

## Position paper: Evaluating Horizon 2020 and designing FP9

Universities Denmark wishes to contribute to the midterm evaluation of Horizon 2020 and the design of the 9<sup>th</sup> Framework Programme for Research and Innovation. This position paper outlines the joint position of the eight Danish Universities, based on experiences and recommendations for further improvement.

While there are still a number of issues which need to be addressed in order to achieve the full potential of the European Framework Programme for Research and Innovation, Universities Denmark would like to acknowledge the efforts of the European Commission to reduce the administrative burdens of participating in Horizon 2020. Involving stakeholders in the efforts to ensure simple procedures, low transaction costs and increased participation is highly recommendable, and the participant portal is one example of how increased involvement of stakeholders has led to a great improvement in transparency.

We hope that thorough consultations with stakeholders will also help to address the current shortcomings of Horizon 2020, where the following points are of key concern:

- The 7<sup>th</sup> Framework Programme has been effective in boosting excellent science, strengthening Europe's industrial competitiveness, contributing to jobs and growth and addressing societal challenges. However, it is very important to ensure continued political commitment, ambitious public investments and understanding of the long term perspective if the current and future framework programme is to have a significant impact on jobs, growth and welfare in Europe.
- High quality research should be the cornerstone in all three pillars, also when it concerns activities to support public-private collaboration and initiatives to improve conditions for innovation. Horizon 2020 has created a gap between the fundamental research funded by the European Research Council (ERC) to the later stage innovation funded in Societal Challenges and Industrial Leadership. More funding should be allocated to collaborative research projects at lower Technology Readiness Levels (TRL).
- Horizon 2020 has become too focused on activities close to the market with a significant risk that Europe is missing out on game-changing innovations

with the possibility of creating new value chains and solving societal challenges. It is necessary to strike a better balance between research and innovation to ensure university commitment to Horizon 2020 as well as the development of the European Research Area.

- The integration of Social Science and Humanities (SSH) has been improved in Horizon 2020, but there is still need for a greater inclusion of SSH in consortia and projects. SSH perspectives should be included during the formulations of calls, and the concept of impact should be adjusted to make it easier to integrate SSH research in Societal Challenges and Industrial Leadership.
- With the current success rates the probability of getting a grant is too low, the transaction costs are too high, and the best researchers may decide to go elsewhere for funding. National and European funding for research and innovation should be increased, but better strategic alignment and synergy between funding instruments might also mitigate the issue of over-subscription. Furthermore, it is relevant to look at application procedures and competition on individual topics.
- In order to ensure trust and commitment to the framework programmes, it is necessary to improve the quality of evaluations. The system is under pressure due to over-subscription, and it is very important that the evaluation feedback is adequate, relevant and unbiased. When responding to first stage proposals in a two-stage procedure, substantial feedback should be given to proposals approved for second stage submission.
- Some member states are still experiencing low participation rates in Horizon 2020 due to differences in research and innovation capacity across the EU. It is important to address this issue, but we should do so without changing the nature of research funding. In this regard, in the future a greater share of the structural funds should be directed towards dedicated capacity building in research and innovation in member states where this is not the case, leaving Horizon 2020 to focus on excellence.
- The establishment of a European Innovation Council should bring added value, avoid duplication and build on excellent science with a focus on research-driven innovation. Funding should be found outside Horizon 2020 which suffers from over-subscription and low success rates due to budget constraints. Special attention should be given to leverage more public and private funding for innovation, using different funding instruments for public research organisations and private companies.

### ***Commitment, ambitions and long term planning***

The European Framework Programme for Research and Innovation plays a significant part in developing the research and innovation capacity of the European community as well as the individual member states. The investments of today will have an important impact on economic growth and job creation in Europe in the short as well as the long run. The latest evaluation of the 7<sup>th</sup> Framework Programme (FP7) has shown that FP7 has been effective in boosting excellent science, strengthening Europe's industrial competitiveness, contributing to jobs and growth and addressing societal challenges.

This emphasizes the need to strengthen the European commitment and ambitions to support the continued development of world class research and innovation environments in Europe - with a view on the long term impact on European growth and employment. No matter the short term challenges Europe might be faced with today, we should keep in mind that investing in research is an investment in our future, as was the argument when introducing Horizon 2020. We need continuous strong and ambitious backing by the political leaders of Europe, the members of the European Parliament and by everyone involved in the European Research Area.

