EUROPEAN UNION **Brussels, 30 August 2012**

EUROPEAN RESEARCH AREA COMMITTEE

– ERAC –
Secretariat

ERAC 1207/12

NOTE

To:	ERAC delegations
Subject:	ERAC Opinion on the Relationship between the European Research Area and Horizon 2020

Delegations will find attached the ERAC Opinion on the Relationship between the European Research Area and Horizon 2020.

ANNEX

ERAC Opinion on the Relationship between the European Research Area and Horizon 2020

Prepared by an enlarged ERAC Steering Board (SB+)

1. Introduction

In December 2011, the European Research Area Committee (ERAC) adopted its advice [1] to the Commission for the development of the ERA Framework proposal, in which it urged that there should be synergies and complementarity between Horizon 2020 and the wider European Research Area (ERA)[2]. Against the background of that advice and other ERAC opinions [3], ERAC agreed, in February 2012, *"to undertake a follow-up discussion on how the Commission and Member States can best work in partnership in relation to both the governance proposed for Horizon 2020 as well as the wider ERA"* [4]. It was further agreed that the work would be undertaken by the ERAC Steering Board in an *ad hoc* enlarged format (hereafter ERAC SB+)[5].

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1 ERAC 1215/11 ERAC Opinion on the Development of an ERA Framework, Dec 2011.

2 ERAC had then not yet had sight of the proposals for Horizon 2020 of 30 November 2011.

3 ERAC Opinions on the "Common Strategic Framework for Research, Technological Development and Innovation" / Horizon 2020 (ERAC 1210/11); on ERA-related instruments (ERAC 1208/11), including instruments relevant for the implementation of Horizon 2020; and on Synergies between the Knowledge Triangle and Cohesion policies (ERAC 1204/10).

4 Discussion Note to 9th ERAC Meeting (Brussels, 10 February 2012).

5 The enlarged Steering Board (SB+) included members of the ERAC Steering Board and additional country representatives. Membership for this project was: Mr Bjarne Kirsebom (Vice-chair of ERAC and Chair of the Steering Board), Ms Anneli Pauli (Deputy Director for Research and Innovation, European Commission), Ms Jacqueline Allan (rapporteur for this work, IE Delegation to ERAC) and representatives from CH, CY, DK, ES, FI, FR, NL and UK and from the Commission.

The ERAC SB+ met three times, undertook individual and collective work and considered two background documents[6] – an "Ideas Paper"[7] and a "Mapping Paper"[8]. This ERAC Opinion, the final outcome of that work, reflects on current and future European governance and oversight structures for research and innovation and presents proposals to foster the ERA such that:

- *Horizon 2020 can best support the continued development of the European Research Area post-2013 and thereby the implementation of the Innovation Union;*

and

- *The ERA can grow to become the best environment for European research and innovation, including most specifically the main EU-level funding action in 2014-2020, Horizon 2020.*

[6] Prepared by the rapporteur under the guidance of the SB Chair and based on the input of, and with assistance from, the ERAC SB+.

[7] Ideas paper "Horizon 2020 and the Realisation of the ERA" (ERAC SB+, March 2012).

[8] Mapping paper on "Horizon 2020 and the Realisation of the European Research Area" (ERAC SB+, April 2012). See Annex I for a summary of the paper which maps Horizon 2020 actions to the five axes of the ERA and identifies some gaps which could be addressed in the future by ERAC.

2. Horizon 2020 supporting the European Research Area

The primary aim of Horizon 2020 is the promotion of growth through research and innovation under the Europe 2020 Strategy. Building on the successes of previous Framework Programmes, Horizon 2020 will be dedicated to the "achievement and functioning" of the European Research Area (ERA). This can be inferred notably from the Horizon 2020 Regulation[9] and the accompanying Communication of the Commission, which contains a section on "completing the ERA and of the Innovation Union", which are "urgently needed to avoid costly overlaps and unnecessary duplication of activities"[10].

[9] Proposal for a Regulation of the European Parliament and the Council establishing Horizon 2020 - The Framework Programme for Research and Innovation (2014-2020) - Partial general approach (Competitiveness Council, 31 May 2012)

- *Article 5.1 – General objective, priorities and specific objectives*
  "Horizon 2020 shall contribute to building a society and an economy based on knowledge and innovation across the whole Union by leveraging additional research, development and innovation funding. Thereby, it shall support the implementation of the Europe 2020 strategy and other Union policies, as well as the achievement and functioning of the European Research Area (ERA)*."*
- *Article 13.1 – Cross-cutting issues*
  "Linkages and interfaces shall be implemented across and within the priorities of Horizon 2020. Particular attention shall be paid in this respect to areas relating to bridging from discovery to market application; to social and economic sciences and humanities; to climate change and sustainable development; to fostering the functioning and achievement of the ERA and of the Innovation Union; .....".

[10] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Horizon 2020 - the Framework Programme for Research and Innovation - COM(2011) 808 final (Chapter 9). See Annex II.

The Communication also states that completion of the European Research Area *"entails building a genuine single market for knowledge, research and innovation, enabling researchers, research institutions and businesses to circulate, compete and co-operate across borders. Remaining gaps will be addressed through the ERA framework, to be presented by the Commission in 2012."* In particular, Horizon 2020 will support a number of ERA priorities (e.g. researcher mobility and careers, research infrastructures, knowledge transfer and international co-operation), encouraging the Union, including its industry[11], to become more competitive and will thereby foster stronger partnerships between Member States (MS), Associated Countries (AC) and the private sector to invest more efficiently. It will also take account of gender, ethical issues and Open Access to research results.

Horizon 2020 is the main European funding instrument supporting the development of the ERA and thereby the Innovation Union. It seeks to engage a wider range of participants than in any previous Framework Programme and to provide a more comprehensive system of supports and types of mechanisms than before. At the same time, it forms part of a wider research and innovation system relating also to sectoral policies such as those for enterprise, agriculture, marine, health, trade and many other sectors.

