SUBJECT: Comments from the Academy of Finland, 18 June 2010. EU 8th Framework Programme (2014–2020)

“Unless we get smarter, we’ll get poorer”¹ – Overall objective for policy and strategy

According to Article 129 of the Treaty of Lisbon², “[t]he Union shall have the objective of strengthening its scientific and technological bases by achieving a European research area in which researchers, scientific knowledge and technology circulate freely, and encouraging it to become more competitive, including in its industry, while promoting all the research activities deemed necessary by virtue of other Chapters of the Treaties.”

The Eighth Framework Programme for Research and Technological Development (FP8) should be premised on improving excellence across Europe. It should be a resource aimed at implementing the objectives set in both the Lisbon strategy³ and the Europe 2020 strategy, “A strategy for smart, sustainable and inclusive growth”⁴. The Framework Programme is the EU’s main instrument for funding research and development in Europe and the most tangible manifestation of European R&D collaboration. As per the Treaty of Lisbon, the Framework Programme shall be implemented in keeping with the goals of the European Research Area (ERA), thereby supporting its creation.

The Union is in the process of reviewing and reformulating its financial framework. Looking ahead, there are signs of increasing emphasis being attached to those policy instruments that support European growth and development. The Framework Programme is one such instrument.

It seems unlikely that an ageing Europe will be able to maintain its competitive edge in the global economy by relying on a good supply of resources and cheap labour. Our only chance is to achieve and maintain excellence on a broad front, in science, research, technology and innovation – across all sectors of society.

Europe’s biggest competitors are North America and Asia. While the US and China have substantially increased their R&D funding over the last ten years⁵, the EU has stood still (R&D expenditure remains at slightly less than 1.9% of GDP).⁶ It seems clear that the US, for instance, views science, research, technology and innovation as key pillars of society with potential to provide solutions to future challenges. President Obama, the United States Congress and the House of Representatives have all expressed their strong support for increased R&D spending⁷.

¹ “Unless we get smarter, we’ll get poorer”, Royal Society, The Scientific Century – securing our future prosperity. 2010
² http://europa.eu/lisbon_treaty/index_fi.htm
⁴ http://ec.europa.eu/eu2020/index_en.htm
⁵ www.nsf.gov/statistics/seind10/c0/c0s2.htm
⁷ The White House Blog 18 Jan 2010: “Similarly, in his April 2009 speech at the National Academy of Sciences and on several occasions since then, President Obama set a goal for the United States to invest 3 percent of its Gross
The 8th Framework Programme is Europe’s chance to catch up with the US and China, at least to some extent. However, the **FP budget should be substantially increased**. The budget could be double the current level of EUR 7–8 billion a year. The FP7 budget is back-loaded, making the annual funding between 2011 and 2013 close to EUR 10 billion. But this still is not enough for FP8. What we need is a noticeable increase, and decisive actions by Europe. An increase in funding is also necessary to ensure the success of the Europe 2020 strategy.

**The main principles: Excellence, relevance and European added value**

Framework Programmes should generate **genuine European added value**. This fundamental principle must be given particular attention in FP8, much more so than in previous Framework Programmes. The time is ripe to cast aside any introversion and instead venture beyond national interests. The core values embedded in FP7 – the quality and innovativeness of research – should also be the guiding principles in FP8.

A key aspect in shaping the new Framework Programme is to find **the right balance between continuity and change**, while not forgetting about new funding perspectives. Multilateral collaboration – collaborative projects between different countries and different actors – should continue to be at the heart of FP thinking.

Research within FP8 should be **a complement to national research activities**. Its focus should be on promoting projects that cannot be implemented at a national level and that, by pooling resources and creating synergies, serve joint European interests.

Excellence and high quality should be the deciding criteria for the selection of projects to be funded. This should be applied as a dedicated, cross-cutting principle underpinning the Framework Programme as a whole. For **FP8, there can be no compromise when it comes to quality**.

FP8 should be premised on providing opportunities for participation to all R&D actors, without compromising on quality criteria. Cooperation between different actors is essential for success in the long run and for the application of research results in Europe.

