

Input to the European Commission Consultation

March 8, 2018

In this contribution, ISE has chosen to cover only a few essential themes; they are developed below. Overall, one threat to the effectiveness of EU research programmes, and to the building of a European-wide knowledge society, is the insufficient level of national budgets, whether for research funding or for research positions. As a consequence, EU programmes are oversubscribed and researchers are insecure about their future -- both factors which are known to have negative effects. We hope that the next framework programme, in addition to having an increased budget, will include some leveraging tools on national research policies.

1 - Excellent science

Fundamental science has always been a critical part of the origin of major progress in applied science, providing long term benefits to society. Without fundamental research, there would be no new materials, no new medicines, and no new electronic devices. But one shouldn't reverse the time-proven order of things: the subtlety of nature often escapes human understanding, which makes it difficult, and often impossible to steer basic research for the purpose of specific applications.

Indeed, funding science based only on market demands and new trends would limit science to short term needs and would prevent unforeseeable advances and breakthroughs. Fundamental science is essential to the future of society.

The **European Research Council** is one of the successes of both FP7 and H2020. Its focus on excellent research at the frontiers of understanding have attracted many top researchers in all fields worldwide.

Funding of the ERC needs to be continued and expanded. One of the current criticisms of the ERC is that it is oversubscribed. This leads to frustration among the researchers applying for grants. The extreme competition in order to receive funding eliminates risky proposals almost automatically, which contradicts the ERC's main goal to fund "frontier research", where there is by definition some risk. This issue needs to be addressed by an increased total budget, by reassessing the allocation of resources, and by technical measures, as the 2-stage proposal process — provided, however, that the chance of success in the second stage be reasonable.

The **Marie Skłodowska-Curie actions** (MSCA) represent the second part of the excellence pillar in H2020. The scheme should aim to attain the following goals in FP9:

- (1) Increase success rate of proposals, through increased funding or novel evaluation procedures. With the current setup, a success rate of less than 10% indicates that many excellent applications are not funded, thus wasting valuable projects.
- (2) Develop new schemes to widen participation inside the EU R&I framework programme. The interim evaluation of Horizon 2020 has highlighted a gap in the participation and use of resources, which is still associated with complex geopolitical imbalances.
- (3) Improve the connection to the private sector. Develop new grant schemes where the

participation of the private sector is more flexible and allows the fellow to adapt her/his own career path during the fellowship period.

2 - Global challenges / collaborative basic research

Strengthening collaborative basic research in relation to applied research, demonstration and innovation actions will help to reinforce the research and innovation cycle addressing global challenges. Work by the Initiative for Science in Europe (ISE; *R1 and 2*), the League of European Research Universities (LERU; *R3*) and Science Europe (*R4*) suggest that due to the increasing focus on higher Technology Readiness Levels (TRLs), the Societal Challenges aspect of Horizon 2020 misses out not only on the potential benefits from projects that include, or focus on, basic research, but also on linking basic research to applied solutions. It thus hinders ground-breaking solutions for current and future challenges. Compared with FP6 and FP7, there is a steady increase of support for applied research and demonstration actions and a steep increase of support for innovation actions. However, support for basic research has dropped dramatically, especially from FP7 to Horizon 2020 (*R2*).

This could be overcome by:

Provisioning funding that addresses Societal Challenges through encouraging collaborative basic research as focus or intrinsic component of research and innovation projects.

Encourage more cost-effective ERA-NETs which support fundamental research and its translation into applications, including transdisciplinary approaches, to broaden the scope of the European Research Area Networks and their ability to address interlinking and related goals through basic as well as applied research.

Both approaches will widen participation, including from underrepresented countries (EU13; *R5*), increase mobilisation of national and EU resources and contribute to resolving gaps in collaborative research. This will create a translational bridge between the scientific excellence and the industrial leadership pillars.

Increased funding for basic and strategic research will also meet the needs of private companies, who might have in-house capacity for applied research and innovation, but lack motivation, time and funding to do the explorative research which lays the ground for innovation activities.

3 - Open science

Open Science is still very much an idea and a framing in progress. Although research communities have long been open with others in their communities in many ways, the idea to codify this and to have research results (scoped as broadly as possible) available on demand, to anyone who wants them, anywhere in the world, is still undergoing changes almost on a daily basis.

How the Commission and research communities themselves deal with these changes and how they become reified over the last part of H2020 and into the next Framework will determine in large part how research is done and how society will benefit for at least the next 15 years. Clearly, through the Open Science Policy Platform (*R5*) and other policy work (*R6*) the Commission has shown leadership on this issue and this is greatly appreciated by research communities.

A key issue for Open Science is the very practical one of how to make openness a reality. In short, these cannot be unfunded mandates. Substantively, “open” does not (necessarily) mean “everything”, but certainly should mean minimally “everything useful”. But there needs as well to be some kind of quality control.

Thus, funding for open access, open data, mechanisms for sharing, tools for sharing, etc. should be in the first instance baked into research budgets. These items are not aside from research, they are the research itself. Further, there should be sources of money to help assure quality control. This may mean adding money to research grants themselves, but it more likely means giving money to organizations that can help to assure the quality of results that will be openly available (for example to organizations or service providers that can help assure that published figures are legitimate, but also to providers handling data). Data providers must not only store the data, but add value so those data can be used under FAIR principles. The Commission has already committed to an open publishing platform for its grantees. This and similar experiments of new models of publishing are important. Their development should be evaluated in the coming years by all stakeholders.