3. The ERA: the environment for European research and innovation and for Horizon 2020

The ERA is the environment for all European research and innovation and, therefore, for Horizon 2020. In order to see more clearly how the ERA will support Horizon 2020 and how Horizon 2020 will reinforce the goals foreseen in achieving the ERA, a subjective mapping exercise between the two was carried out, mapping the three pillars of Horizon 2020[12] and their likely contribution to achieving progress with respect to the five axes of the ERA[13]. A summary of that mapping is provided in Annex I. In the context of the development of the ERAC Work Programme, consideration should be given to conducting a similar exercise mapping the Innovation Union with Horizon 2020.

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11 Proposal for a Regulation of the European Parliament and the Council Establishing Horizon 2020 – The Framework Programme for Research and Innovation (2014-2020)- Partial general approach (Competitiveness Council, 31 May 2012).

12 Excellent Science, Industrial Leadership and Societal Challenges.

13 Researcher careers and mobility; knowledge transfer; the international dimension; joint programming; and research infrastructures.

While it is clear from the mapping that Horizon 2020 can contribute greatly to the ERA, it is neither the only nor the major mechanism to ensure its success. National funding of research and innovation is the second and larger source of financial support which can enable the successful functioning of a European research and innovation area. Where appropriate, national funds can and are working together and in parallel with European funding (Horizon 2020 and other) to foster the growth of the ERA. In order to build the ERA in a sustainable manner for European socio-economic benefit, it remains essential that synergies be found and complementarities leveraged across the EU, particularly in these times of economic difficulty. This will require an ongoing strong buy-in and sound partnership approach from Member States, Associated Countries and the Commission and its constituent parts.

To build a robust European environment for research and innovation, good governance must lie at the heart of the successful implementation of Horizon 2020, positioned as it is in the ERA and the Innovation Union. Simple and transparent governance will enable Member States, Associated Countries and the Commission to reach their research and innovation goals in the context of the large number of complementary policy objectives, the variety of stakeholders, the need to balance internal EU aims with increased externalisation, and adherence to the principle of variable geometry. Strategic advice focused on structure and governance and on avoiding any overlaps or duplication of effort can smooth the progress of the ERA, and with it Horizon 2020. An adaptable system of governance is clearly needed, one which can change as both the ERA and the broader global research and innovation environment change over time.

ERAC has a strategic role[14] in providing timely advice to the Commission and Member States for the development of the ERA and brings added value through its knowledge and experience of national research and innovation policy arenas. It has in the past, following the request of the Council[15], drawn on the expertise of ERA groups[16] in fulfilling its role of providing such strategic policy advice. ERAC, working with ERA groups, can contribute to good governance by providing its advice on the identification and design of strategic priorities, of monitoring the progress of the ERA, of promoting the co-ordination of national research and innovation policies and of working towards greater coherence with other relevant policy areas addressing research and/or innovation.

4. Observations and Recommendations

Through its consideration of the mapping between the ERA and Horizon 2020 and discussions at the ERAC SB+ and ERAC plenary meetings, ERAC has identified two areas of key importance in the interplay between Horizon 2020 and the ERA: peer-to-peer learning for the ERA and strategic development of the ERA.

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[14] Specifically, the mandate (doc. 10255/10, 28 May 2010) states that ERAC has the role to:
- "At an early stage, provide advice on the identification and design of strategic priorities for policy initiatives on research and innovation relevant for the development of the ERA";
- "Monitor the progress of ERA, while having regard to the principles of subsidiarity and complementarity, with special attention to the efficiency, accessibility, transparency and coherence of its different instruments and initiatives, including those defined in EU Framework Programmes, based notably on the criterion of European added value";
- Contribute to promoting the co-ordination of national research and innovation policies, where relevant, and to ensuring that national policies and Union policy are mutually consistent";
- "Strive to develop strategic interactions and coherence with other relevant policy areas when appropriate".

[15] Conclusions on the development of the ERA through ERA-related groups, 3094th Competitiveness Council meeting, Brussels, 31 May 2011.

[16] Currently, the Strategic Groups on Human Resources and Mobility (SGHRM) and Knowledge Transfer (KT), the GPC (Joint Programming), the European Strategic Forum on Research Infrastructures (ESFRI) and the Strategic Forum on International Co-operation (SFIC).

Observations

a. Peer-to-Peer Learning for the ERA

There is a clear need for ongoing exchange of good practice and peer-to-peer learning with respect to participation in EU research and innovation governance structures, so that countries can better organise themselves, learn from one another and adapt to new circumstances in research and innovation in Europe and nationally, notwithstanding the need for diversity of national approaches.

ERAC has a formal role in stimulating mutual learning opportunities[17]. These will be developed in the context of discussions on the ERAC Work Programme and might consider the following questions:

- How can the most efficient and effective links be established in MS/AC between the governance structures of the ERA and Horizon 2020 and the wider national policy environment for both research and innovation (including, for example, finance, education and labour)?

- How will MS/AC each organise their national participation in the EU research and innovation governance structure under Horizon 2020 and the ERA, in the context of the Innovation Union, and ensure the necessary national linkages?

- Given the diversity of national systems and approaches, how can research and innovation, and their European dimension, be more fully integrated into national policies and co-ordinated at national level with other policy areas (notably, perhaps, into the National Reform Programmes as they relate to the European Semester)?

[17] Recalling the annual mutual learning exercises by ERAC.

- How can complementarity at both national and European levels between groups be progressed for the benefit of research and innovation (e.g. between ERAC and EPG[18])?

b. Strategic development of the ERA

Recalling the remit of ERAC in monitoring the progress of the ERA, and the potential for that monitoring to contribute both to informing timely strategic policy advice by ERAC and to the reporting by the Commission of progress in achieving and sustaining the ERA, the second area of importance identified by the SB+ is:

The provision of well-co-ordinated, evidence-based and timely policy advice, in relation to the ongoing strategic development of the ERA, and thereby the Innovation Union, with the simultaneous implementation of Horizon 2020, is essential given the continually changing environment for research and innovation in Europe.