The Academy of Finland sees the goal of cohesion and the Structural Funds as an important part of the EU’s activities. The **role of the Structural Funds in supporting research-capacity building should be further expanded. However, cohesion must not be mixed in with the Framework Programme**, where quality and excellence are the deciding criteria for funding. The Structural Funds and other similar forms of support should be used to provide funding to the least developed regions in and outside Europe, while FP funding

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Domestic Product (GDP) on R&D. Chapter 4 of *Indicators* tells us that in 2007 the U.S. R&D/GDP ratio was 2.68 percent, with roughly one-third of that investment coming from Federal funding and two-thirds from the private sector, and that the U.S. ranks eighth in the world in this measure among major economies, some of whom—such as Japan and South Korea—are already investing in excess of 3 percent.”
should be reserved for Europe’s best talents. In science, research and innovation, the bottom line is ensuring the best possible quality.

**The rules for participation need to be simplified.** In their current form, the rules for participation and the practical duties pertaining to EU funding place us at a competitive disadvantage. As a whole, the European research funding process should be one based on transparency and trust. The Commission has indeed taken steps towards simplification, but its simplification measures need strong support. In the area of RDI, the EU cannot afford to inch along with “slow movers”, but has to base its funding on mutual trust and the best international standards.

**The ideal structure of FP8**

The Academy of Finland considers the current structure of specific programmes to be very clear and viable. In FP8, the number of specific programmes should be limited to a minimum, to no more than four or five. It is essential to find a balance between policy-driven (top-down) and science-driven (bottom-up) research.

The Academy also recognises the importance of facilitating a certain degree of continuity. Just as society transforms and challenges change, so too must the Framework Programme – the single most important instrument in implementing a European Research Area – be able to adapt to meet the challenges that lie ahead.

The specific programmes of FP7 – and the sub-programmes within these – have been very successful. ‘Health’ is one of the success stories, since it is consistently organised and has been provided with sufficient resources. As a major theme under FP7, health comprises three complementary sub-themes, which cover topics ranging from basic health research through clinical applications to the entire healthcare system. By contrast, the theme ‘Socio-economic Sciences and Humanities’ is fairly resource-limited, which has led to very poor success rates and frustration among researchers in fields that are important to Finland as well. As the challenges facing society and the environment grow more complex, there appears a need for more comprehensive approaches than the thematic priorities under specific programmes. To some extent, this issue has already been addressed in FP7, with joint cross-thematic calls. The specific programme on ‘Cooperation’ has had to cope with two problems in particular: calls have been too strictly targeted thematically and the expected level of SME participation has not been reached. In its current form, the Framework Programme may face difficulties in trying to meet major societal challenges. It would be crucial to reach a “critical mass” of programmes to be able to pool resources and thereby solve research problems.

The current specific programme on ‘Cooperation’, which is sub-divided into distinct themes, should be replaced by a specific programme that responds to grand global challenges. This specific programme on ‘Grand Challenges’ would facilitate the formation of a wide variety of projects (see Implementation instruments) in which many different actors – national programmes, SMEs and industry, universities and research institutes, and perhaps even individual researchers – could participate. Applicants should be given

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8 [www.trust-researchers.eu](http://www.trust-researchers.eu)
“carte blanche” to choose the funding instruments best suited for their particular research plans, regardless of whether these instruments are within the STREP, IP, ERA-NET+, FET or some other scheme.

The specific programmes ‘Ideas’ and ‘People’ have earned their place in the Framework Programme and the Academy of Finland wants to further highlight their importance and their contribution to generating European added value. The significance of individual researchers to the innovation system cannot be overemphasised. Although still in a pioneering and nascent stage, the European Research Council (ERC) has already heavily influenced national research structures and funding schemes, as well as the strategies of individual universities. Free scientific research has an undeniable, albeit indirect, effect on financial competitiveness, growth and welfare at large. Scientific research can help boost and improve the human potential, which is crucial in responding to the challenges that lie ahead. The challenges facing society and the problems dealt with in research are becoming more and more complex, which will require multidisciplinary approaches. Science is a distinctive method with which to produce and experiment with new knowledge; a process that is constantly changing while demanding increasingly greater efforts from its performers. Even scientific research itself is under a great deal of pressure to perform. It is here that the ERC has the potential to rise to the challenge, thanks to the effective investigator-driven approach it has adopted. It is important that the Scientific Council continue to be the ERC’s highest decision-making body.

