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Finnish Research Council - Academy of Finland: Position paper on FP9

Summary

To maintain and strengthen Europe's position as a global leader in science and technology, and thus ensure the prosperity and welfare of European citizens, the resources dedicated for the next framework programme for research and innovation must be set at a higher level than at present. Making excellent research and innovation a budget priority is the best possible investment the European Union can make in its future. It is critically important that this investment creates European added value and, furthermore, has wide impact at local, national, European and global levels.

In this position paper, the Academy of Finland wishes to draw the European Commission's attention especially to the importance of excellence, impact, mission-oriented research, open science and the applicants' perspective. Furthermore, we suggest two new measures: pooling ongoing research to increase the knowledge base for the missions, and a specific instrument to support cooperation between high- and low-performing countries.

Excellence in curiosity-driven research is essential for impact and innovations

Excellent scientific research has a significant role in enhancing knowledge base to create welfare and prosperity for Europe and the entire global community. Breakthroughs and impact in science and technology cannot be achieved without long-term investments in curiosity-driven research. Some of the biggest innovations of the 21st century have been based on decades of frontier research that became crucial in finding solutions to present-day problems and challenges. For instance, the world most likely still would have no Ebola vaccine, had it not been for decades of basic research that made it possible to develop a vaccine in such a rapid pace, nor would there be WiFi without long-term research into radio astronomy.

- The European Research Council (ERC) has a critical role in **advancing excellent research** in Europe; its funding must therefore be significantly increased.
- There is a continued need for **support for researcher mobility**, which is fundamental both for fostering excellent researchers with wide networks and for the renewal of science. Marie Skłodowska-Curie actions have proven to be an efficient means to achieve this, and they should be at the very least maintained at current level.
- **High-quality research infrastructures** are vital for enabling frontier research and innovations in a broad range of scientific fields, so the EU should continue to facilitate and fund the co-construction and use of infrastructures to decrease unnecessary fragmentation and support interdisciplinary research. Infrastructures also have an important role in fostering scientific collaboration among European researchers and innovators.

The impact of research is underpinned by excellence and enhanced by engagement with society

Excellence is the backbone of truly impactful research and innovation. Significant scientific breakthroughs and societal impact are achievable only if the EU funds high-risk, high-gain research, and allows and accepts the possibility of failure in them. To cope with highly complex and multidimensional grand societal challenges, it is fundamentally important to ensure a strong knowledge base and develop long-term solutions. It is also vital to recognise that societal impact comes in many forms, in many different channels and timeframes.

In the long-term perspective, high-quality basic education and a high-quality higher education system, both supported by excellent research, are critical for Europe to foster creative talent and skilled citizens who are not only able to utilise the advances of science and technology but also to participate in defining and carrying out the European research and innovation agenda. The engagement of societal stakeholders, including citizens, has

considerable potential in increasing the quality, relevance and impact of research, and the framework programme has a central role in developing the mechanisms, processes and culture needed for this. Novel approaches are needed to build up strong ecosystems supporting the impact of research underpinned by excellence.

- The future framework programme needs to adopt a **broad view of impact**. In addition to having a significant role as a source of prosperity and wellbeing, science builds our world-view and knowledge, supports practice development and offers a well-founded basis for decision making. Research can also produce unexpected impacts. The framework programme also needs to consider the varying timeframes and channels of impact.
- The **interaction** of researchers from different disciplines, policy-makers, the public sector and industry as well as citizens enhances the societal impact of research. The whole European research and innovation community needs to become **engaged** in developing ways in which the various stakeholders could participate in a transparent and structured way in the design of research agendas as well as in the actual research and innovation processes.
- A **mission-oriented approach**, as suggested by the independent High-Level Group, could provide a means for better communicating the benefits of the framework programme and capturing the public's imagination and interest. A restricted number of carefully defined missions would better support the wider aim of solving European and global challenges such as climate change, food security or the resilience of European society. In drafting these missions, the UN Sustainable Development Goals should be taken into account.
- To achieve added value, there should be a specific budget to **pool ongoing research already funded** in any of the three pillars of FP9 or by Member States to increase the knowledge base in the missions.
- Addressing societal challenges, as well as achieving the more concretely defined missions, requires top-quality transdisciplinary research. The social sciences and humanities should not only be fully integrated into the missions but also allowed to initiate and lead them.

