

EUROPEAN RESEARCH AREA BOARD

Towards a Common Strategic Framework for Research and Innovation: ERAB Views and Recommendations

ERAB's contribution to the Common Strategic Framework consultation

ERAB has produced extensive advice and recommendations to support the Common Strategic Framework consultation. These documents are attached herein.

From this follows the following key recommendations:

- 1- Be ambitious and be prepared to take managed risks for the sake of the European economy.
- 2- Concentrate funding on a selection of high-impact research themes driven by key societal challenges, whereby Member States and the European Commission would agree on a common approach and joint support mechanisms to move forward (e.g. SET-plan and Active and Healthy Ageing Innovation Partnerships).
- 3- Create a more efficient mechanism that would facilitate pooling Member State resources.
- 4- Encourage Member States to harmonise support structures between themselves to increase the impact of research and innovation across Europe.
- 5- Support high-risk, high-gain excellence frontier research (continue and increase ERC funding to this end).
- 6- Extend ERC model to support Future Emerging Technologies for which there may not exist apparent market at first.
- 7- Integrate all EC support mechanisms to focus on key challenges and create a common approach between different Directorate-Generals of the Commission.
- 8- Encourage specific mechanisms to support less performing countries or regions in their research and innovation efforts.
- 9- Use Structural and other funds constructively to support cutting edge research linked to solving societal challenges in all areas including health and secure food supply.
- 10- Divide support between curiosity and mission-driven. The latter to include both high risk enabling technologies and further support for European competitiveness.
- 11- Develop ways of supporting excellent research management in all sectors, more specifically when associated with the Grand Challenges.

- 12-Create a number of independent arms length funding agencies to support and govern different types of excellent research and innovation. The agencies should be funded on the long term and be legally allowed to make long-term commitments (e.g., ERC for basic, curiosity driven research, a similar institutional setting (agency) to support industrial and applied research, mobility, research infrastructures, etc).
- 13-Better support near-market research and innovation (e.g., demonstrations and pilots).
- 14-Revise and agree on State Aid rules to further encourage innovation.
- 15-Incentivise and encourage higher mobility at all levels including mid-career mobility between private and public institutions.
- 16-The European Commission should pursue the creation of a global forum to agree actions pertinent to global research and investment.
- 17-The Commission should be mandated to act on behalf of the Member States at such a forum.

ERAB produced the following documents to advise the Commission during the past two years and should be consulted for any further specific recommendations. Many of the themes are subject to further detailed studies which will allow for fine tuning the recommendations.

- Preparing Europe for a New Renaissance: A Strategic View of the European Research Area (October 2009)
 - Realising the New Renaissance: Policy Proposal for Developing a World-class Research and Innovation Space in Europe 2030 (October 2010), including the 2030 ERAB Milestones (May 2010)
 - Towards a Common Strategic Framework for the EU Research and Innovation: ERAB Views and Recommendations (May 2011)
- ERAB 10 Key Recommendations (June 2010)
 - ERAB View on the Contribution of FP7 Instruments to the Establishment of a Genuine European Research Area (February 2009)
 - ERAB View on the Communication “Simplifying the implementation of the Research Framework Programmes” (May 2010)
 - ERAB View on the Role of Public Procurement for the R&I Strategy (April 2010)
 - ERAB View on the Role of Venture Capital for the R&I Strategy (April 2010)
 - ERAB View on Achieving Cohesion in European Research and Innovation (July 2010; update April 2011).
 - ERAB Recommendation to Maximize High Risk – High Gain Research in the Next Framework Program (December 2010)
 - ERAB View on Social Innovation (April 2011)
 - ERAB View on the Role of International Collaborations (April 2011)

1. Introduction

The Green Paper *"Towards a Common Strategic Framework for EU Research and Innovation Funding"* published in February 2011 by the European Commission (EC), launched a public debate on key issues to be addressed in future EU research and innovation (R&I) funding schemes for the next multi-annual Financial Framework. The ratification of the Lisbon Treaty (TFEU) together with the new financial perspectives would allow for proper tools to be identified so as to build an effective European Research Area (ERA). Financial constraints would be taken into account, both at Member State (MS) and EU levels.