This highlights the need to (re-)define the ERA structure (comprised of ERAC, the ERA groups and other committees), where relevant, well-coordinated with other mechanisms such as the European Innovation Partnerships, maintaining clarity on their strategic roles in the future, and to ensure that the different elements of strategic governance complement one another, work in one efficient and effective system and address both research and innovation policy issues. Different needs may arise over time, dominated in the period from now until the end of 2013 by the implementation of the forthcoming Commission Communication on the ERA, once agreed, and by decisions on Horizon 2020 and, in the post-2013 period, by the long-term development agenda for the ERA and the Innovation Union supported by the implementation of Horizon 2020.

This has implications not only at European level. It will be important for MS and AC, within their own diverse systems, to organise their participations in the EU research and innovation governance structure for the ERA and Horizon 2020. There are also implications for national and European co-ordination in engaging all of the relevant stakeholders appropriately in this system and its

[18] Enterprise Policy Group of DG Enterprise and Industry and specifically its sub-group on innovation. http://ec.europa.eu/enterprise/dg/epg/index_en.htm.

environment, in the context of a sound partnership approach.

A "business as usual" scenario for ERAC and the ERA groups will not adequately take into account the changing nature of European research and innovation, including most critically the new environment which is being put in place by the end of 2013 and will develop thereafter, the European Research Area. Nor will it meet the new requirements resulting from the proposed changes in the operation of the Framework Programme from FP7 to Horizon 2020, such as the new strategic role of the Programme Committee.

The ERA structure therefore needs to better develop and reinforce an existing task, namely that of actively contributing to the monitoring of the progress of the ERA, and thereby the Innovation Union, including its full range of initiatives and instruments, for the purpose of regularly providing strategic policy advice on ERA-related issues, including advice relevant to Horizon 2020 [19]***.***

The alternative scenario to "business as usual" would see the ERA structure altered as necessary to enable it to better accomplish this task, perhaps by also adopting improved working processes, thereby enhancing its capacity to provide timely strategic advice. New priorities could relate to the indicators and data needed, appropriate forms of stakeholder involvement, etc. New working methods could include combined meetings between ERAC and relevant Horizon 2020 bodies and/or between ERA groups (with, notably, the progress in achieving and further developing the ERA being one of their shared missions).

Recommendations

This work by ERAC has examined several inter-related questions: How can Horizon 2020 best help to build the ERA, and the ERA be the best environment for Horizon 2020? How can Horizon 2020 and MS/AC activity best become mutually reinforcing? How can ERAC work in the most

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19 The functioning and achievement of the ERA is one of the cross-cutting actions in the Horizon 2020 Regulation (article 13), annual monitoring should include information on the cross-cutting topics (article 25). The proposed Council Decision for the Specific Programmes stipulate that the annual work programmes should take account of the state of science, technology and innovation at national, Union and international levels and should contain a section on the cross-cutting actions in article 13 of the Regulation. See also footnote 9.

complementary way with the ERA-related groups and others? How can the ERA-groups together[20] address common topics? How can a partnership approach, with MS/AC, the Commission and other stakeholders, be achieved and optimised? How can ERAC stimulate an ongoing exchange of good practice and peer-to-peer learning (a new activity building on the Mutual Learning exercises)? And, last but not least, how can ERAC best monitor the establishment of the ERA to end 2013 and the progress of the ERA thereafter? Such an exercise should also be considered, in the context of the development of the ERAC Work Programme, for the implementation of the most ERA-relevant Innovation Union commitments.

In answering these questions, the focus for ERAC is on its key role of providing timely strategic policy advice to the Commission, Council and Member States. Therefore, in the context of the rolling development of the Work Programme of ERAC for the next few years, ERAC recommends that:

1. ERAC should continue to work to stimulate ongoing exchange of good practice and peer-to-peer learning with respect to participation in EU research and innovation governance structures and processes, so that countries can better organise themselves, learn from one another and adapt to new circumstances in research and innovation in Europe and nationally – and work closely with the Commission to facilitate this.

2. ERAC, in its monitoring role, should provide advice for the measurement of progress of the achievement of the ERA and thereby the Innovation Union and, thus, be involved in regular reporting on that progress[21]. In this as in other areas, it should work with ERA groups[22]. The reports and opinions of ERAC should contain recommendations to the Council, Commission and MS. They should be carefully timed and should enable the Commission and the MS/AC to take them into account (e.g. in Competiveness Council meetings, European Semester and in the implementation of the ERA, the Innovation Union and Horizon 2020).

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20 For example, GPC with ESFRI, GPC with SFIC, KT with SGHRM, etc.

21 It is anticipated that such monitoring of the implementation of the ERA would be facilitated through ERAWATCH, NETWATCH and other information platforms, current and future (e.g. the proposed Research and Innovation Observatory).

22 As concluded by the Council in its Conclusions on the development of the ERA through ERA-related groups, 31 May 2011.

3. In light of the above recommendations, any necessary changes in the processes and/or structures of the ERA-related groups should be made in a timely manner to facilitate their role in providing strategic policy advice and engaging in related monitoring. Changes should be consistent with and complementary to the revised structures for Horizon 2020, and a holistic perspective pursued. Changes in the ERA governance structure should reflect changes in the ERA as it develops and should be informed, but not delayed, by the upcoming review of ERAC.

ANNEX I

Mapping Horizon 2020 and the European Research Area[23]

This is a working document prepared as background to the ERAC discussion document under the responsibility of the Chair of the ERAC Steering Board.

At the March meeting of the SB+, it was proposed that a mapping between the ERA and Horizon 2020 be carried out to assist the SB+ in further developing its ideas on the interplay between the policies and governance of Horizon 2020 and the wider ERA, work being undertaken in the context of related policies such as education, enterprise and fiscal policies.