The Academy of Finland wants to stress the importance of the theme ‘Research Infrastructures’ (RIs), which warrants a specific programme of its own. Dedicating a separate specific programme to RIs is essential in raising their visibility and reaching a sufficient level of political commitment. RIs are the most important representation of European added value. Infrastructure projects shall be linked to the different stages of RIs. Planning, establishing, building and implementing RIs are often very great undertakings, which pose challenges that cannot be met by individual Member States. RI investments should be examined in a larger context – not merely concentrating on one specific field of research. This requires a collaboration between the EU Commission, ESFRI (European Strategy Forum on Research Infrastructures) and Member States.

10 http://ec.europa.eu/research/mariecurieactions/docs/inspiring_researchers_en.pdf. Thus far, a total of 10,000 researchers have received funding through Marie Curie Initial Training Networks (ITN) in both the public and private sectors; 22,000 different mobility grants have been awarded to senior researchers (incl. national co-funding); 6,000 grants have been awarded for mobility between industry and the public sector; and 16,000 projects have been funded within the scope of an international dimension. Marie Curie funding has benefited high-quality research environments (50% of the individual funding has been granted to European universities included in the Shanghai ranking of top academic institutions, but in particular to CNRS, the Max Planck Society and CSIC).


12 http://erc.europa.eu/pdf/ERC_rapport2009_091001.pdf. For example, Ghent University has a tenure track system for ERC grant winners, with funding for ten-year professorships, provided the research is carried out in Ghent in Belgium (https://www.ugent.be/en/research/erc/erc.htm). ETH Zurich, in turn, offers dual career programmes for successful ERC grantees. Austria has also initiated a funding programme for young researchers, much in the same vein as ERC Starting Grants. Based on the ERC model, Poland has established a funding organisation for basic research, the Polish Council for Science.

13 Examples of RIs: singular large-scale research installations, collections, libraries, databases, biological archives, high-capacity/high-speed communications networks, research vessels, telescopes, satellite and aircraft observation facilities, networks of computing facilities (http://ec.europa.eu/research/infrastructures/index_en.cfm?pg=esfri).
Analyses should not be fixed on whether a particular RI project is an individual project requiring large-scale investment, but first and foremost on how it will benefit Europe, where it will place in the European RI landscape, and how the investments will help in meeting grand European challenges. Particular attention should be given to how the RI project promotes cutting-edge scientific research and whether it serves a broad range of users and generates European added value.

FP7 already provides support to existing RIs, as well as to the planning of new RIs. Prioritising the RIs should primarily be the responsibility of Member States. This facilitates real joint negotiations in launching new RI projects, especially for those Members States that show an interest in and are ready to commit to the projects. As a key supporter of RI policy, the Commission should have a seat in these negotiations. Joint high-quality RIs have a global appeal to both individual researchers and research teams or business companies. Without high-quality RIs, Europe will not be able to keep pace with its competitors in the production of new knowledge and know-how. RIs should not be regarded as obligatory expenditure items, but as an investment in the future. RIs are like magnets, attracting R&D activity, education and business opportunities, which in turn creates jobs and promotes welfare. RIs offer a high return on investment.

**FP8 versus other EU programmes – CIP, Structural Funds and Joint Programming Initiatives**

All projects and programmes that make up the Framework Programme shall be of high quality and selected based on the criterion of excellence – regardless of whether they concern research, technology or innovation activities. At present, the EU’s various funding opportunities are too scattered, and there is no overall picture of other available European, international and national programmes. In addition, the new ERA initiatives have further jumbled the fragmented landscape that is the European research funding system. The different programmes should be mutually supportive and their tasks clearly defined, but they should also have similar rules for participation and funding, if they are to succeed in attracting research and innovation actors. FP8 should be used to fund significant, pan-European research coordination actions, such as themes selected for Joint Programming themes, or other coordination and networking as well as ERA-NET activities, which benefit all regions in Europe. Detailed planning and effective coordination are essential in ensuring the creation of European added value, the attainment of set objectives and networking between actors, stakeholders and policy-makers, thereby facilitating an effective application of research results. These coordination actions should be reserved a sufficient amount of resources. FP8 should also participate with complementary funding in significant pan-European and worldwide research programmes, for example, by supplementing the common pot funding of national and other programmes. The Structural Funds can be used to fund, for example, national RIs, provided that the selection criteria and evaluation mechanisms can guarantee a high quality. In addition, the national RIs should not be inappropriately placed. We must under no circumstances compromise on quality. The role of the Structural Funds in the funding of participation in Joint Programming and RI programmes could be reinforced in those countries where the national funding does not enable participation in joint European programmes or projects. There should be no overlaps between the Competitiveness and Innovation Framework Programme (CIP) and FP8, but they should also not be disunited into completely separate components.
Thematic priorities