Significant and long term impact of research and innovation activities require ambitious and stable funding, commitment of the main stakeholders, transparent framework conditions and long term planning. But it is also important to consider possibilities for better strategic alignment, cooperation and synergy between national and European research and innovation programmes in order to achieve increased impact and higher returns on investments. Careful consideration is required before changing the structure of the current Framework Programme, but we should work towards better alignment and synergy between the different instruments and actions in order to reduce the risks of a fragmented programme.

New structures often involve high transaction costs in the first years of implementation, and it is important to avoid an overly complex set-up given the number of stakeholders involved in the Framework Programme. The effects of projects funded by FP7 are just recently starting to show. This highlights the need for great patience when designing the next European Framework Programme for Research and Innovation. Having this in mind, there are still several points where the current and future programme would benefit from adjustments and simplification.

### ***High quality research as a cornerstone in all three pillars***

When evaluating the current activities in Horizon 2020 and when discussing the design of the next Framework Programme, we should maintain that the core of the European Research and Innovation Programme is a strong focus on world-class science complemented with initiatives to improve conditions for innovation and public and private sector collaboration.

Horizon 2020 has tried to address the gap between research and innovation, but the ambition to target the entire value chain has created a new problem without solving

the issue at hand. A new gap is arising between the fundamental research funded by the European Research Council (ERC) to the later stage innovation funded in Societal Challenges and Industrial Leadership. This is especially a problem with Societal Challenges where there is no proper connection between the technologies which are supposed to bring solutions to the market and the ground-breaking research which is a prerequisite for the anticipated solutions.

The European Research Council plays a very important role in strengthening the quality and capacity of European researchers, and it should remain a flagship in the future Framework Programmes. However, the European Research Council cannot support the European research environments on its own. There is a need for greater synergy between activities and projects across the pillars and along the knowledge chain. Tackling the great societal challenges of Europe requires a better connection between the pillars of Excellent Science and Societal Challenges and a much greater focus on high quality research in all three pillars. Horizon 2020 is still missing the glue that connects pure fundamental research to academic research - and academic research to the rest of the knowledge chain.

In order to strengthen the connection between research and innovation, more funding should be allocated for collaborative projects at lower Technology Readiness Levels (TRL). The role of the European Research Council should not be downplayed, and the budget in the first pillar should not be changed, but within Industrial Leadership and especially Societal Challenges more funds should be allocated to frontier research at lower TRLs in order to ensure synergy between activities in ERC and topics in Societal Challenges and to promote transnational research collaboration.

Increased funding for basic and strategic research will also meet the need 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. While fundamental research is dependent on public grants, companies seeking funding for later stage innovation can benefit from different types of support, including instruments designed to leverage private investments and initiatives to reduce barriers to innovation.

### ***Balanced support to research and innovation***

Horizon 2020 presents a more challenge-driven approach with activities closer to the market. So far a large proportion of the Horizon 2020-topics address activities at higher TRLs, which might allow for more demand-driven approaches and encourage new players to participate in Horizon 2020, but with the significant downside that enabling research is not being sufficiently prioritised. A narrow focus on later stage innovation may obstruct the creation of game-changing innovations and hinder solutions of a more ground-breaking nature to emerge from Societal Challenges and Industrial Leadership.

It is quite understandable that the global pressure to achieve short-term impact on European growth and employment can lead to arguments that Horizon 2020 should

place greater focus on activities that can support the growth of private companies. However, we should be careful not to adopt the notion that strategic research aimed to solve defined societal needs can only be conducted at high TRLs. In fact, it is most often in the early stage research that truly ground-breaking results can lead to radical innovation and the creation of new value chains – including solutions to the great societal challenges. Much greater benefit is generated by investing a larger share of the total budget in early and middle stage research where the economic returns are larger.

Unfortunately, Horizon 2020 has already seen too many calls with Technology Readiness Levels (TRLs) so high that it is quite unattractive or difficult for academia to participate. It is very difficult to incorporate blue-sky research into the proposals when the research required is not of a ground-breaking nature. Participating in research projects that are very close to the market can - in some countries - be difficult to reconcile with national legislation concerning university obligations to conduct research at the highest international standards. Moreover, projects at high TRLs do not necessarily lead to usable results. There is a need for greater emphasis on end-user perspectives throughout the knowledge chain in order to ensure greater relevance of technological solutions. If this trend towards higher TRLs continues, the university commitment to Horizon 2020 will eventually weaken, thus damaging the participation and contribution to the development of a European Research Area.