The EU 2020 strategy (*"A European Strategy for Smart, Sustainable and Inclusive Growth"*) and its Flagship Initiative *"Innovation Union"* provide a general direction. The strategies and policies within R&I, which will be proposed by the EC, will be extremely important for implementing policy. A Common Strategic Framework (CSF) approval by the Council and the Parliament will set a common direction for the joint efforts of all MS.

The European Research Area Board (ERAB) welcomes the opportunity to present its vision of the Common Strategic Framework (CSF) architecture. ERAB's recommendations are based on its past work as advisory board (2008-2011) and particularly on its two published reports, *"Preparing Europe for a New Renaissance"* (2009) and *"Realising the New Renaissance"* (2010).

The second ERAB Report states clearly: *«The prospect of what might happen if we don't act immediately is economic and social decline in Europe and further environmental degradation»* (ERAB, 2010). ERAB believes that unless there is a drastic change in how the CSF operates, Europe's ability to compete or cooperate globally will significantly diminish. Therefore, ERAB urges the decision making bodies in Europe to consider this a priority and it welcomes the CSF proposal as an important step to a new and more efficient R&I policy.

ERAB's recommendations are ambitious both in scope and budget. It is essential that the full resources of Member States and within the Commission are focused and utilised efficiently rather than being divided up into, often, competing and small scale programmes.

2. Implementing existing Framework Programmes

Maintaining the European standard of living will be challenging as other world economies emerge and there is further pressure on scarce resources which has been recognised in the context of achieving the European Research Area (ERA). Building ERA will require a more efficient investment in research and innovation at the EU level to avoid the current and visible fragmentation of the individual MS programmes.

As such, FP6 and FP7 were thought to have allowed for:

- i) **significant enhancement of research in Europe**, in quality through competition and in intensity through more funding, and
- ii) improved efficiency **through coordinating national research policies**.

Have these aims been achieved?

- The coordination of national research policies has not been achieved, although FP7 was **quite successful in building foundations for ERA**, via the People, Cooperation, Ideas, and Capacities Programmes. ERAB acknowledges this resulted in a **"collaboration fabric"** among researchers, which is a unique asset for Europe.

The overall efficiency of the EU innovation system suffers from **a large number of instruments which are overly complex** and have different funding schemes, rules and timetables, responding to the needs of different beneficiaries. In addition to its complexity, the financial regulation imposed on the EC as well as the associated procedures lead to **an unacceptably heavy and costly bureaucracy**, to a level which discourages actors (mostly in industries and particularly in SME's). Clearly the number and complexity of the instruments and the financial regulations have to be reviewed urgently.

- In line with the application of the rules and procedures, most of the Framework Programme (FP) instruments are centrally managed by the EC Services (or by Executive Agencies newly put in place, but applying the same strict rules). The current rules in fact counter the very nature of R&I, which is generally high-risk and long-term. This is especially true for large European and international projects which should be a key element of ERA (e.g. JTI, JPI, or EIT); these projects **require effective governance and efficient management** suitable for high-risk R&I projects.

- The current annual amount of the European budget devoted to R&D (7.5 billion Euros on average in FP7) is only 3.6% of the total amount spent by all MS in this field. The amount of national funds spent on R&D actions coordinated at the European level is a meagre 11 billion Euros in 2007 (15% of public R&D funding in all MS). These numbers do not allow the Commission to launch R&D programmes of a truly European nature. The EC should therefore concentrate on how to attract MS participation in common programmes at the European level and pool a larger amount of their R&D investments. **This issue is probably the main problem in achieving an efficient and productive CSF implementation.**

The following paragraphs give ERAB's reflection on current specific funding instruments:

- **Within the Cooperation Programme**, collaborative research continues to foster transnational partnerships, even if projects are often too numerous, too small and consortia too large, without a consistent Grand Design. Some attempts to address this have already started, such as the European Technology Platforms (ETP) and Joint Technology Initiatives (JTI). The SET-Plan approval is a good example of how to start a large strategic R&I programme.

