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## **WORKING DOCUMENT**

on Specific Programme Implementing Horizon 2020 - The Framework  
Programme for Research and Innovation (2014-2020)

Committee on Industry, Research and Energy

Rapporteur: Maria Da Graça Carvalho

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## 0. Introduction

The world is changing quickly. The international environment is increasingly multi-polar and Europe is currently confronted with a whole series of new challenges. In the field of research and innovation, the formerly dominant position that Europe enjoyed in many areas is being rapidly eroded.

Rectifying this state of affairs supposes accurately identifying the strengths that Europe possesses but also entails recognising and correcting Europe's weaknesses. Europe has world leading researchers, entrepreneurs and companies; a set of deeply embedded values and traditions, a dynamic culture of creativity and diversity and the largest internal market in the world. Finally, European civil society is actively engaged in emerging and developing economies across the globe.

However, at the same time, Europe has a number of weaknesses: under-investment in our knowledge base; unsatisfactory framework conditions (ranging from poor access to finance and the high costs of IPR to slow standardisation and ineffective use of public procurement); and finally, too much fragmentation alongside excessive bureaucracy and red tape.

The forthcoming Horizon 2020 programme – the single largest collaborative programme for research and innovation in the world – will reinforce Europe's leading position in an environment in which Europe has lost ground in many areas.

The Commission proposal for Horizon 2020 draws on and builds upon work that has already been developed in Parliament in such contributions as the reports Simplifying the Implementation of the Research Framework Programmes ("the Carvalho Report"), Mid-term Review of the Seventh Framework Programme of the European Union for Research, Technological Development and Demonstration Activities ("the Audy Report") and on the Green Paper: From Challenges to Opportunities towards a Common Strategic Framework for EU research and Innovation Funding ("the Matias Report"). Already, the Commission proposal represents a real step forward: it strikes an appropriate balance between the three pillars – “Excellent Science”, “Industrial Leadership” and “Societal Challenges” – and in addition to the contribution from Parliament, it effectively integrates input from a whole range of stakeholders. However, some work remains to be done.

## 1. Excellence and the Stairway to Excellence as major drivers for Horizon 2020

Excellence – across the three pillars – should be the main driver for Horizon 2020 as a whole. This supposes that excellence is defined independently of any geographical or other precondition and, secondly, that excellence is unambiguously defined for all applicants. Such clarity is necessary because what is understood by excellence may take various forms in the different contexts of research and innovation.

In general terms, excellence in science will be further fostered by a bottom-up, scientist driven research agenda, one that will allow novel ideas and technologies to flourish. In this respect, Marie Curie and the ERC have traditionally been the main instruments for the promotion of excellence at a European level. The emphasis placed on the ERC by the Commission is to be welcomed. By contrast, the Marie Curie programme should be given more prominence. Finally, the "Synergy Grant" pilot scheme – in which consortia of excellent researchers have been able to work collaboratively – has attracted a large number of applicants and this scheme should be continued.

The whole of the first pillar is devoted to bottom up research. However a certain percentage of funding attributed to the other two pillars should be devoted to bottom up research as well. This will allow new ideas and disruptive research to germinate.

Excellence remains central to the evaluation of projects and proposals in all three pillars. Considerations of impact and relevance with regard to the two pillars of Industrial Leadership and Societal Challenges remain, however, of considerable importance.

With regard to the "stairway to excellence", Horizon 2020 must be designed in such a way that it encourages the first sprouts of excellence. The "stairway to excellence" should lay the grounds for the participation of small units of embryonic excellence, such as small research groups and highly innovative start-ups. The Commission has already taken a series of significant steps in this direction such as the "twinning schemes" and the "ERA chairs scheme". However, we must go even further.

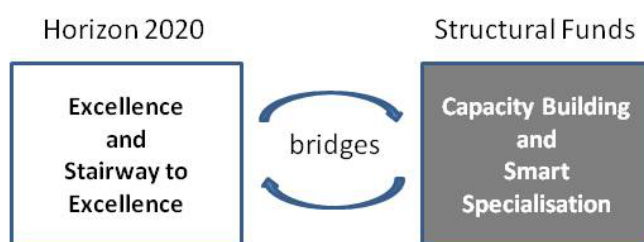
In this respect, a number of additional instruments might also be foreseen. For example, these instruments could include the creation of ERC *return grants*. ERC return grants could be attributed to researchers currently working outside of Europe and who wish to work in Europe

or to researchers already working in Europe who wish to move to a less developed region.

## 2. Building synergies between Horizon 2020 and the Structural Funds

Building greater synergy and as much complementarity as possible between Horizon 2020 and the structural funds is urgently required. There are two wholly distinct programmes. On the one hand, there is Horizon 2020, in which excellence and the stairway to excellence is the main driver. On the other hand, there are the structural funds, whose main driver is capacity building and smart specialisation.