Finally, while it is important to support the creation of multi-stakeholder-consortia where public research institutions, industry and end-user organisations work together in research and innovation projects, it seems inappropriate that large industries are entitled to funding on the same conditions as non-profit organisations in view of the scarcity of public funding for research and innovation.

#### ***Better inclusion of Social Science and Humanities (SSH) in consortia and projects***

Social science and humanities research has a very important role to play when it comes to solving the great challenges in our society. Much effort has been done to strengthen the integration of SSH, making it a cross-cutting issue in Horizon 2020, but it is still our experience, that it is too difficult to integrate SSH in the Science, Technology, Engineering and Mathematics (STEM) domain due to the way the SSH components are described in topics. There is a need for better knowledge of various fields within SSH, and how they can contribute with new insights and solutions. More often than not, SSH is seen as a sort of add-on consultancy service to STEM activities, making it difficult for SSH academic researchers to participate and contribute to new solutions.

In the upcoming calls it would be highly recommended to emphasize that effort should be made to include cross-disciplinary research areas in the formulation of topics in order to allow for proper integration of SSH research in future calls. It should also be considered whether there is sufficient funding for cross-disciplinary research in the existing structure, and whether there are sufficient opportunities for SSH to take on more fundamental research questions of relevance to the societal

challenges. In addition, a broader understanding of impact and innovation to better include SSH will open up for a proper integration of SSH research in Societal Challenges and Industrial Leadership to the benefit of the European research and innovation capacity.

In connection to this, a more cross-disciplinary definition of impact could increase results and returns on the public investments made in Horizon 2020. At the moment there is a feeling that a rather narrow interpretation of impact excludes many stakeholders and research fields from participating in Horizon 2020 with a significant risk that high-potential proposals will be overlooked. It is generally quite a challenge to address the question of impact as the leap from a specific challenge to the expected impact can be quite big. No specific guidance is given on when impact is expected to materialize, and the notions of short term and long term can lead to very different interpretations, depending on professional background and area of research.

#### ***Reduced transaction costs and improved success rates***

As it has been widely reported, the probability of getting a Horizon 2020 grant is too low, even when it comes to exceedingly excellent and relevant research proposals. The programme is highly popular which put an enormous pressure on the resources and in some extreme cases leads to success rates around 1-2 percent. Success rates at this level reduce the possibility of getting a grant to a matter of luck.

This problem is further aggravated by the widespread problem of reduced national research spending, leading even more researchers to look for funding from Horizon 2020 and other international sources – thus applying further pressure on subscription and success rates. It takes significant time and resources to coordinate with partners and prepare a proposal for Horizon 2020, and much effort which could be put into research activities is being wasted - even more so for the bigger consortia. When highly rated proposals don't get funding, the willingness to invest time and resources in preparing and drafting a new proposal diminish. If this problem continues, some of our best researchers may look elsewhere for funding, and the quality of winning consortia will decrease as it will be difficult to get the best partners involved in a proposal.

There is no quick fix to the problem of over-subscription, but an important step is to protect the Horizon 2020-budget from further cuts and increase the budget for the next Framework Programme. We strongly recommend that the European Commission, European Parliament and European Council strengthen the support to and investments in research and innovation on a national as well as European level. As it was recognized when initiating Horizon 2020, investments in research and innovation are vital in generating the scientific and technological breakthroughs which can help maintain high standards of living, deal with pressing societal challenges and deliver jobs, prosperity and global public goods. In addition, better complementarity between EU funding instruments as well as better strategic alignment and synergy between national and European research and innovation programmes might mitigate the issue of over-subscription.

Application and evaluation procedures also have a significant effect on success rates and the transaction costs involved in applying for Horizon 2020. When using two-stage evaluation procedures it is possible to control the number of proposals in the second stage, while reducing the time and resources put into proposals with limited chance of obtaining funding. It is important to allow sufficient time between the first and second stage application. Otherwise it will be necessary for the researchers/consortia to continue working on a proposal in order to make the next deadline without knowing if the application is approved for second stage application. It might also be appropriate to assess how the increase in demand have affected the general quality of proposals, and whether it is necessary to introduce barriers that can lower the number of proposals submitted to a given call while ensuring high quality and relevant proposals – also when using two-stage procedures. It might also be relevant to consider the funding for certain topics where the allocation of funding is only sufficient for one winning project. However, changing the allocation of funds within Horizon 2020 does not solve the overarching issue, as the increase in success rate on one topic will lead to a decrease in the rate on another.