These pioneering projects are a key step towards creating a true ERA in their fields. They should demonstrate that efficient partnerships can be established across national borders, joining national public and private funds, and benefiting from appropriate governance and management. Therefore the difficulties faced by the projects (see the JTI Sherpas Group report) must be resolved, in particular as related to the complexity and rigidity of a **Community Body status and the inability to pool MS resources**.

- In addition to FP funding, **the Joint Programming Initiatives (JPI)** are designed to contribute to solving major societal challenges, for which MS, on a voluntary and variable geometry bases, will implement a common strategic research agenda. Nine such programmes have been agreed upon by the Council. The appropriate framework conditions for this new process are still being debated, but given their similarities with Joint Technology Initiatives (JTI), it is quite probable that the JPIs will encounter some or all of the same difficulties.

- **The European Institute of Innovation and Technology (EIT)** is just beginning to establish its Strategic Innovation Agenda and therefore it is not possible to assess whether this approach adds value.

- **Actual usage of the Structural Funds** (around 25%), supposed to help all regions to build R&I capacities corresponding to their situation and priorities, is not transparent. It's actual **objectives and management should be revised urgently to support ERA wide R&I**.

3. Driving principles for the future CSF, according to ERAB

In line with preceding remarks on the current FP, ERAB formulated recommendations, which are, as mentioned above, based on the two published ERAB Reports (2009 and 2010). These recommendations are still relevant and urgent. ERAB stands for improvement through drastic changes: less complex framework with clear priorities and objectives, less bureaucracy and more efficient management, supporting fast decision and high risk/high impact choices, performance-oriented and trust-based funding structures and a need to convince MS to evolve from their national focus and pool resources across borders to implement strategic programmes. In addition it is vital that all related disciplines are involved from humanities and social sciences through to medical practice and manufacturing. Any attempt to support discipline silos should not be encouraged if value is to be achieved.

Some of these recommendations are recalled in the following paragraphs:

- **Concentration of R&I-funding** around a selection of high-impact research themes, driven by societal needs and relevant to «Europe 2020», on which MS and EC can agree on a common approach and on the joint support mechanisms necessary to move forward. Addressing «Grand Challenges» would provide integrated research programmes, covering the whole cycle of innovation and allowing for interaction between research

stages all the way from curiosity-driven to applied research in development and innovation all the way through delivery to market and society. The success of ERA via the CSF will be measured by the number of such programmes, launched **as joint work across borders, pooling MS public and private funds and EC contributions**, and by progress made in quality, coherence and efficiency of their implementation.

- **Frontier research** should always be a priority, while high risk is to be promoted if high impact is the end goal. **Striving for excellence**, not only in sciences but also in problem solving, innovation and economic impact, should be the only way with the support of European-wide competition. Current differences in new MS research structures and development require targeted cohesion measures to allow for fair competition (see ERAB's Views on Achieving Cohesion in European Research and Innovation, April 2011).

- **Implementation** of programmes should be in the hands of **mission-driven agencies or management structures** which are accountable for a well-defined and politically agreed set of strategic goals updated regularly by the European Council and the European Parliament in conjunction with the Commission who can take a truly ERA perspective. Details of the programmes and how they are implemented should be in the hands of the agencies who will consult with their communities. Research-intensive Organisations in most MS provide examples of professional management and goal-oriented focus in research; they should be encouraged to **build long-term institutional alliances amongst them**. ERAB recommends that governance of European programmes be based on a set of **independent institutions/agencies at arms-length of the EC and MS** as should be the case of the European Research Council (not fully the case yet). High risk/high impact and tangible results should progressively become the dominant criteria for R&I funding.