While the original mapping carried out for the SB+ was based on the proposals for Horizon 2020 as laid out by the Commission in its documents of 30 November 2011, this background document is an update of that, taking into account the current status (31 May 2012) of the negotiations on Horizon 2020 being progressed by the Research Working Group. Please note that this is a subjective mapping.

[23] The mapping was prepared by the UK delegation, assisted by the rapporteur. Comments from the SB+ were taken into account.

ERA and Horizon 2020: Mapping

The following considers the three pillars of Horizon 2020 (Excellent Science, Industrial Leadership and Societal Challenges) and their likely contribution to achieving progress with respect to the five axes of the ERA (researcher careers and mobility; knowledge transfer; the international dimension; joint programming; and research infrastructures). The interaction between the pillars and the axes is described as HIGH, MEDIUM OR LOW, without any reflection on the likely value or quality of the action within the pillar itself, just how it relates to the axes.

In addition to the mapping on to the pillars, it should be noted that, in the current version of the Horizon 2020 programme[24], "broad lines of the specific objectives and actions" are identified, most specifically in Annex 1. These include a listing of a number of cross-cutting issues to be addressed across Horizon 2020 which should inform the implementation of all elements in the programme. This "horizontal box" contains a number of items which have a strong linkage to individual ERA Axes (e.g. international co-operation links to the international dimension axis; gender links to researcher careers and mobility; and bridging from discovery to market application and SMEs link to the knowledge circulation axis). In addition, the section on cross-cutting support measures refers explicitly to action in support of the ERA, including all five axes. These explicit references strengthen the linkage between Horizon 2020 and the ERA and in principle aim to ensure that ERA concerns are mainstreamed in the implementation of Horizon 2020, rather than that they are marginalised by the approach.

In the section which follows, an interaction map is plotted against the five axes for each pillar in turn followed by an interaction map for the three pillars together. These plots are followed by a more detailed explanatory table taking each of the five axes and identifying the strength (high, medium or low) of the interaction with the elements of the Horizon 2020 pillars.

Gaps are also identified at the end of the mapping.

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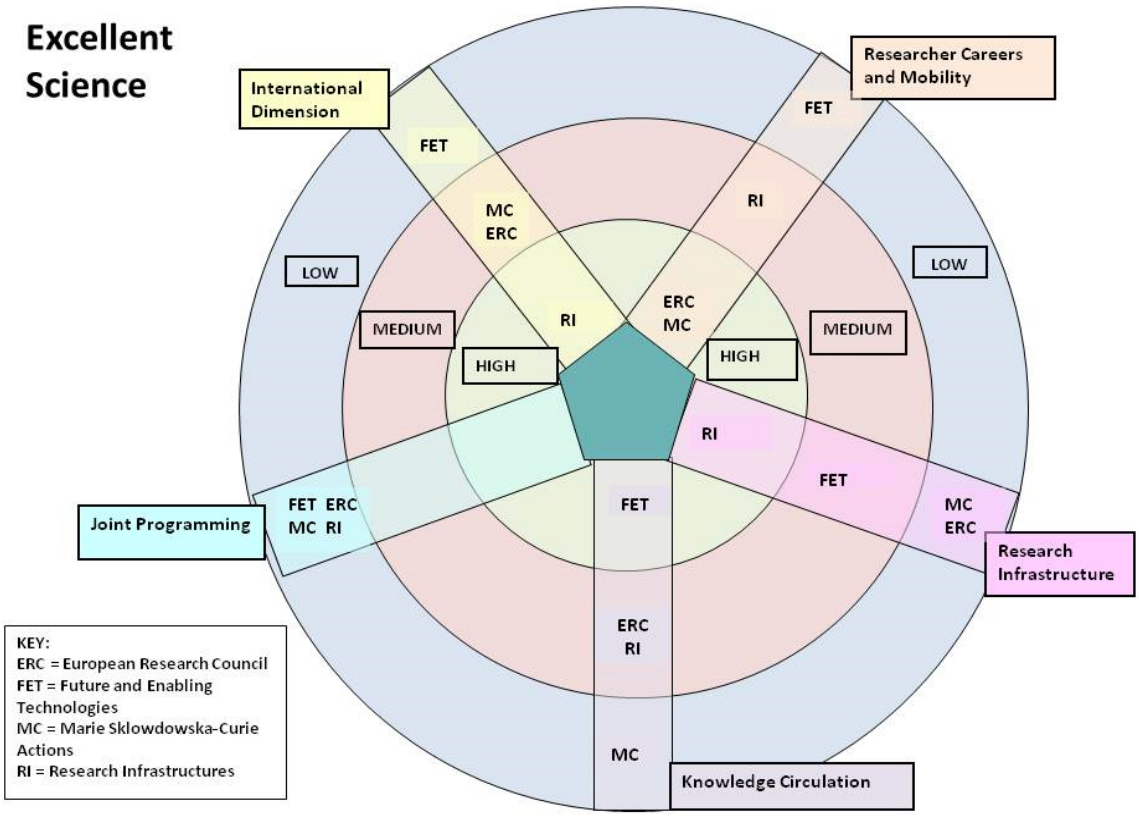
[24] Proposal for a Regulation of the European Parliament and the Council establishing Horizon 2020 - The Framework Programme for Research and Innovation (2014-2020) - Partial general approach (Competitiveness Council, 31 May 2012).