Open science enhances the quality and impact of research

Open science in its many forms is an integral part of good research practice and transparency in public and private research-performing organisations as well as funders and research policy decision-makers. Open research and innovation enables high-quality research and enhances societal impact, thus providing a strong basis for breakthroughs in science and society.

To promote open science, the Academy of Finland requires that Academy-funded projects commit to open access publishing and urges projects to make their research data and methods freely available, with due consideration of research ethics. Therefore, we fully support the European Commission in its open science efforts and urge it go even further by ensuring that the next framework programme fully integrates the principles of open science.

- The European Commission should continue to support **open science** in all research and innovation activities. The EU has a central role in creating and supporting optimal procedures for making data available, storing and managing data and ensuring the usability of data. The use of standardised metadata, leading to easy access and interoperability, quality-controlled open access data and long-term maintenance of high-quality repositories, guarantees full use and impact of open access data.
- The principles of open science (e.g. publishing results and data, open research processes) must also be considered in making funding decisions. The next framework programme should **reward researchers** who actively promote open science practices.
- The Commission has strong leverage in promoting **open access publishing** and it should be more decisive in using that leverage. Close European cooperation with Member States, national stakeholders, including research and innovation funders, is essential. True open access to all publications demands high-quality open access publishing with open peer-review based on real costs.

International cooperation and mobility are needed for excellence and to respond to global challenges

Science transcends national borders. EU-funded research must therefore be conducted also in wide collaboration with non-European researchers and experts. Strategic collaboration with countries outside the EU is essential for achieving and maintaining Europe's leadership in science and innovation and for tackling major global challenges.

- Both the European Research Council (ERC) grants and Marie Skłodowska-Curie actions have been instrumental in attracting **excellent scientists** to Europe and in helping European researchers join global networks more efficiently than ever before. Therefore, it is crucial that both instruments continue in FP9 and that more budget is allocated especially to the ERC.
- In Horizon 2020, **international collaboration** between third countries and the European Commission has been problematic due to participation rules and contractual difficulties. For FP9, this issue must be solved and the current co-funding mechanism developed in a more transparent direction.
- In specified areas, global collaboration can be better advanced through **public-to-public partnership (P2P) initiatives**, such as JPIs and ERA-NETs, which have proven to be attractive to third countries thanks to the easy accessibility of the networks and their smaller research consortia.

The framework programme must attract the best applicants

To maintain the quality of EU-funded research projects at the highest level, the framework programme must be able to attract the best possible applicants. Therefore, excellence must remain the key criterion. In addition, further simplification of participation and funding rules is still needed and the problems of oversubscription and the innovation divide need to be tackled.

- The **three-pillar approach** adopted in Horizon 2020 has proved to be balanced and functional and should be maintained in the next framework programme.
- **Excellence** must be maintained as the guiding principle throughout the framework programme. The modest performance of some Member States is a Europe-wide issue that should be dealt with, but instituting geographical quotas is not the answer. Instead, FP9 needs to support new ways of **bringing together top-level researchers from well-performing countries and lower-performing countries**. For instance, ongoing EU projects could receive additional funding for researcher exchange and joint events with research groups from lower-performing regions. **Such cooperation would enable bridge building without compromising the quality of research**. Also, ESFRI infrastructures should have a central role in fostering cooperation between lower-performing regions and the rest of Europe.
- The problem of **oversubscription** should be tackled to keep success rates at an acceptable level (e.g. 20%). A two-stage application procedure should be applied as often as possible.
- The upcoming programme should also include **calls for smaller consortia**, with more focused topics, capable of conducting top-quality research with potential for wide impact and added value at European level.

The Academy of Finland – the Research Council of Finland – promotes high-quality, high-impact research as well as the renewal and internationalisation of Finnish science. In 2016, the Academy of Finland's research funding budget was 426 million euros. Read more at www.aka.fi/en.