

EUROHORCs Reflection Paper on the future of EU Research and Innovation

Ahead of the consultation and preparation of the next generation of EU Research and Innovation programmes, EUROHORCs would like to take stock of the current developments and express its views on the basic principles that should govern EU initiatives and programmes in the future.

This paper is thus not a position paper on the Europe 2020 Flagship Initiative Innovation Union. Such a paper is currently in preparation and will present EUROHORCs' commentary on this very important document.

1. Rethinking the Role of Research and Innovation

Considering the overall role of Research and Innovation in Europe we would like to stress the following points:

Economic and Societal Changes.

In today's world, policy and strategy are driven by (i) financial uncertainties, (ii) a growth in the realisation of the importance of research for the recovery of the economy, (iii) an ambiguous attitude by the citizens to research that they believe will provide solutions to to-days challenges but that they do not fully understand or trust and (iv) the changes in the equilibrium between the different economic blocks in the world. Simultaneously, the expectations from early stage high-tech companies are higher, the linkage between academic research and the economy is questioned and the views on the cost-benefit ratio for investment in research vary. All of these conflicting perspectives have to be kept in mind when planning the future of RD&I for Europe in the ERA.

Attitudes and Expectations of the Young Generation.

Europe is confronted with a great loss: the brightest young people have lost interest in research as a career. At the same time, research is no longer expected to merely deliver knowledge. There is a growing need to convert results into measurable impacts. Previously mono-disciplinary entities must now look at the opportunities and challenges of convergence and interdisciplinarity including a greater appreciation and integration of the Social Sciences and Humanities. This development presents both challenges and opportunities. There is an urgent need to communicate the excitements and novelties of research to the younger generation, in particular, if society and the economy are to prosper harmoniously in Europe

National and European Policies.

The development of the European Research Area (ERA) suffers from an apparent inconsistency between declarations of common European goals and national policies. Often ministers and public servants who meet under the aegis of the Competitiveness Council agree and promote one collective view but act differently nationally. One such example is the agreement of the Barcelona (Lisbon) goal for investment in research followed by the failure to take any real actions towards achieving it.

Research organisations must work together more closely and effectively. They must speak with one voice in order to be best able to integrate the needs of the research communities into European research policy. It follows that a more integrated approach that respects the specific roles of the different players must be central to and characterise the ERA.

The Role of National Research Organisations.

The European association of the heads of research councils (EUROHORCs) represents the major national funding and research bodies in the EU and most Associated Countries. Numerically, EUROHORCs is responsible for awarding the majority of the competitive funding in Europe for Research, Development and Innovation. Although the focus of each Research Council is national, EUROHORCs, when acting collectively, look at the European Research Area (ERA) as a natural and necessary arena for our collective activities. The direction outlined by the European Commission (EC) is considered extremely important as it reflects the political/strategic direction of the EU. Each Member State has a significant and complementary role in achieving the outlined European goals. Various bilateral and multilateral co-operations schemes between national organisations are already in place and are being extended to help make the ERA successful.

EUROHORCs believes that it is timely and necessary to develop an improved level of dialogue with the European institutions and hope that our perspectives will add positively to the discussions and ultimately the proposals that will follow from the Innovation Union document and the upcoming FP8.

2. Challenges

Linkage between Research and Innovation.

The addition of innovation to the former DG Research asks for a careful reassessment of the relationship between frontier research and innovation. Innovation may take many forms and thus requires different support tools. In some sectors it is indeed sufficient to have a good knowledge of the market plus an entrepreneurial spark and economic benefit will follow through innovation. However, we are of the opinion that applications mostly follow from research (broadly defined). In many instances, potential innovation is already an essential decision-making criterion in peer-review processes even for earlier stage research proposals

Our preferred wording for this is '*research driven innovation*'. Otherwise the domino effect may lead from a statement of "not all innovation comes from research" to "research is not needed for any innovation". This would be disastrous for Europe's hopes

to have a high-tech economy. Therefore, we underline that the linkage between research and innovation should be stressed in all EC statements and that the essential nature of the linkage needs to be appreciated and resourced accordingly.

