



Horizon 2020 Interim Evaluation

Position paper of the Federal Government

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New Impetus for Horizon 2020

Horizon 2020, the EU Framework Programme for Research and Innovation (R&I), was launched three years ago to contribute to building a society and an economy based on knowledge and innovation across the Union. The Programme is aimed at strengthening the European scientific and technological base and fostering benefits for society. In this way, Horizon 2020 will help implement the Europe 2020 strategy for smart, sustainable and inclusive growth and realize the European Research Area (ERA). These goals are as relevant and pressing today as ever. The impetus provided by the European Union (EU) under Horizon 2020 in future will be key to increasing Europe's research strength, capacity for innovation and global competitiveness.

The European Commission is obliged to carry out an interim evaluation of Horizon 2020 by the end of 2017. The German Federal Government is contributing to achieving this goal with the present position paper. We need to answer the question of whether the programme has been honouring the above mentioned political goals and what modifications might be necessary to reach these goals more effectively and efficiently. The interim evaluation serves in particular to identify where and to what extent Europe's scientific-technological basis has been strengthened and to provide reliable data to illustrate these achievements. Furthermore, the benefit for society - one of the central structural elements of Horizon 2020 - needs to be assessed in a differentiated manner, in particular with regard to the seven Societal Challenges, and gender aspects need to be considered and promoted.

Horizon 2020 thrives on being an attractive programme involving the best researchers and innovators. Its *raison d'être* is to create European added value. The priority of any modifications in the wake of the interim evaluation must be to significantly increase the European added value and attractiveness of the programme. Close cooperation between the European Commission and the Member States is the basis for this.

1. Generating European Added Value

Added value for the EU is one of the central aspects that the interim evaluation needs to assess.¹ In order to generate this European added value, Horizon 2020 shall focus on objectives and activities that cannot be efficiently realised by Member States acting alone.² This means that the EU can only become active if the Member States are unable to deal effectively with a given matter at national, regional or local level. On the other hand, it can be assumed that no European country alone can manage climate change, the transformation of the energy system, food security or the challenges related to migration.

It remains to be shown whether and with what outcome the EU has been able to make substantial progress through concerted action. An assessment of the European added value is also useful for the efficient allocation of funding resources.

a) European Collaborative Projects

Cross-border, transdisciplinary cooperation among the best European research players from science and industry in collaborative projects as well as the resultant exchange or joint use of knowledge, methods, infrastructures, staff, data, etc. have been a significant added value and

¹ See Article 32 para 3 c) Regulation (EU) No 1291/2013

² Article 4 Regulation (EU) No 1291/2013

motivation for applicants since the beginning of the framework programmes. Added value involves more than just monetary aspects - particularly in countries with solid national R&I funding. It must be established whether the potential inherent in Europe-wide collaborative research is being put to full use to address complex research questions and the great societal challenges. Furthermore, it has to be clarified whether cross-border cooperation increases the performance of European research by successfully overcoming the fragmentation of Europe's research landscape and deploying resources more efficiently (e.g. through work sharing). It must be ensured that the innovation potential of small and medium-size collaborative projects can develop as sufficiently as that of larger research groups. It also remains to be established how cooperation among actors from different countries can be strengthened to become a solid stepping stone for new players (e.g. from low-performing regions) in transnational R&I cooperation.

Horizon 2020 focuses on promoting cooperation between industry, research centres and higher education in research, technological development and pilot measures. Public private partnerships (PPPs) with technology readiness levels (TRLs) of up to 7 offer possibilities for becoming involved in thematic industry-oriented calls. PPP projects need to be assessed with regard to their particular efficiency and impact in direct comparison with standard collaborative projects and proposals for their development made.