Excellent Science
International Dimension
Researcher Careers and Mobility
Joint Programming
Research Infrastructure
Knowledge Circulation
LOW
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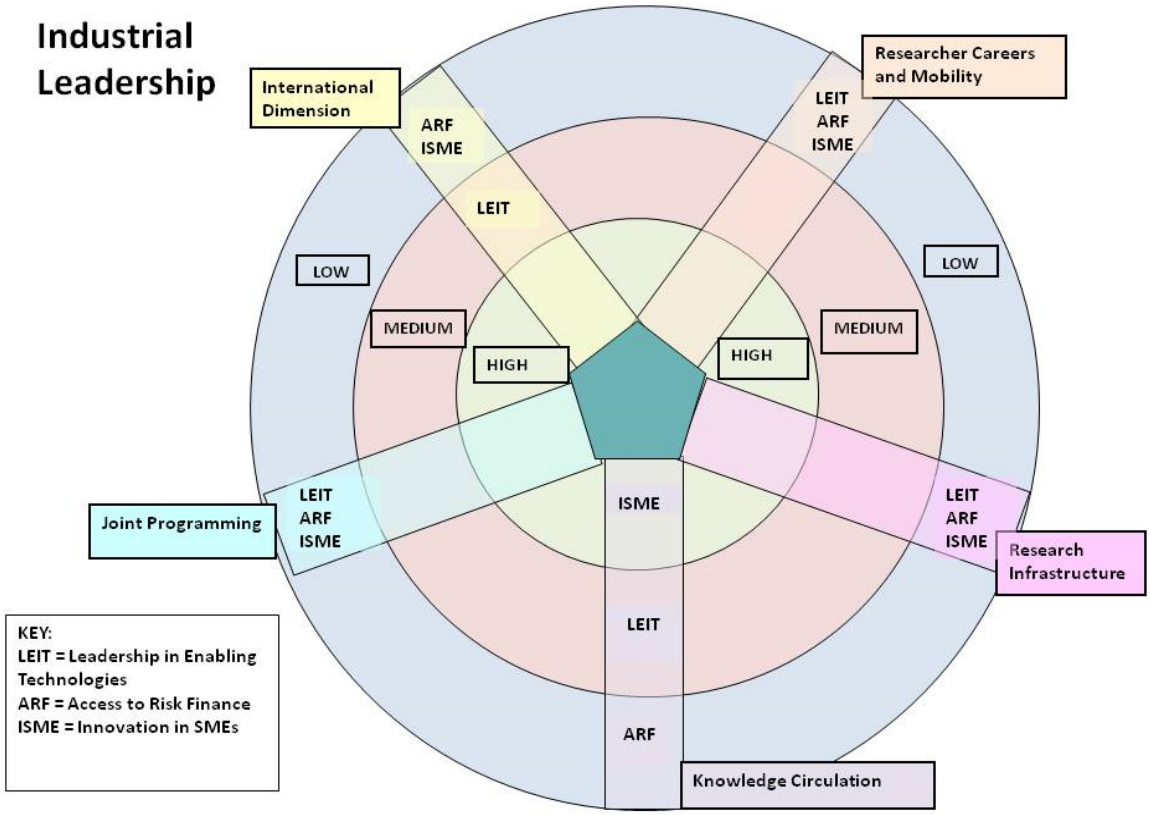
KEY:
ERC = European Research Council
FET = Future and Enabling Technologies
MC = Marie Sklowdowska-Curie Actions
RI = Research Infrastructures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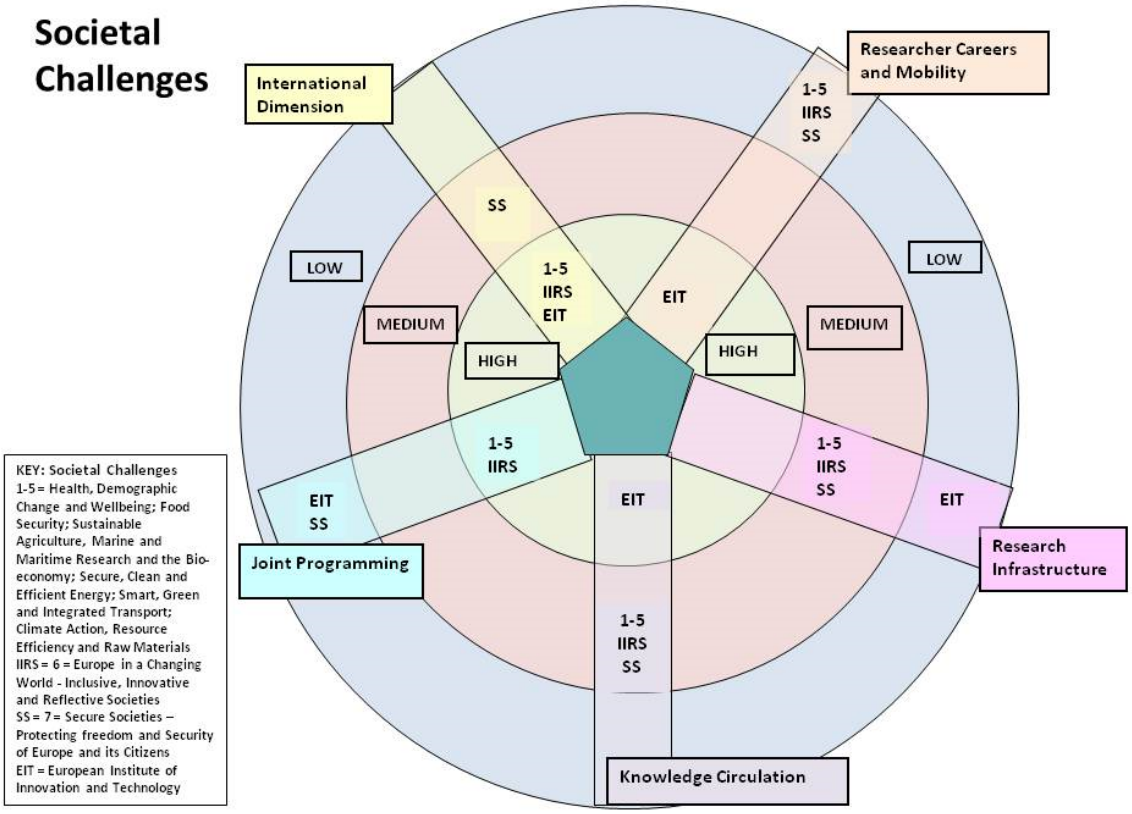
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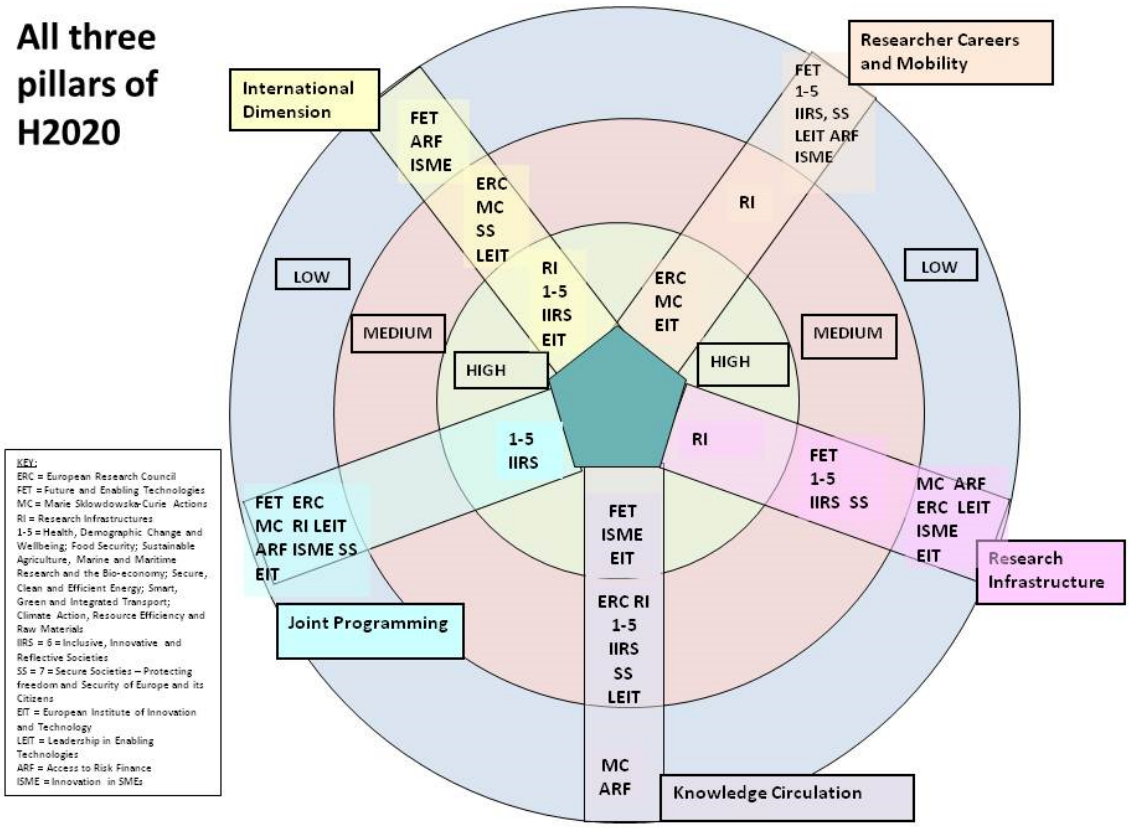
KEY: Societal Challenges 1-5 = Health, Demographic Change and Wellbeing; Food Security; Sustainable Agriculture, Marine and Maritime Research and the Bio-economy; Secure, Clean and Efficient Energy; Smart, Green and Integrated Transport; Climate Action, Resource Efficiency and Raw Materials
IIRS = 6 = Europe in a Changing World - Inclusive, Innovative and Reflective Societies
SS = 7 = Secure Societies – Protecting freedom and Security of Europe and its Citizens
EIT = European Institute of Innovation and Technology