New Programmes for Innovation.

With regard to programmes that may be developed specifically for innovation, we suggest that existing selection processes may not be appropriate. If the outcome of a research project is a predefined product or process, concerns about state aid rules may surface, although recent developments in technology procurement regulations may provide solutions for some of these problems. It may, for such programmes, be useful to be informed by reflections and conclusions developed around the Joint Technology Initiatives (JTI) or the European Technology Platforms. Scaled down versions could focus on closer-to-market innovation projects. Implicit in this approach is the need to have co-funding by industry, clarity on the ownership of the intellectual property and selection processes that match the more applied goals of such programmes. Another viable option would be a mix of grants and debt financing (as is provided by the EIB-EU RSFF programme during FP7). Having *specifically designed programmes for innovation would clarify the goals* for different segments of the FP8 and avoid an excessive drift away from discovery through research and exploration that leads in an indirect way to economic and societal benefits.

Societal Grand Challenges.

Much discussion has taken place at EU level on the need to focus on Societal Grand Challenges (e.g. the Lund Declaration and the Innovation Union document). We welcome this as a timely development as we believe that *research should lead to knowledge, economic benefits and positive societal impacts*. Every analysis of the Grand Challenges points to the need for global co-operation. It needs to be understood that most problems will require many years before the solutions will be available and that contributions to the solutions may come from unexpected disciplinary fields. Thus, the *focus on Grand Challenges should not be confounded with the focus on a few disciplines*. Subtle actions that build on all strengths will be needed if the announced direction of focussing on Societal Challenges is not to become a hollow policy. *Specifically there is a need to have a new system of management that looks above individual projects and their quality and delivery*. A comprehensive analysis should be developed in order to integrate diverse approaches from exploratory basic research to applications into multi-faceted projects. This will contribute to milestones on the way towards the announced goals of the programmes and will answer the needs of society.

Problem-Oriented Research, Interdisciplinarity and Quality Assessment.

To address the Grand Challenges, an integrated science that focuses on multi- and interdisciplinary, problem-oriented approaches is needed. This will place extra demands on the project selection process and will require greater flexibility in monitoring quality and progress. It is important to remember that quality, and not applicability, has always been the key factor in the long-term strength and success of research. Therefore, *excellence should be the prime criterion in the selection of research projects irrespective of whether it is basic or applied*.

3. Lines of Action and Contributions from National Organisations

In order to meet the challenges sketched above, the ERA needs the adequate set of framework conditions, players and tools. Below, several relevant aspects that specifically require cooperation between the EC and national organisations are listed.

Other aspects not mentioned here are the specific tasks the EC or the national organisations working to their individual mandates. These need to be respected while recognising that the ERA will only be dynamic if all parties contribute to this goal. Overall, we would like to suggest that an approach integrating the EU and national initiatives and contributions should prevail in the ERA and this reflection paper is written with this in mind.

A. Career Opportunities for Young Researchers.

Training through research and the provision of career opportunities for young researchers, who are the base of every research system, yield ample room for national as well as European funding schemes. They vary in their objectives, architecture and ambition. The Marie Curie (People) Programme of the EU concentrates on mobility and excellence. The programme has achieved a high regard within the scientific community of Europe. The *need to continue the Marie Curie Programme* (even if now under the responsibility of a different DG) and to appreciate its core rationale remains essential. Excellence has to remain central to its mission and we would like to suggest that this might best be achieved if *there was a closer link between the ERC and the Marie Curie programme. This would stress the fact that excellence is the driver for training in Europe as well as for research output.* In addition to the Marie Curie Programme, the national organisations must continue their own career support programmes and resist any tendency to replace them by EU funded actions. This is a general point that can best be delivered by the stringent monitoring of research and development by national governmental funds.