- Facilitating successful public-private partnerships relies on **completing the «Open Innovation Charter»**, which would help establish sustainable collaborations and confident knowledge exchange between public research organisations and industrial firms. Management of Intellectual Property Rights (IPR) for knowledge-transfer activities is an important matter to every partnership and should benefit from the guidelines of the «Responsible Partnering Handbook»; an IPR valorisation instrument which would facilitate SME access to the knowledge market would be welcome. In order to help **young innovative firms** to access venture capital, a European Fund should be established to invest in early-stage proof-of-concept and business development before private institutional investors start to play their role. An innovation programme specific to high-tech SMEs and supported by risky funding and bank guarantees (e.g. Risk Sharing Finance Facility, RSFF) should be put in place in coordination with EC and local administration to receive similar national support.

- **Pre-commercial Procurement** of R&D services from the private sector, using the very large public sector purchasing power, is a very promising scheme to drive innovation.

- **At least 30% of the Structural Funds** should be used exclusively for R&D&I investments. Similarly a part of **the EC agricultural budget (ERAB suggests 10%)**

should be earmarked to contribute to the CSF and dedicated to the Grand Challenges as related to agricultural activities and producing safe and sustainable food for all.

- **There is a deficit in scientific knowledge dissemination.** The number of trained scientists, engineers and researchers moving between institutions (both public and private) is too small. There also is a deficit of training to support working in multi-disciplinary environments. There is little evidence of compulsory training in entrepreneurial skills. Education is the responsibility of MS, however a stronger interaction should exist between universities, laboratories, and enterprises while benefiting from the **Marie Curie programme**.

Based on these recommendations ERAB proposes a new architecture for EU R&D&I-funding. The structure is described in the next chapter.

4. A new architecture for CSF funding

The CSF proposes to fund **the implementation of a strategic programme to tackle societal challenges** in partnership between the EC and (groups of) MS. All actors should share common objectives and all funding instruments including those in MS should be aligned in a common strategic and funding approach.

Emphasis should be on innovation to address societal challenges, and lead to major market opportunities and economic benefits. Innovation would be the results of **an integrated programme, an activity line for each challenge**, covering the whole cycle and related set of instruments from basic S&T research all the way to D&I. The strategy implies establishing strong links (feedback loops) between every stage of the innovation cycle, thus leading to various types of innovation, and building an ecosystem mostly inexistent to date. This European Innovation Partnership (EIP) approach will strengthen the **EU's competitiveness and its science base**.

ERAB would like to emphasize **the role of the EC as a catalyst and facilitator** in attracting and pooling national funds for joint activities, and to ensure formal commitment from the MS a lacking element in the current JTI and the JPI initiatives. As such, MS Groups would join and finance a common strategy, on a voluntary and variable basis, thus introducing a mix of intergovernmental and European participation in support and management. However, in view of current experiences, there is a clear need for a **more effective ERA tool for pooling MS resources, with or without EC co-funding**.

Focusing on societal challenges would help MS to agree on common research strategies. In order to have the necessary confidence in pooling resources at the European level more efficiency will be required via **appropriate governance and management**, for example:

- Governance should be taken up by an Independent Agency at arm's length of EC and MS; the former should be legally able to make long term commitments ;
- Each MS participant should contribute through a limited number of funding institutions with a clear task-oriented mission;

- The individual Member State institutions will be accountable for their contribution to the programme of the Agency and will develop their own working procedures with the individual programmes, to encourage high risk/high gain developments;
- The execution of the strategy is determined by the MS institutions, which are held accountable for the outcome ; success or failure of a programme should be judged by actual outcome in terms of new insights brought to sciences or technologies or any other worthwhile impact on society ;
- Achieving high risk/high gain research requires research management and leadership willing to take high risks in the MS institutions concerned.