All three pillars of H2020
International Dimension
Researcher Careers and Mobility
Joint Programming
Research Infrastructure
Knowledge Circulation
LOW
MEDIUM
HIGH
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KEY:
ERC = European Research Council
FET = Future and Enabling Technologies
MC = Marie Sklowdowska-Curie Actions
RI = Research Infrastructures
1-5 = Health, Demographic Change and Wellbeing; Food Security; Sustainable Agriculture, Marine and Maritime Research and the Bio-economy; Secure, Clean and Efficient Energy; Smart, Green and Integrated Transport; Climate Action, Resource Efficiency and Raw Materials
IIRS = 6 = Inclusive, Innovative and Reflective Societies
SS = 7 = Secure Societies – Protecting freedom and Security of Europe and its Citizens
EIT = European Institute of Innovation and Technology
LEIT = Leadership in Enabling Technologies
ARF = Access to Risk Finance
ISME = Innovation in SMEs

Now follows the explanatory table taking each of the five axes and detailing the strength of the interaction with the elements of the Horizon 2020 pillars.

ERA Axis	Horizon 2020 Action
Research Careers and Mobility	**<u>High:</u>** Excellent Science: **Marie Sklowdowska-Curie Actions** *Interplay between MSCA funding and ERA objective of making research an attractive career - though note that private sector companies participate in MSCA and indeed play a major role in some proposed actions (e.g. industrial doctorate programmes) but have little direct engagement with the ERA objective at present. Linkage with national funding via Co-Funding scheme which explicitly seeks to enhance career conditions.* *A link with the ERA axis is explicitly recognised in the support and policy action part of the proposal.* Excellent Science: **European Research Council** *Interplay between ERC grants and ERA objective of making research an attractive career option.* Societal Challenges: **EIT** *Contributing to this agenda is surely central to the success of the EIT.* **<u>Medium:</u>** Excellent Science: **Research Infrastructures** *Supporting access to infrastructures is part of the action, as is enhancing training of the staff of infrastructures.*

	<u>Low:</u> Excellent Science: **Future and Emerging Technologies** *Weak except as part of the general background conditions for successful research* Industrial Leadership: **Leadership in Enabling and Industrial Technologies** *There is very little reference to enhancing human capital in the text - and it is focused on the private sector.* Industrial Leadership: **Access to Risk Finance** Industrial Leadership: **Innovation in Small and Medium Sized Enterprises** Societal Challenges: **Challenges 1-5** (Health, Demographic Change and Wellbeing; Food Security, Sustainable Agriculture, Marine and Maritime Research and the Bio-Economy; Secure, Clean and Efficient Energy; Smart, Green and Integrated Transport; and Climate Action, Resource Efficiency and Raw Materials) *There is no obvious reference to building up human capital and resources here - though obviously high quality researchers will be required to achieve the ends set out for the challenges.*