We want to push the concept of “open” even a little further by intersecting “open science” with “open borders”. Beside the scientific value of open availability of papers, text, data, knowledge, etc. by those who have created them, Open Science allows those who have no possibilities, or limited possibilities, to contribute to the knowledge base, to benefit from it and make it easier for them to be contributors as well; this includes citizens science. It is important, both for European integration and the overall expansion of knowledge, that a special attention should be given to researchers in countries and regions where inadequate equipment, insufficient access to documentation, and lack of travel funds tend to isolate them from the larger scientific community. Mechanisms for inclusiveness of all researchers within and outside Europe are very important, and certainly need attention from the Commission.

Moreover, Open Science is a major avenue for the improvement of public understanding of science and public engagement with science.

4 - Interdisciplinarity

In line with H2020, we support the idea that the next framework programme give particular attention to *interdisciplinarity*. To give it full force, we consider that some issues should be taken into account in order to be sure that the interdisciplinary approach will fit and fully respond to the different societal challenges identified in the work programmes. Research topics ranging from *health, energy, environment, migration, education, security* - to name only a few - need to be interdisciplinary.

But interdisciplinarity has never been an easy endeavour, as has been proved by several research studies; frequently the partnerships ended in failure as a result of disciplines that are too distant, or researchers who are not trained to work in such settings. For FP9, to give more force to the interdisciplinarity issue that is very often included in the different calls, we suggest taking into consideration the following points:

- Develop and explain clearly the need for interdisciplinarity at the level of evaluation criteria but also in the work programmes with clear references to the benefits of interdisciplinary approaches and impact at the societal level.

- Include at all stages of the programme (preparation, evaluation, steering committee etc.) representatives of all relevant fields, including the social sciences and humanities; taking into consideration the SSH dimension should not be an afterthought to embellish programmes!
- Design starting from the “best practices” of interdisciplinary projects a handbook concerning the practices of interdisciplinary research at a theoretical but also methodological level.

5 - Horizontal issues to improve the impact of FP9

There is currently a major dilemma in the European research area. In the past, there was a clear “division of labour”, between nationally-oriented projects via national funding and transnational European projects that had access to funding by the framework programmes.

Meanwhile, at least in part due to the crisis, some national programs, especially in the Southern part of Europe were drastically reduced resulting in an enhanced number of proposals submitted for the European framework programmes. The success rates for European projects have decayed dramatically, at least for most of the topics addressed.

This means that it is more and more difficult to collaborate within Europe because success rates for the classical European projects are in many cases too low, and national programmes are seldom compatible. The only possibility that always works is subcontracting but in most of these cases, one party will automatically lose its intellectual property rights.

There are possibilities to organise transnational collaboration via the ERAnet scheme, and the new opportunities for combining structural funds provide some options. To give these schemes a greater impact, the administrative obstacles must be reduced.

Finally, for the most simple case of a scientific collaboration within Europe, e.g. a bi- or trilateral project where every party pays its own cost, there is no unified legal framework available in Europe. Therefore, a unified legal framework needs urgently to be defined to regulate details, such as:

- rules of participation
- ownership of IP
- export control to third countries
- exchange of staff
- insurances
- roles of third countries
- tax regimes
- provisions on the technology readiness levels addressed.

ISE believes that addressing these difficult issues would have a very significant impact. To investigate such schemes, a dedicated CSA (Cooperation and Support Action) within H2020, for example, could provide the required input.

We also hope that the responsible European bodies could lay down these principles and rules in the corresponding “Council Regulations” establishing FP9 to ensure relevance and legal authority right from the beginning.

6 - Working conditions for researchers

Overall, the success of European research hinges on its researchers. FP9 must contribute to address two major issues:

- Facilitate long-term financial stability for mobile researchers; free movement introduces financial challenges for mobile researchers, given that taxation and pension systems are largely based on national legislation. The resulting uncertainty on financial stability, hinders mobility and causes financial loss for mobile researchers.
- The stagnating research funding landscape of the past decade, the increasing inflow of researchers, and the rigid structure of research institutions have led to a hyper-competitive environment, which has negative effects on long-term career perspectives for researchers. Their talent and knowledge could be invested in solving Europe's challenges and thus have a long-term impact on European science and society. Greater impact can be granted if and only if there is a healthy job market for researchers. Europe should develop policies and invest money to ensure wider options for researchers, and better security for those who remain in research institutions.

References and links

- R1: [ISE and EuroScience offer to engage in dialogue with the EC on the H2020 interim evaluation](#), at a meeting with Commissioner Moedas in Manchester, 26.7.2016
- R2: ISE: [Conclusions from the ISE event "Is there a funding gap on collaborative basic research in Europe?"](#) which was held on 7 April 2016 in Brussels, 14.4.2016
- R3: LERU – [Beyond the Horizon – What LERU wants from FP9](#), 20.6.2017
- R4: Science Europe – [The Framework Programme that Europe needs](#), October 2016 & [Key principles to shape the future Framework Programme](#)
- R5: EC (EU Science Hub): EU13 participation in Horizon 2020, 20.3.2017: <https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/collaboration-and-networks-eu13-participation-international-science>
- R6: European Open Science Policy Platform <https://ec.europa.eu/research/openscience/index.cfm?pg=open-science-policy-platform>
- R7: Europe's Future: Open Science, Open Innovation, Open to the World <http://ec.europa.eu/research/index.cfm?&na=na-150517&pg=newsalert&year=2017>

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About Initiative for Science in Europe

The Initiative for Science in Europe (ISE) is an independent platform of European learned societies and scientific organizations whose aim is to promote mechanisms to support all fields of science at a European level, involve scientists in the design and implementation of European science policies, and to advocate strong independent scientific advice in European policy making. It is a registered association base in Strasbourg. More than 20 European learned societies and European professional science & technology organisations are full members or observers of ISE.