JPI MACSUR Knowledge Hub • European Metrology Research Programme (EMRP) / European Metrology Programme for Innovation and Research (EMPIR) • JPI HDHL's European Nutritional Phenotype Assessment and Data Sharing Initiative (ENPADASI)

2.8 Research dissemination, uptake and implementation

Transnational alignment in research dissemination and uptake has the potential to increase the impact of research tremendously. Since P2Ps address grand challenges, the stakeholder community is large and diverse. This calls for target group specific communication and dissemination channels that might benefit from a common approach across a variety of EU Member-States. Additionally, European countries could align their national innovation and investment programmes (or respective P2Ps could align with implementation oriented networks addressing the same societal challenge (Joint Technology Initiatives, Knowledge and Innovation Communities, PPP, etc.)) for the benefit of better and easier uptake of research results to produce useable outputs for stakeholders and applicants.

Joint action no. 27	Joint exchange, learning and dissemination of research results towards policy makers
Short description	If P2P have the ambition to enable policy learning they should establish means to exchange and communicate with policy makers. Thereby, two kind of policy makers might be addressed in different ways: (1) policy makers in the R&I context (e.g. research ministries, research funding agencies) and (2) policymakers responsible for a relevant sectoral policy domain (e.g. city authorities, energy ministries, health organisations). It involves developing and implementing dedicated measures to exchange, translate, and disseminate knowledge generated in joint actions to European, national, and regional policy makers to stimulate mutual learning.
Benefits	<ul style="list-style-type: none"> • Greater influence of P2P research on policymaking • Alignment of R&I policies and domain policies addressing the respective challenge and alignment of policies on different geographical levels • Greater visibility and impact • Cost-efficiency
Challenges	<ul style="list-style-type: none"> • Challenge of P2Ps to establish respective policy networks • Agreement to speak with one voice as a P2P to the different policy makers at European, national and regional level
Key success factors	<ul style="list-style-type: none"> • Strategy of P2Ps on how to facilitate learning of actors in the policy community to build capacity and influence decisions • Set up sustainable communication channels (e.g. consultations, workshops, platforms) to policy-makers to (1) identify policy needs, (2) exchange knowledge and (3) disseminate results, stimulate mutual learning of policy makers and P2Ps • Excellent access to policy actors or network of policy actors on regional, national, European and international level • Stimulate alignment of policy related activities (strategies, programmes, priorities, actions) between the different geographical levels
Learning material	<ul style="list-style-type: none"> • ERA-LEARN 2020 case study on the FACCE JPI MACSUR Knowledge Hub • ERA-NET final conferences to disseminate results (e.g., GENDER-NET, ERA-NET ANIHWA, ERA-NET ROAD II, etc.)

Joint action no. 28	Joint dissemination of research results towards stakeholders/end-users
Short description	The establishment of a common approach to communicate, exchange and learn with stakeholders, applicants and end-users increases the impact of research. A common transnational approach should include stakeholder involvement at all level of actions (priority setting of the SR(I)A, research implementation and dissemination of research findings).
Benefits	<ul style="list-style-type: none"> • Higher intermediate and long-term impact of joint actions of the P2P • More effective in tackling societal challenges by changing the behaviour of end-users and changing societal systems • Close the research-implementation gap
Challenges	<ul style="list-style-type: none"> • Uptake by end-users is sometimes nationally motivated, i.e., driven by national priorities • Challenge to motivate researchers that are not used to working with stakeholders to do so
Key success factors	<ul style="list-style-type: none"> • Participatory approach to integrate and communicate with stakeholders and users from the very beginning of joint actions • Clear identification of needs for knowledge, data, infrastructure and expertise of stakeholders and users • Permanent/regular communication and exchange and transfer of knowledge with stakeholders and users (e.g. cooperation with other implementation oriented networks/initiatives related to the societal challenge) • Utilisation and cooperation with existing networks/initiatives/platforms of stakeholders and users to have a wider reach (e.g. Partnerships with European Technology Platforms and Joint Technology Initiatives, City Platforms) • Develop dedicated instruments and activities to approach and integrate end-users (e.g. joint calls, research infrastructure, data, etc.) • Participation in patent developments (e.g. within joint research projects)
Learning material	<ul style="list-style-type: none"> • FACCE JPI Communication and Valorisation Strategy: https://www.faccejpi.com/Document-library/FACCE-JPI-Communication-and-Valorisation-Strategy • BiodivERsA Stakeholder Engagement Handbook: http://www.biodiversa.org/702
Joint action no. 29	Joint activities and instruments to facilitate upscaling and replication of research findings
Short description	P2Ps contribute to the development of innovations and solutions for societal challenges. In order to achieve more impact, a common approach to facilitate upscaling and replication of the innovations and solutions in a variety of European countries is needed.
Benefits	<ul style="list-style-type: none"> • Higher impact of solutions developed in JPIs • Facilitates changes in behaviour of many actors in Europe to ultimately change the system and respond to societal challenges • Close implementation - replication gap
Challenges	<ul style="list-style-type: none"> • Little knowledge available on the actions and instruments JPIs could use to set the right framework conditions for upscaling and replicability • Involvement of new actors in the JPI or respective close cooperation with other actors/networks at national and European level (e.g. EIP, other DGs, other national ministries, users) is difficult

- Key success factors
- Think about activities and instruments for replicability and upscaling from the very beginning when designing joint actions within JPIs (e.g. calls, set-up stakeholder platforms, etc.)
 - Closely cooperate with relevant national actors to identify barriers to replication and upscaling in the different countries
 - Mobilise groups of stakeholders as followers in projects and joint activities that could potentially replicate successful implementation
 - Coordinate with existing networks and initiatives that are closer to the users to understand and clarify issues on upscaling and replicability
 - Engage national delegates in the JPIs to take actions to facilitate upscaling and replicability within their countries and mobilise respective national stakeholders and actors
-

- Learning material
- JPI Urban Europe's partnership in the EIP on Smart Cities and Communities. <http://jpi-urbaneurope.eu/news/invitation-for-commitments/>
-