	Societal Challenges: **Challenge 6** (Inclusive, Innovative and Reflective Societies) *Low, though the focus of the challenge on tackling issues, for example, related to migration and integration should imply that the programmes are run in ways which themselves address these issues in the research sector.* Societal Challenges: **Challenge 7** (Secure Societies) *There is no obvious reference to building up human capital and resources here.*

Joint Programming	**<u>High:</u>** Societal Challenges: **Challenges 1-5** *There is - or should be - a clear linkage between the existing JPIs (and possible future ones?) and the societal challenges identified in H2020, though direct cross-references in the H2020 text are not as clear as one might have expected.* Societal Challenges: **Challenge 6** (Inclusive, Innovative and Reflective Societies) *There are explicit references to several JPIs in the text* **<u>Medium:</u>** **<u>Low:</u>** Excellent Science: **European Research Council** *ERC operates on bottom-up basis so formal linkages with JPIs are limited.* Excellent Science: **Future and Emerging Technologies** *It is not clear how far existing JPIs will interact with this action, if at all - though the FET action also proposes to bring national and EU funding agendas together* Excellent Science: **Marie Sklowdowska-Curie Actions** *Bottom-up, though it is possible to envisage, say, individual JPIs participating in the initial training network actions* Excellent Science: **Research Infrastructures** *There is little explicit linkage to JPIs, though individual JPIs may well have interactions with specific infrastructures or groups of infrastructures*

	Industrial Leadership: **Leadership in Enabling and Industrial Technologies** *There is no indication of any potential linkages* Industrial Leadership: **Access to Risk Finance** Industrial Leadership: **Innovation in Small and Medium Sized Enterprises** Societal Challenges: **Challenge 7** (Secure Societies) *There is no explicit reference.* Societal Challenges: **EIT** *There is no explicit reference to possible linkages between JPIs and the EIT/KICs*

Knowledge Circulation (including Open Access)	**<u>High:</u>** Excellent Science: **Future and Emerging Technologies** *Getting the Knowledge Circulation regime right will be important if this action is to succeed* Industrial Leadership: **Innovation in Small and Medium Sized Enterprises** *Reference e.g. to assistance to high-technology sectors which show the ability to exploit project results commercially and to tackling specific barriers preventing growth of innovative SMEs.* Societal Challenges: **EIT** *This is surely crucial to the success of the EIT.* **<u>Medium:</u>** Excellent Science: **European Research Council** *Especially for "proof of concept" action* Excellent Science: **Research Infrastructures** *Reinforcing the innovation potential of infrastructures is an explicit goal of the action; Knowledge Circulation is a part of this agenda.* Industrial Leadership: **Leadership in Enabling and Industrial Technologies** *Intellectual property (IP)/"spin out" issues have to be got right if these programmes are to succeed.* Societal Challenges: **Challenges 1-5** *Again this is largely implicit.*

	Societal Challenges: **Challenge 6** (Inclusive, Innovative and Reflective Societies) *Largely implicit-and much of the "knowledge transfer" mentioned is more at the "soft", spreading of best practice end of the scale.* Societal Challenges: **Challenge 7** (Secure Societies) *Largely implicit* **<u>Low:</u>** Excellent Science: **Marie Sklowdowska-Curie Actions** *IP/Knowledge Circulation issues are among the skills which researchers ought to be learning about as part of the wider training aspect of fellowships (but not the only ones).* Industrial Leadership: **Access to Risk Finance**

Research Infrastructures	**<u>High:</u>** Excellent Science: **Research Infrastructures** *Self evidently - the interface between national and EU funding and policy priority setting is of particular importance in this area.* Industrial Leadership: **Leadership in Enabling and Industrial Technologies** *Some of the themes - ICT, Space - include provision for constructing and running new or enhanced infrastructures, though it is not clear how these fit into the ESFRI road map and all are likely to make use of infrastructures.* **<u>Medium:</u>** Excellent Science: **Future and Emerging Technologies** *Access to top quality infrastructures is likely to be important here - and successful FET actions may generate new infrastructures.* Societal Challenges: **Challenges 1-5** *While some challenges, in particular energy, refer to new demonstration facilities and while all will no doubt require high quality research infrastructures, there is little explicit cross-reference to e.g. the ESFRI process.* Societal Challenges: **Challenge 6** (Inclusive, Innovative and Reflective Societies) *There is reference to developing infrastructures such as libraries, albeit that these do not seem to be very closely related to the ESFRI process.*

	Societal Challenges: **Challenge 7** (Secure Societies) *Closely related to infrastructure issues* **<u>Low:</u>** Excellent Science: **ERC** *High quality infrastructures are part of the wider European research environment, not just for ERC grant holders.* Excellent Science: **Marie Sklowdowska-Curie Actions** *Access to top quality infrastructures is part of the wider European research environment, not just for MSC fellows.* Industrial Leadership: **Access to Risk Finance** Industrial Leadership: **Innovation in Small and Medium Sized Enterprises** Societal Challenges: **EIT** *While EIT KICs will no doubt need access to infrastructures to succeed there is no direct reference to them.*

International Dimension	**<u>High:</u>** Excellent Science: **Research Infrastructures** *Reinforcing international cooperation via infrastructures is explicitly mentioned as part of one action in this area.* Industrial Leadership: **Leadership in Enabling and Industrial Technologies** *The introductory text for the pillar refers to the development of new international standards for products, services and technologies, and the space theme contains specific reference to international partnerships. On the other hand, this action is aimed at enhancing European competitiveness which must limit the extent to which co-operation may make sense.* Societal Challenges: **Challenges 1-5** *Some challenges - health, climate change - make explicit reference to linkages to international activities; for others the link is more implicit; references to "global leadership" or "enhanced competitiveness" for European industries in fields like transport or health perhaps suggest limits to collaboration.* Societal Challenges: **Challenge 6** (Inclusive, Innovative and Reflective Societies) *The Challenge talks of world-wide co-operation and fostering co-operation with third countries, although references to making Europe a "distinctive model of inclusive, innovate and secure societies compared to other world regions", which could be read in a competitive sense and move it to the medium category.*