B. Project Funding for Individual Researchers.

Traditionally, the funding of projects by individual researchers is the backbone of most national funding agencies. Next to responsive-mode research, researcher driven research is of utmost importance. With the establishment of the European Research Council (ERC), the EU has become a strong player in this area as well. As for the career programmes, national and European agencies can complement each other. In keeping with earlier comments we remain enthusiastic supporters of the ERC. It epitomises the commitment of the EC to excellence and in a very short period has captured the imagination of all researchers. The ERC success draws upon the earlier and on-going investments made at national level. It is therefore crucial that further developments on both sides aim at complementing each other while recognizing that all research is funded from a mixture of sources. This complementarity bolsters the success of ERC applicants and could be regarded as a model for co-operation between national and EC programmes.

One point that is sometimes overlooked is the fact that the principles that guide the ERC are those that also guide the processes in most research councils. This has been the case for many years prior to the establishment of the ERC. The two lessons that can be learnt from the ERC are (1) the *portability of grants across national borders* and (2) that *juste retour* does not characterise this particular European programme. With regard to point 1, national agencies have made progress by introducing bilateral and multilateral agreements like ‘Money-Follows-Researcher’ and ‘Money-Follows-Cooperation Line’. EUROHORCs considers such schemes extremely useful to complement the effort of the EU and engages in promoting and expanding them. Obviously, *juste retour* should not be a specific problem at a national level but this can be assured only if excellence remains the basis for funding decisions both locally and at European level.

Appreciation of the experience of the research councils would be timely and *joint consultations between the ERC and EUROHORCs* on topics such as peer review, the handling of ethical questions, the implementation of more extensive Open Access publication, etc. would be welcome. After all, the best practices in Europe, whether found in the ERC or in national research councils, need to be widely disseminated and integrated into local habits. This is most likely to occur if national and European interest groups work together.

C. Multinational Cooperation and Joint Programming Initiative.

On a higher level, we observe the need of cooperation schemes from small networks to large multinational programmes. Again, this domain represents an ideal field for both national agencies and the EU. *On the small end of cooperative schemes, the national agencies should take the lead* since they are more flexible to explore new instruments. EUROHORCs promotes attempts such as the newly introduced ‘Lead Agency Scheme’ that involves a small number of countries that agree to work together and devolve responsibility of selection to one partner with financing remaining at the national level.

On the large end of cooperation schemes and related to the Grand Challenges, we note, with a mixture of optimism and concern, the evolution of the Joint Programming Initiative (JPI). The core concept of JPI is essential in today’s world. It has the potential to bring the collective research efforts in the EU together in a well co-ordinated manner to address important areas. But the initial organic growth of this through discussions between committed Research Councils and Organisations has been replaced by a more centralised approach. We urge a much greater direct engagement with the Research Councils through EUROHORCs to ensure a greater alignment of the JPI with national programmes, a heightened appreciation of the granularity of research projects that will contribute to realistic time lines for important research goals and the establishment of funding mechanisms that respect the autonomy of research councils. The EC is familiar with the difficulty of large consortia (the Networks of Excellence was an example that was not assessed favourably) and the JPIs could become another example of such difficulties. Currently, there remains a disturbing lack of clarity about the financial modalities: Will money be mandated from the national research council budgets? Will there be a system that pools funds prior to allocation? What scale of funds are really needed to address any of the questions selected? Etc. Equally, there is a lack of clarity

regarding the processes that will be associated with joint programming. This includes processes such as selection and monitoring progress. We suggest *that this is a great opportunity for EUROHORCs and the Commission to work together to ensure that the action is jointly programmed in a profound and practical manner.*