It is essential that these programmes are complementary and that bridges are built in both directions, linking the two programmes. As such, the structural funds have a role to play – both upstream and downstream – with regard to the Horizon 2020 objectives.



Upstream from Horizon 2020, the structural funds can be used for capacity building and, here, two recommendations stand out:

- The structural funds could be used to finance equipment, human resource development, the creation of clusters in the priority areas of Horizon 2020 and as a source of small grants given for the preparation of proposals to be submitted to Horizon 2020;
- National and regional funds might be used to contribute to the funding of ERC, Marie Curie or collaborative projects that meet the criteria of excellence but cannot be funded due to lack of European funds. Horizon 2020 could confer a “seal of excellence” on positively evaluated projects that

have not otherwise been able to achieve funding because of budgetary limitations.

Downstream from Horizon 2020, the structural funds could be used to help smooth the passage from conception to market. One again, two recommendations might be singled out:

- The structural funds could be used to finance or co-finance the follow up to Horizon 2020 research projects (e.g. pilot scale and demonstration projects);
- Structural funds could be used to valorise research results in such a way as to encourage easy access to knowledge or to facilitate the deployment of the resulting knowledge in terms of its direct economic or societal use.

Finally, two recommendations might be made at a more general level:

- EU funding for Research and Innovation is of key significance and should be exploited for leverage. Horizon 2020 should attract additional financing from the Structural Funds, the EIB and from the private sector, something that supposes adopting a multi-fund approach;
- The interoperability between the instruments of Horizon 2020 and the structural funds should be enhanced. This entails designing compatible rules and procedures, coherent application formats and evaluation criteria, common entry points, synchronising priority setting through smart specialisation and using common cost definitions and other administrative and financial criteria. It would also involve synchronised roadmaps and administrative cycles including, for example, the need to respect the academic calendar, especially for universities.

### **3. Competitiveness of European Industry**

In the current economic climate, it is essential that Europe's industrial base is strengthened. Industrial participation in Framework Programmes for Research has dropped significantly over the last few years: it was 43% in FP4, 37% in FP5, 29% in FP6 and has risen, but only slightly, to 31% in FP7.

In addition, Europe has difficulty in ensuring that research results are effectively converted

into innovative products and services that reach the market. The ability to innovate but also to see innovation through to viable market solutions is central to competitiveness.

To counter this difficulty, six recommendations merit attention:

- Firstly, Horizon 2020 should be designed in such a way as to provide industry with an incentive to participate in European projects. However, industry participation should not be narrowly restricted to consideration under the Industrial Leadership pillar. Innovation flourishes best when it strives to attain excellence but also when it offers real solutions to existing societal challenges;
- Secondly, Horizon 2020 has been designed to cover the whole innovation cycle. In particular, innovation should be fostered from the earliest stages of the passage from concept to market. At the same time, the Commission proposal concerning the later stages of the innovation cycle might include different forms of innovation beyond technological innovation;
- Thirdly, SMEs are central to building up the competitiveness of European industry as a whole and their participation in European projects should be fostered across the three pillars. In this respect, the Commission's proposed target of 15% is perhaps too rigid a definition: there is no reason why this should be a mechanically defined cut off point. The circumstances of different sectors (and the degree of activity of SMEs within these different sectors) should be taken into consideration.

Similarly, dynamic start-ups should be encouraged. Another possibility, in this respect, might be to measure the impact of Horizon 2020 in relation to the number of start-ups generated. The Commission proposal with regard to the SME instrument is a very welcome initiative. Finally, it is necessary to develop a mechanism that is at once simpler, faster and more efficient. In this respect, a model might be innovation vouchers;

- Fourthly, procurement can be used to stimulate innovation. The introduction of pre-commercial procurement and the procurement of innovative solutions is central in the creation of new businesses and the fostering of innovative SMEs across Europe;

- In the fifth place, risk sharing is a key element in bringing promising and strategically important technologies to the commercial phase. Horizon 2020 has proposed debt and equity facilities that should help bridge the "valley of death". Easing access for companies to loans, guarantees and other form of risk finance will increase the willingness of the private sector to invest in R&I projects. However, the existing set up involving intermediate financial institutions should be further analysed and its design and implementation should take into account the specific needs of SMEs and other targeted participants;
- Finally, standardisation should be built into technological development projects and should be present throughout the different stages of these projects.

#### **4. Simplification of the Research Landscape and Widening Participation**

A distinction should be made between simplification of the rules of participation, in particular, and the simplification of the research landscape in general – although both are equally important. The simplification of the Rules of Participation will be addressed in a specific report.

With regard to the simplification of the research landscape – and in addition to the imperative that Horizon 2020 be as simple and clear as possible – two further recommendations merit attention:

- Streamlining of the instruments and funding schemes should be encouraged and the plethora of instruments that is currently to be found should be reduced;
- The interaction between initiatives such as the European Innovation Partnerships, the Joint Programming Initiatives and the European Technology Platforms should be clarified.