### ***Improve the quality of evaluations***

In order to ensure trust and commitment to Horizon 2020 and future framework programmes, great efforts must be made to ensure high standards and procedures for evaluation. Unfortunately, it is our experience that the feedback given in the Evaluation Summary Reports in Horizon 2020 is of significant lower quality than evaluations in FP7. One of the major differences between evaluations during FP7 and Horizon 2020 concerns the amount of useful advice on how to improve a given project. Going forward, it is very important that the evaluation feedback is adequate and relevant – avoiding biased or generic comments. Experience has also shown us that some evaluators find it difficult to judge projects of a cross-disciplinary nature.

It is necessary to analyse how evaluators are chosen, and whether they have the right competences. More attention should be given to clear and systematic briefing of evaluators in a way that mirrors the call text. It is important that evaluators have understood the Horizon 2020 ambitions and the specific call text correctly in order to avoid personal interpretation and ensure that evaluations are based on explicitly mentioned criteria in the call text. Additionally, more funds should be allocated to ensure high quality evaluations, or the amount of proposals should be reduced – for example by introducing barriers or increasing the number of two-stage evaluations where more emphasis can be placed on second stage proposals. Furthermore, when responding to first stage proposals in a two-stage procedure, substantial feedback should be given to proposals approved for second stage submission. It might also be beneficial to allow evaluators to point out potential cross disciplinary synergies and cooperation between similar project ideas, making it possible to identify potential new consortia set-ups. Finally, consensus meetings should be reinstated as they play an important part in ensuring sufficient exchange of opinions and arguments between evaluators; in reducing the negative influence of personal preference and understanding; and subsequently in delivering appropriate and high quality evaluations.

### ***Structural funds to address difference in capacity***

There is still significant difference in research and innovation capacity between EU member states which is very important to address in order to achieve the objectives of the European Research Area. It is important to use the right instruments to address this issue in a way that does not have an adverse effect on the continued development of high quality research and solutions to the major societal challenges. We should maintain that the choice of partners in Horizon 2020 consortia and any subsequent decision about funding should be based on excellence and relevance to the project. Geographical concerns should not be allowed to create confusion as to excellence being the fundamental criteria for funding.

However, structural funds play a valid and important role in supporting the research and innovation capacity in member states, and a far greater share of the funds should be directed towards dedicated capacity building in research and innovation in new as well as old member states. On the same note, it might be relevant to use more funding from the European Investment Bank on favourable terms to research organizations and universities where there is a need to iron out regional differences in capacity. Denmark has good experiences with the Structural Funds playing an important role in supporting the innovation capacity of SMEs. Currently a great number of projects funded by the SME instrument have been mono-projects, and it might be relevant to look into how more SMEs can be motivated to join a consortium, giving them the opportunity to learn from other participants.

### ***European Innovation Council to bring added value and complementarity***

The idea of establishing a European Innovation Council (EIC) to support research-driven innovation is still under development, and as such there are plenty of roles that such a council could take on. It is very important that the set-up of a new body includes simple procedures and transparent decision-making processes as well as university and business representation in the governing council. Careful consideration should be given to the existence of current innovation support in EU and member states in order to avoid duplication of current initiatives. Council activities should build on excellent science with a focus on research-driven innovation projects, including bottom-up initiatives and cross-disciplinary research with the possibility to deliver breakthrough innovations. This demands attention to all stages in the knowledge chain, but with a special focus on activities taking place at TRLs 4-6.

In addition, financial instruments should be funded by other funding sources than Horizon 2020, as the current budget is already strained, and Horizon 2020 suffers from over-subscription and low success rates. Possible instruments could include proof-of-concept funding as well as finance for scale up, using different funding instruments for public research organisations and private companies. Special attention should be given to leveraging more public and private funding for innovation. The EIC could also play a role in promoting a culture where it becomes more attractive to start a new company. This includes support to existing and new innovation ecosystems, bringing more research-driven results to the market as well as attracting and supporting entrepreneurial talents and ideas – taking into account existing national and European instruments in order to ensure the value added of EIC-activities.

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