We are currently observing a situation where the work programmes of collaborative projects, too, are focusing more strongly on innovation, particularly in the field of key enabling technologies (innovation measures from TRL 5 and higher). We perceive this to lead to a situation whereby applicants with research-intensive project goals resort to open-topic areas with a lower TRL³ in order to realise their basic research and application-oriented collaborative projects. It is, however, exactly this kind of more generic research collaboration which often lays the technological foundation for addressing future issues, for example in the context of the Societal Challenges. Collaborative research at lower TRLs and with a stronger focus on generating knowledge should be safeguarded in all programme areas by including corresponding elements in the relevant calls. A fair balance and coherent interaction between the collaborative research instruments needs to be achieved along the entire value-added chain.

b) Research Infrastructures

Europe has a multifaceted and more than excellent landscape of research infrastructures, without which world-class R&I would be impossible in many fields. This landscape plays a key role in attracting the brightest minds and bringing them together in Europe. Interconnecting national infrastructures across country borders and opening them to researchers from all over Europe is one of the greatest success stories of the European framework programmes. It must be established in how far opportunities for access to the research facilities, including access for scientists from countries with a relatively small research budget, strengthen the performance and efficiency of the European R&I landscape as a whole. Clarification is also needed regarding the role infrastructures play in standardisation and how this role can be strengthened.

Furthermore, coordination with regard to new large research infrastructures is imperative to ensure that the ERA is in a position to meet the challenges of the future. The aim here is to significantly reduce the time it takes in Europe for an idea to be implemented. The research

³ For example, the FET Open instrument in the "Future and Emerging Technologies" (FET) programme.

framework programmes could support the work of the European Strategy Forum on Research Infrastructures (ESFRI) more strongly in this context.

c) Funding Instruments for Individual Applicants

We do not consider that further expanding the range of funding instruments for individual applicants would generate any European added value. European added value is mostly generated only when transnational R&I activities concern topics that call for the competences of players from several Member States. Although Horizon 2020 is being implemented in a difficult European funding policy context that is characterized in many countries by declining resources at the national and regional level, EU funding must not become a mere replacement for the lack of funds at those levels. Funding at the national and regional level based, for example, on strategies for smart specialisation is thus more efficient and targeted.

It also seems that funding instruments for individual players would create false incentives for the Member States. States and regions would be released from the pressure to provide relevant funding opportunities themselves. The first results of the SME Instrument show, for example, that applicants from countries which have cut back national funding for small and medium-sized enterprises (SMEs) were especially successful in the application process. The interim evaluation must therefore consider in greater depth the question of in how far the SME Instrument creates European added value while taking into account the undesired distortion of incentives. However, we believe that the European Research Council (ERC) has created a European competition for excellence between the brightest minds, best ideas and locations that provides an additional positive incentive for the individual Member States to make more national resources available for R&I funding, generating significant European added value.

d) Establishment of a European Innovation Council

In June 2015, Commissioner Moedas announced the establishment of a European Innovation Council (EIC), triggering a debate on funding for innovation under Horizon 2020 and its follow-up programme. This debate presents a good opportunity to take stock of the innovation instruments that already exist at European level. It needs to be established what gap in the value chain (from basic research including the ERC to market-driven activities) an EIC would or should close. Its measures and general thrust must be based on the principles of generating European added value and achieving more “excellence in innovation”. Only then will an EIC become the flagship of European innovation funding⁴. The interim evaluation should be used to re-focus the SME Instrument on high-potential SMEs whose market-creating innovations harbour the desired potential for rapid growth. Under the leadership of an EIC, “Inducement Prizes” could be used more often and in a more targeted manner as incentives to develop innovative solutions to great societal challenges such as the fight against malaria or affordable seawater desalination plants. Furthermore, the EIC should serve as a “one-stop shop” and guide to the European innovation funding system in order to enhance the clarity and compatibility of the various instruments.

All important initiatives must be taken on board in the process of realising the EIC. These include the European Institute of Innovation and Technology (EIT) and its Knowledge and Innovation Communities (KICs), for example.

e) No Cuts in Earmarked Funding for Horizon 2020

⁴ Cf. the BMBF’s position paper of July 2016 for more details https://www.bmbf.de/files/EIC_Positionspapier_dt.pdf

Horizon 2020 is the world's best endowed single R&I funding programme. The EU has thus sent out a strong message that R&I take priority in Europe and Europe's competitiveness is to be strengthened. The current distribution of funds gives the impression that those countries which invest substantially in their national R&I systems are particularly successful. If this is the case, the research framework programmes do not only have direct positive effects, but also act as an incentive mechanism that indirectly strengthens the competitiveness of the ERA. This mechanism creates genuine European added value, the actual extent and level of which has yet to be established. Against this backdrop, we need to avoid drawing on funds earmarked for Horizon 2020 to finance other programmes.