The Lund Declaration\textsuperscript{14} in July 2009 strongly emphasised the importance of adding the “Grand Challenges of our time” to the research-policy agenda and targeting research funding to meeting these challenges. The current thematic priorities may have been a drag on far-reaching innovation activities. The current thematic structure does not always facilitate a comprehensive approach to meeting major challenges, which require multi- and interdisciplinary research and a wide spectrum of participants from both the private and public sector. \textbf{The thematic priorities should therefore be replaced by thematic components that address grand societal challenges.} These components should then also support ERA initiatives (Joint Programming and RIs).

The main points – Grand challenges, continuity, unforeseeable, public-private partnership (PPP), international activities, researcher mobility, RIs

\textbf{An intelligent, sustainable and inclusive increase}\textsuperscript{15} hinges on a sufficient supply of skilled individuals – researcher mobility

Enhancing the attractiveness of careers in research is a cornerstone of both European economic growth and the European Research Area. Research careers typically involve work abroad and international collaborations\textsuperscript{16}. One of the obstacles to genuine European research careers has been the lack of a common career structure and the lack of knowledge about the different stages of the research career. The new model of the four-stage research career\textsuperscript{17} will bring more clarity to career development and open up new opportunities across national borders. The specific programmes of FP8 will play a crucial role in promoting the mobility of researchers. \textbf{The funding provided through FP8 and the Directorate-General for Education and Culture to promote mobility should be mutually supportive.} The Marie Curie Actions have proven to be an excellent way to implement the fifth freedom – the free movement of knowledge – and a model example for national researcher mobility programmes. There is still too little intersectoral researcher mobility. The mobility programmes in FP8 should therefore lead the way in increasing the mobility between private and public research and in disseminating good practices throughout Europe.

\textbf{Besides researcher mobility, FP8 should also support pan-European researcher training, in particular within Joint Programming components. The grand challenges of our time call for multi- and }

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\item \textsuperscript{14} \url{www.se2009.eu/polopoly_fs/1.8460!menu/standard/file/lund_declaration_final_version_9_july.pdf}
\item \textsuperscript{15} \url{http://ec.europa.eu/eu2020/pdf/1_FI_ACT_part1_v1.pdf}
\item \textsuperscript{16} \textit{“Support for mobility is designed to promote the independence of researchers. [...]This is followed by the postdoctoral stage, which lasts from two to five years. It is typically at this stage that young researchers spend a period abroad, and for this reason almost all funding organisations have dedicated funding instruments for postdoctoral researchers. Statistics indicate that most young researchers want to work in countries and at universities that provide a sufficient degree of independence, supervision, encouragement, and a high-quality research environment. Attractive research environments depend most crucially on the availability of top-level infrastructure, i.e. facilities and collections.”} Professor Eero Vuorio, in “Get Ahead in Your Career – Get a Doctorate”, Academy of Finland 2010.
\item \textsuperscript{17} For example, \url{www.esf.org/fileadmin/links/CEO/ResearchCareers_60p%20A4_13Jan.pdf} and \url{www.leru.org/files/publications/LERU_paper_Harvesting_talent.pdf}
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interdisciplinary approaches and novel solutions. Joint European programmes for researcher training would go far in supporting this objective.

International actions

New global challenges and diversified collaborative networks place Europe in a new situation. The streamlining of international research cooperation that was started in FP6 has created new partnerships with global actors, in accordance with the objectives of ERA. FP8 should continue to promote an easy participation of researchers from third countries. Joint programmes between EU countries and large RDI-intensive countries and regions are an excellent way to make Europe more international, given enough time and resources from both parties. It is essential that FP8 continue to enable an extension of ERA-NET activities to expand the cooperation to a global scale. International ERA-NETs reduce the need for national bilateral and multilateral agreements and thereby bring more efficiency to the cooperation between EU and third countries. The Strategic Forum for International Cooperation (SFIC) and the international actions in FP8 should be mutually supportive.