A possible architecture for the CSF, according to the content of these comments, is proposed by ERAB in the following figure.

	Distribution of EU Funds:	70%	30%
Distribution of EU Funds:	Initiative by:	EU MS/Private contributing	MS/Private EC facilitating
	Character of research:		
30%-40% Mainly led by DG R&I	Curiosity driven	<i>ERC/FET Marie Curie Grants Other enabling activities</i>	<i>Research Infrastructures Specific university/ institution training for global challenges</i>
60%-70% Led by DG R&I plus all relevant DG's according to the specific Grand Challenges	Mission driven (Innovation in Industry/SME) Grand Challenges EU 2020 agenda	<i>European Innovation Partnerships With all MS Cooperation</i>	<i>European Innovation Partnerships With Groups of MS SME EIT</i>

Table: Possible architecture for the CSF

It should be noted that “curiosity driven research” also includes the support for New Emerging Technologies (FET) in addition to basic research.

All research activities are shown in matrix form: the horizontal columns reflect the origin of the leading initiative, the vertical columns indicate the character of research activities, either curiosity or mission driven. The resulting programmes are all managed through a system of Independent Agencies on the model described above.

A) Support of "Curiosity Driven Research" should be increased from current levels up to 40% to reach the long term goal of 50% of total EC funding for frontier high risk research and development.

- **The ERC** with its original IPR and grant portability is an example that can be extended from supporting basic science to **future emerging technologies (FET) in all fields, not only ICT**, without jeopardizing existing support for basic research.
- **Marie-Curie Grants** should be extended into new areas such as COFUND, doctorates in industry, temporary mobility of post-docs and middle-career scientists or engineers to/from a public laboratory or industrial firm, knowledge transfer partnerships, industrial host fellowships, lifelong learning. **Success rates should improve through greater funding.**
- **Research Infrastructures** require more financial EC support for open accessibility and new construction beyond the preparatory work done. Aside from e-infrastructures, funding should include very large **demonstrations or prototypes** to display key technologies.

Activities should be governed by Independent Agencies which are at arms length from the Commission on the model described above: one for the ERC acting under new financial regulations that allow for considerably more freedom of action (High risk/High gain choices). It is preferred that there is one overall agency with separate divisions supporting fundamental research, applied research, key enabling technologies, research infrastructures and mobility. The action « **Other enabling activities** » refers to what was previously under the "People and Capacities", such as International Cooperation, Development of Research Policies and Science in Society. Here, funding should be much lower than described under the three bullets above.

B) "Mission-Driven Research" spirit is a new approach.

At the core of this part of the CSF would be support of a limited number of jointly agreed major themes (Grand Challenges) along the lines of Europe 2020 (energy, climate change, etc.). Their strategic goals and priorities are politically defined by the European Parliament and Council. Their research goals are set by the EC, in collaboration with the related stakeholders. For each of these long term 'missions' (suggested names '**Research and Innovation Strategy for energy / climate change/**' etc.) an Agency type management structure, at arms-length from the EC and MS, would be set up to govern the implementation supported by pooling resources from the MS and the EC. Under each theme a full spectrum of available funding instruments/strategies, with or without competitive calls, would be used as decided by its management.

To date, EC support for technology development within the different themes of the Cooperation programme has allowed for progress in collaborative research across boundaries and among public and industrial laboratories on projects of limited size without strategic links between them. It would be unreasonable to stop this kind of action; therefore, even if the agreed missions should include a large majority of supported projects, a limited number of excellent proposals which could not fit in the

missions objectives (but could provide an innovative approach to generic technologies) could exceptionally be supported through the maintained Cooperation programme.

The EIT should be maintained, but it should become part of the CSF, while maintaining its links to education. Activities currently under the Competitiveness and Innovation Framework Programme (CIP) should be continued as an integral part of the CSF and extended to all actions supporting innovation in industry, including all those in the supply chain such as SMEs.