	Societal Challenges: **EIT** *There is an explicit reference to EIT KICs making Europe internationally attractive- though that could also be seen as competitive rather than co-operative.* **<u>Medium:</u>** Excellent Science: **European Research Council** *Aspiration to attract the best researchers world-wide.* Excellent Science: **Marie Sklowdowska-Curie Actions** *Aspiration to attract the best researchers to Europe and fostering co-operation with third countries.* Societal Challenges: **Challenge 7** (Secure Societies) *While there are references to ensuring collaboration between European institutions, etc., there is no direct reference to collaboration with non-European actors.* **<u>Low</u>:** Excellent Science: **Future and Emerging Technologies** *Likely to be an area where Europe/MS will be primarily be looking to compete with the wider world.* Industrial Leadership: **Access to Risk Finance** Industrial Leadership: **Innovation in Small and Medium Sized Enterprises**

Some Gaps

- There is little obvious linkage between any of the more industrially focused/private sector dominated parts of Horizon 2020 and the ERA axes. While industrial participation in JPIs has been a subject of some debate, it is perhaps surprising that there is little apparent recognition that some JPIs may be operating in areas close to, say, the topics identified for the LEIT action. Also increasing potential linkage through actions like Innovative Doctoral Programmes (IDP) ITN could be relevant.

- There is quite a bit of potential funding for infrastructures which seem to be outside the ESFRI process (presumably because they lie more at the demonstration/exploitation end of the research and innovation process?).

- The International Dimension does not figure in any very systematic way in the three pillars of Horizon 2020 despite some high-level coverage in the cross-cutting issues section.

- Outside the Excellent Science pillar there is little read across to the careers and mobility agenda despite the importance of developing human capital. There is an issue over private sector involvement here, however, as the private sector has next to no involvement in/interest in the instruments being developed to promote the European Partnership for Researchers.

- Exploitation of results and not Knowledge Circulation issues are almost certainly much more important than the limited explicit recognition they currently appear to receive in Horizon 2020.

- There is little obvious focus on non-commercial knowledge transfer issues (e.g. on how information flows from researchers in the social sciences and humanities field to policymakers to provide an evidence base for policy decisions).

- Bridging actions are a key issue for resolving once for all the European paradox i.e. that too much knowledge generated in the EU never (or too late) reaches the market-place. Some examples of bridging actions:

- The natural extension of any project should be trials, demonstrations and pilot actions (as an option for consortia, following the same rules, although different funding rates may be applied, and without the need to wait a year for the next call – perhaps using yearly calls with deadlines every four months).

- Knowledge generation to overcome bottlenecks: there are still many gaps in the knowledge needed to reach markets. Who will point out the needs? of course researchers can but industry (who knows the market) needs to be consulted. There is an opportunity to work with ERC to look for answers.

- Extend a fast-track "Proof of the Concept "funding to all the Innovation chain in Horizon 2020.

- Systematically drive pilot and market replication projects from R&D results.

ANNEX II

Communication on Horizon 2020 – The Framework Programme for Research and Innovation (doc. 17932/11 of 5 December 2011), Chapter 9: Completing the European Research Area

Completing the European Research Area is urgently needed to avoid costly overlaps and unnecessary duplication of activities. It entails building a genuine single market for knowledge, research and innovation, enabling researchers, research institutions and businesses to circulate, compete and co-operate across borders. Remaining gaps in completing ERA will be addressed through the ERA framework, to be presented by the Commission in 2012.

Horizon 2020 will strengthen the support to promoting researchers' careers and mobility or ensuring the networking and opening up of large scale research infrastructures. Further steps will be taken towards Open Access, to ensure that research results are available to those who need them. It will also involve actions to remove barriers preventing women to pursue successful scientific careers. The Commission is committed to implementing the target of 40% female participation in its advisory structures and it will ensure that gender differences are reflected in the content of calls for proposals, and in evaluation processes, where appropriate.

This 'Inclusive, innovative and secure societies' challenge will support policy coordination across Europe. This will provide a strong evidence base to help Member States in implementing adequate policy mixes. As a novel measure, the work programmes will contain information on how coordination with national research and innovation funding is ensured, making it an element of discussion in the programme committees.

Horizon 2020 will support approaches aimed at pooling and leveraging other sources of funding through a simplified ERA-NET scheme, providing support from coordination of national programmes up to the co-funding of joint calls. A clear set of criteria for joint programmes under Article 185 and joint undertakings under Article 187 will enable a stronger set of initiatives to go forward, taking account of the experience and evaluations under FP7 as well as the revisions to the Financial Regulations.

Horizon 2020 will aid Joint Programming Initiatives (JPI) in the development of their Strategic Research Agendas. Where the challenge addressed by a JPI is in line with the priorities of Horizon 2020, ERA-NET or co-funding may be used to provide further support. New Article 185 initiatives will only be considered when a JPI has demonstrated its capacity for significant collaboration and the scale and scope to support full integration of national programmes.

Building on the experience of the Public Private Partnerships under the EU economic recovery plan, the possibilities for establishing such Partnerships without recourse to new legislative procedures has also been strengthened. This allows such initiatives to be implemented in a streamlined manner while ensuring greater clarity of roles and responsibilities.

Building an ERA which is open to the world will involve cooperation with third countries on the basis of common interest and mutual benefit. The aim will be to strengthen the EU's excellence and attractiveness in research, to tackle global challenges jointly and to support EU external policies. Apart from a general opening up of Horizon 2020's actions to participants from third countries, dedicated support measures have been included in the 'Inclusive, innovative and secure societies' challenge.