Average-quality RIs do not attract top talents

FP8 can and should have a special role in developing ESFRI roadmap projects and establishing RIs. The current role could, however, be shifted more towards a role as an initiator. The specific programme on ‘Research Infrastructures’ should provide funding at different RI stages and for different purposes: planning, mobilisation, service/equipment maintenance costs, costs for maintenance and operation, and possibly the building stage. In addition, the specific programme on ‘People’ should include a funding opportunity that supports the use of RIs by individual researchers and research teams. The ERA-NET and ERA-NET+ schemes should be used more widely in the funding of RIs.

Implementation instruments

Broadening and ensuring the appeal and scope of FP8 requires user-friendly funding instruments. However, this cannot be taken to entail too small-scale, project-specific instruments. The key issue here is to ensure long-term and sufficient funding, in proportion to project size. It is necessary to continue seeking out ways to pool national- and EU-level research and research funding (i.e. ERA-NETs). It would be a critical error to abandon the ERA-NET instrument, and in particular its goals. ERA-NETs can form a firm foundation for Joint Programming, but their independent status as an instrument of science policy should be retained.18

Article 185 (previously 169) is an interesting implementation instrument for European programmes. We need to gather more experiences applying it. However, in implementing Joint Programming Initiatives, it is still requires further development and simplification.

18 http://netwatch.jrc.ec.europa.eu/nw/
The Academy of Finland considers the current selection of funding instruments to be sufficient. **IP and STREP projects could be supported as flagship projects, where long-term (8–10 yrs) and sufficient funding (in proportion to the goals) would set out a new way to commit researchers and business companies to the funded project**

**FET projects** should be more widely utilised, especially in the specific programme on ‘Grand Challenges’.

FP8 should also incorporate a mechanism that would allow for the provision of funding for challenges that require swift actions.

More attention should be given to reinforcing industry-academia cooperation. We should consider how to involve SMEs at the very start of research projects (at the research plan stage) or as a module (“topping-up”) at the later stages of the project. Finland should actively put forward good practices and examples of industry-academia cooperation. This could also be applied to ERC projects. SME participation should not, however, entail compromising on the criterion of high quality. FP8 should source innovative ways to facilitate SME participation. Particular support should be dedicated to investigator-driven entrepreneurship and related venture capital investments.

**Administration and funding processes**

The committee structure should support large-scale societal challenges, the EU 2020 strategy and ERA initiatives. **In particular, we need a general and joint committee to handle the entire Framework Programme.**

**Application of results**

**Open access**

Open access is the foundation of scientific research. Results verification and further research require free access to background material and results from previous studies. These days, innovations are a result of new approaches to linking data, often across traditional disciplinary boundaries. We must distinguish between free access to background material and research data and free access to publications. Many of the available scientific journals already have an open access policy, and most universities require that their researchers deposit parallel copies of their research articles in the university’s open-access repository.

In terms of open access to information resources, Europe still trails the US, for instance, which gives the US a clear competitive advantage. The US has significantly increased its expenditure on research and has also enacted legislation requiring public access to the results of publicly funded research\(^{20}\). **The EU Commission**

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19 For example, the sub-programme “Health” has used extensive “flagship projects” already in FP7, so-called pilot actions for high-impact research initiatives (large-scale integrating research projects, up to EUR 30 million).

has made efforts to support open access in FP7\textsuperscript{21}, but this policy should span the entire Framework Programme.

**The budget – main principles for budget distribution**

It is the opinion of the Academy of Finland that the 2014–2020 budget increase should be allocated specifically to augmenting the size of FP8. Member States should see to that the increased budget will not be used as a substitute for national initiatives. The national budgets still make up the greater part of Europe’s total R&D funding. An increase in EU funding can by no means compensate for undersized and insufficient national investments. The old targets set in Lisbon and Barcelona (3% of GDP) are still in force, and have been reiterated in and backed up by the EU 2020 strategy.

**Miscellaneous**

The limited supply of venture capital in Europe (as opposed to our competitors) constitutes a major obstacle to carrying out ambitious and high-risk projects and benefiting from the results of such projects. The development of venture capital instruments must continue in FP8.

\textsuperscript{21} Communication on scientific information in the digital age: access, dissemination and preservation COM(2007)56.