With regard to widening the participation of all stakeholders in European research and innovation programmes, a balanced participation in terms of gender, types and sizes of



institutions and between established and young researchers should be ensured. (Geographical distribution has already been addressed in sections 1 and 2).

Further to this, three recommendations might be made:

- **Barriers to entry.** Smaller research units have difficulty in participating in the existent European networks. In particular, outsiders from these networks encounter barriers in participating in large consortia. Measures should be taken to overcome this barrier. In particular, improvement could be made in the transparency of processes in Public Private Partnerships and Joint Technology Initiatives both in terms of the definition of research agendas and the participation of SMEs, universities and research centres;
- **Gender balance.** The promotion of the general participation of women in the different projects – including as team coordinators – should be encouraged. For example, the dissemination actions of Horizon 2020 should target women scientists. Gender balance should be ensured for the Programme, Expert and Advisory Committees. More generally, Member States should make greater efforts to overcome gender gaps and gender-specific obstacles;
- **Youth employment.** The participation of young scientists in project teams in the context of collaborative research activities by industry and science organisations should be furthered. The rules deployed should facilitate the recruitment of staff to universities in order to work on Horizon 2020 projects. Hopefully, this will keep young researchers in gainful employment.

## 5. Structure and horizontal issues

Horizon 2020 should be designed in such a way that it will contribute actively to building the European Research Area (ERA). The figure below describes a modified overall structure of Horizon 2020. It represents the three vertical pillars (Excellent Science, Industrial Leadership and Societal Challenges) and a number of horizontal instruments. These compose a common tool box that includes FEST, FEST Flagship, the SME Instrument and Access to risk finance.

It is recommended that the Future Emerging Technologies instrument be widened to include science. This would mean adopting the acronym FEST (Future Emerging Science and Technologies).



Horizon 2020 should be more than a funding programme: it should have a beneficial structural effect on the organisation of research at European level. In this respect, there are six specific measures that might contribute to building a strengthened and more efficient ERA:

- Governance. Horizon 2020 should have sound governance at all levels: at comitology level in the Programme Committees but also at the overall level of a Horizon 2020 Advisory Group. Inside Horizon 2020, each research area should be equipped with robust governance mechanisms and, to achieve this, existing structures should be used as much as possible. The objective of these mechanisms would be to implement Horizon 2020 but also to enhance communication, the exchange of data and good practice. These objectives are fundamental to the acceleration of the research and innovation process in various research areas such as health research;
- Project size and type. Collaborative research should be a central element in all Horizon 2020, mainly in the Industrial Leadership and Societal Challenges pillars. Within these pillars, a balance should be struck between small focused projects and large integrative projects;
- Dissemination and exploitation. The results of research and demonstration projects should be disseminated more effectively, whilst still respecting issues relating to innovation and protecting commercial sensitivities. The dissemination of information, results and best practice will stimulate further development and efficiency. Given Horizon 2020's focus on innovation, IPR should become a central aspect in all phases of the project;
- International cooperation. Finally, in order to strengthen collaboration in strategically defined priorities with key international partners, international cooperation should be present throughout Horizon 2020;
- Work programmes. The implementation process through work programmes should be as transparent and accessible as possible for all stakeholders. At the same time, the drafting process for the work programmes should be shortened;
- Mid-term review. A thorough mid-term review of the Horizon 2020 implementation process should also be envisaged.

## 6. Conclusions

The forthcoming report that the above anticipates will present a number of recommendations that will build on the Commission's proposal with regard to Horizon 2020. This document serves as a basis for further discussion with other MEPs in the amendment process. By way of conclusion, the broad lines of the above document might be summarised as follows.

Given the challenges with which Europe is currently faced, Horizon 2020 should be as simple and as well structured as possible and it should be equipped with an appropriate funding programme. Whilst Europe can take comfort in its many, manifest strengths, we must also strive to overcome some of our weaknesses.

Excellence and the stairway to excellence should be the main drivers of Horizon 2020. The whole innovation cycle should be covered as this will lead to enhanced participation of European industry. This is something that will reinforce Europe's position in the research and innovation and make up some of the ground that has been recently lost.

Greater synergy between Horizon 2020 and the structural funds is urgently required. Whilst the main driver of Horizon 2020 is excellence, the structural funds could be deployed both upstream and downstream from Horizon 2020 to enhance capacity building and to facilitate the passage from concept to market.

The link between science, research and innovation, on the one hand, and the competitiveness of European industry; on the other hand, should be reinforced. Horizon 2020 should aim to foster balanced participation from across Europe, reflecting its diversity and human potential. Finally, Horizon 2020 should be deployed in such a way as to have a structural effect on the organisation of European research, giving rise to an accelerated, collaborative and stimulating research and innovation process.