



Open Letter to the Members of the European Parliament,

Dear Members of Parliament

The European Fund for Strategic Investment (EFSI), an experimental instrument, proposed by the European Commission aims to boost Europe's future through financial means. The EFSI involves an unacceptable €2.7 billion reduction of funds allocated to innovation in H2020, and a cut of €220 million allocated to the European Research Council (ERC). The members of the Young Academy of Europe very strongly feel that the EFSI experiment, if it is funded via substantial cuts of Europe's flagship research initiatives, shows a dramatic underestimation of the societal cost of disinvesting from basic research. We therefore urge parliament to stop these excessive cuts and instead explore and identify alternative funding sources for EFSI that will have lesser costs on Europe's future.

The Symbiosis of Basic and Applied Research

When money is scarce, attention often focuses on applied research that promises economic payoffs in the short run. However, applied research is dependent on basic research and will quickly dry out without an intense basic research effort. Applied research exploits mainstream scientific understandings to incrementally improve current technologies. Basic research, on the other hand, unveils fundamentally new principles, that can inspire truly disruptive innovations that create entirely new markets and sustain the economic pre-eminence of Europe.

It was European curiosity driven particle physics at CERN that developed the Internet, which is now at the core of the Digital Economy that the Commission's program hopes to boost. The value of basic research goes far beyond the economy. Basic research is the brain of medical progress.

It was again basic research, this time on the basis of matter, which gave us the understanding of nuclear magnetic resonance that, in time, enabled magnetic resonance imaging. This technique has now revolutionized every hospital, enabling 60 million medical exams a year and saving millions of lives - in addition to creating entirely new markets with €2 billion per annum in sales for European companies¹ and substantially reducing treatment costs via early disease detection.

Finally, basic research is at the forefront of modern culture: it helps us understand who we are. The basic science discovery of mirror neurons, cells in the brain that respond to our own actions and those of others, for instance, has permeated all aspects of society by shaping our understanding of how social we are.

Basic or Frontier Research is experimental and theoretical work done to acquire new knowledge without any particular application or use in view. It is the basis for **applied research**, which is work to acquire new knowledge with a specific practical aim or objective in view. **H2020** carefully balances funding for basic and applied research, and is the result of thirty years of Framework package optimizations. In contrast, EFSI is an experiment, and is unlikely to provide significant funding for basic research, ignoring this balance.

¹ Particularly Siemens and Philips, see <http://www.magnetica.com/page/innovation/todays-mri-market/>



Cutting the funding for basic research and especially for the ERC in the hope that the same funds will provide more benefits if pumped into financial instruments instead shows an alarming lack of appreciation of how the vitality of Europe is grounded in the symbiosis of basic and applied research. While EFSI might fund some applied research efforts, it is unlikely, by design, to fund basic research. Diverted €221 million from ERC into EFSI represent less than 0.1% of what the European Central Bank is injecting annually into financial markets, and will hardly make a difference. Left in basic research it represents 10% of the ERC annual budget, and has been proven to have a tremendous impact on Europe's innovation and future. Even major industry agrees that cutting basic research is ill advised: in 1996, the CEOs of leading industries pleaded Bill Clinton not to cut funding in basic research².

Why Funds must not be taken from H2020

If Europe wishes to boost innovation, EFSI must be funded from sources that do not target innovation. Otherwise the Commission will sacrifice a validated instrument at the service of Innovation with a carefully optimized balance of basic and applied research (H2020) for a mechanism of unknown efficacy that favours applied research (EFSI). The Commission's only argument for taking funds from H2020 is that doing so is administratively easy. Is that the kind of argumentation Europe stands for? Funds should at least be taken in equal proportions from all heading, including Agriculture, and not be taken excessively from the most innovation-targeting instruments. If the Commission cannot convince Member States to revise the MFF to reallocate funds from non-innovation headings to the EFSI what does that say about democratic trust in the EFSI? We understand the Commission's wish to have a signature initiative, but crafting the Commission's visibility at the expense of H2020 (a mechanisms known to boost innovation) equates to prioritising political visibility above innovation - an unacceptable disservice to Europe.

Why should the European Union fund Basic Research?

Applied research and product development are closer-to-market R&D activities that companies are well suited to do. Patenting laws ensure that innovators can capture most of the economic returns from such R&D efforts. Basic research is fundamentally different: its long-term benefits to the economy, health and culture are dramatic, but are enjoyed by society as a whole rather than by the researchers that undertake it. Accordingly, economic theory tells us, that applied research and product development can be entrusted to market forces, while basic research has to be publicly funded to ensure its benefits. Because basic research has global benefits, the capture ratio (i.e. the proportion of benefits enjoyed for every Euro invested) increases with scale. The European Union, the largest economy in the world, rather than member states, local governments or companies, is thus where economic theory and common sense tells us basic research should be funded.

The vital importance of long-term stability

Pre-eminence in basic research cannot be achieved overnight, but it *can* be damaged overnight. The most talented scientists are highly mobile. They will go where their passion – basic science –

² [http://thomas.loc.gov/cgi-bin/query/z?r104:E01OC6-161:](http://thomas.loc.gov/cgi-bin/query/z?r104:E01OC6-161)



encounters the most fertile grounds. After decades of brain drain, the creation of the ERC has finally laid the foundation to make Europe once more one of the truly best places for ambitious and curiosity-driven research to take place. This affords Europe the opportunity to attract innovation and high-tech companies that exploit that innovation with it. It provides Europe with the opportunity to create the latest trends in basic research rather than follow them. It will create substantial economic benefits and will provide the citizens of Europe with substantial health and cultural benefits through the creation of knowledge. In less than a decade, the ERC has funded thousands of truly ground-breaking research. Under current funding, the ERC can only fund about 10% of the proposals it receives, although all experts agree that the top 20% of the proposals clearly should be funded to bring science forward. Undermining its role through the proposed raid on its budget jeopardizes the newly gained European competitiveness the ERC has fought for.

Amidst national turmoil and austerity plans, basic research funding has been dismantled in many **Southern European countries. For many institutions and individual in these countries, the ERC now remains the only viable source of funding for basic research.** Depriving them from this source of funding will create another lost generation of the brightest minds and ideas. With ERC teams also comes the unique opportunity for young students to be trained by the finest scientists we have, providing the highly trained human capital any knowledge society needs. The ERC has created a beacon of hope, that at least the very best ideas will be funded irrespective of location. It is critical to make the European Research Area a reality. Cutting its budget now, after the fierce and balanced negotiations of H2020, and after the ERC is building a world-wide reputation for Europe would be a devastating blow to the EU that would set back its efforts for decades. Across the world of both basic and applied science, this would be a grave embarrassment.

Our Plea

Can we afford to smother the innovation capital of Europe? Can we afford not to fund today, the Internet or the magnetic resonance imaging of the future? Obtaining an ERC grant has become the criterion for getting a permanent faculty post at the majority of European universities. Cutting the ERC budget means brain drain. **It means that hundreds of the top 10% of European scientists will have no choice, but to leave the EU or science.** Can we afford to lose our best talent? Please stand by the commitments of the Lisbon treaty: if you want to invest into a sustainable knowledge economy, invest into fresh ideas. If you want to fund EFSI, do so from sources the diversion of which will not harm the very innovation EFSI aims to promote.

The Young Academy of Europe

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