D. Infrastructure.

Infrastructures are recognised as a pillar of the ERA and represent another sector where joint action between EUROHORCs members and the EC is vital to sustain Europe's world leading facility base. Successive Framework Programmes have helped build vibrant European networks in many research sectors. The challenge now is to address the updating and transnational use of the current stock and the development of new infrastructures through the ESFRI Roadmap process. The demand for increasing sophistication in the research plans of those that seek support nationally and in the current Framework Programmes shows that there are major opportunities to reap European added value from the investments made in infrastructures for research. However, there remain many gaps that have been identified, in particular by the ESFRI process. *Real rewards could be reaped from stimulating actions leading towards the realisation of the ESFRI Roadmap projects.* Such facilities would have an impact on the whole community of researchers, both academic and industrial. Access programmes are but one component that needs to be addressed. New infrastructures (that have been identified by ESFRI) are also needed. National budgets are currently under strain in most EU countries and hence these action receive a low priority. Therefore, we suggest that FP8 should include an *expanded budget for major research infrastructures* to stimulate greater availability and use of such facilities on a multinational basis.

E. Mobility.

It is self-evident that there is a need for great mobility of researchers within Europe if the ERA is to become a reality. While we reiterate our concern at the slow pace towards solving transnational problems regarding social benefits, transferability of accumulated pension rights etc. we propose that it is time for a new action. Our experience is that most researchers have a plethora of research contacts in other countries. A lot of informal exchange of materials and concepts takes place. Some of these exchanges get formalised in FP joint projects or Marie Curie transfers of personnel. For many reasons (and here gender is a serious consideration) long term movements are not always practical. *We propose that the Marie Curie programme introduce short term and more flexible fellowships to support research visits* and that this could have a galvanising effect on the strengthening of the ERA. The experience of other research councils and organisations that promote actions of this nature could be important to ensure that there is not a disproportionate administrative load associated with such a programme.

F. Framework Conditions.

There are other aspects that are relevant to achieving success. These include (i) bringing to a conclusion the discussions on the establishment of a single European Patent, (ii) improving mobility conditions for researchers to allow a real ERA to develop (see above), (iii) encouraging more networking between academics and business, (iv) securing

adequate supplies of seed capital, venture capital and other funding (such as the engagement of the EIB with the EU in the RSFF) and (v) developing meaningful criteria to measure and rank institutes and their outputs. Again we look forward to working with the Commission on all of these topics and to enrich the discussions with the benefit of our diverse national perspectives.

G. Cohesion.

As EUROHORCs include representatives from a very wide collection of European countries, we are sensitive to the need for all to be engaged in making the ERA a success. Achieving excellence and inclusivity simultaneously is a complex challenge. We would like to point to the *possibilities afforded through Structural and Cohesion funds that should be increasingly directed towards strengthening the science and research base in the less well developed corners of the EU*. We hope that the efforts of the Commission to increase the use of these will be maintained. Accessing these funds, may even provide a partial solution to resolving the deficits in the area of infrastructure referred to above.

We believe that the outcome of the excellence based awards made by the ERC are a very good monitor of progress towards cohesion in the ERA. Currently, the outcomes of selection point to a very limited number of locations where excellence is found. We believe in the concept of excellence being found everywhere, but are aware that in research, as in life generally, the context and support that are available have a real influence on the performance of individuals. Where infrastructure is weak, research funding has been inadequate for many years or research is not a strong component of third level education, there are disadvantages that are difficult to overcome. *Imaginative steps will have to be taken to ensure that scientists everywhere in the ERA become competitive*. Members of EUROHORCs will be willing partners in working towards that goal and in providing insights from the national experiences that might lead to a fully inclusive ERA that remains unambiguously based on the principle of excellence.

4. Conclusion

There are new paradigms in Europe that are addressed in this paper. Research has moved from a peripheral to a central position with its importance pervasive in all sectors. The need for Europe to be the most competitive research community defines an absolute need for the aspirations of Europe 2020 and the ERA. Science and Engineering are key factors for tackling the Societal Grand Challenges. For these and many other reasons EUROHORCs accepts its responsibility to be active, engaged and collaborative with the Commission and among its member organisations. We present ourselves as partners to the Commission as this recognises the realities of ERA. This paper outlines some of our thoughts on a range of related topics. We remain available to intensify discussions on these in the coming months.

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