2. Closer Cooperation between the European Commission and Member States

The requirement to coordinate research and technological development⁵, which is aimed at ensuring coherent national and EU policies, demands continued dialogue between the Member States and the Commission. Instead, however, we are seeing a growing trend towards autonomous action on the part of the Commission. While it is the Commission's duty to implement Horizon 2020⁶, it must not set political agendas without consulting the Member States.

a) The Functioning of the Programme Committee Configurations

The need for coordination is particularly evident in the process of drafting the work programme for Horizon 2020. This coordination is to take place in the various configurations of the Horizon 2020 Programme Committee. The Programme Committee was set up to support the Commission in implementing the programme and to present its views on the work programme. However, in many instances the discussions on the work programme are inadequate. Drafts of the work programme are often made available without sufficient notice in spite of the principle of comitology which stipulates that drafts must be made available 14 days before the Programme Committee meeting. The scope and quality of the data provided is also often inadequate. This means that the Programme Committee cannot fulfil its function as a counselling and control body. The coordination of Member States' activities with activities at EU level cannot therefore be guaranteed.

b) Evaluation of the Joint Technology Initiatives and ERA-NET Cofunds

Six Joint Technology Initiatives (JTIs) were launched under Horizon 2020 as part of the Innovation Investment Package. The JTIs are also being evaluated individually within the framework of the interim evaluation of Horizon 2020. Member States must be provided with information on participation, budget spent, and in particular on industry's actual in-kind contributions in order to make an adequate assessment. So far, however, the Member States have not received this information or only to a limited extent. The Member States cannot therefore honour their counselling duties in the relevant bodies. Coordination of the activities of the Member States and the EU can also not be guaranteed.

Some states lack both the operational capabilities, particularly for coordination, and financial resources to comprehensively cover the ERA-NET Cofund activities, so that a review of the existing instruments would appear to be wise. The Commission in cooperation with all the countries involved in Horizon 2020 should establish for each thematic area whether the ERA-

⁵ Article 181 TFEU

⁶ Article 9 para 1 Regulation (EU) No 1291/2013

NET Cofunds have achieved the initial objectives of reducing the fragmentation of the research landscape and mobilising additional investments by the Member States. It is a matter of considering whether an ERA-NET Cofund activity or rather the Horizon 2020 work programme and its instruments are the tools of choice for dealing with the specific task. While the topics published under the Horizon 2020 work programme are open to all countries, ERA-NET Cofund calls are limited to applicants from the funding countries. It nevertheless proves to be a flexible instrument whose transnational funding allows it to have close links with the national funding agencies.

3. Increasing the Attractiveness and User-Friendliness of the Programme

Horizon 2020 was launched with the intention of cutting red tape, simplifying procedures and facilitating access. These objectives have been achieved in many areas. On the whole, the transition from the Seventh Research Framework Programme (FP7) to Horizon 2020 was remarkably smooth. The Participant Portal was enhanced to improve user-friendliness. Nevertheless, there are still areas where the Programme's attractiveness and user-friendliness could be improved:

a) Strengthening Synergies between Individual Horizon 2020 Programme Sections

We welcome the structure of Horizon 2020. It needs to be established whether the expected interconnectedness between the sections "Excellent Science", "Industrial Leadership" and "Societal Challenges" has been achieved. The formation of "silos" must be prevented and the compatibility of funding themes ensured. The interim evaluation should point out in particular how coordination processes between technological development (FET, "Leadership in enabling and industrial technologies"), JTIs, and areas of application (Societal Challenges) can be improved in the future. This includes the closer integration of research findings, for example from bottom-up programme areas such as the ERC, when shaping topics for the pillars "Industrial Leadership" and "Societal Challenges".

b) Measures to Reduce Over-Subscription and time-to-grant

Average over-subscription has increased from 1:5 under FP7 to about 1:8 under Horizon 2020. The rate of success is in some cases unacceptably low, particularly in open-topic programme areas.⁷ While the high rate of over-subscription is evidence of the strong demand for EU funding, the large number of excellent applications that are rejected represents a waste of staff and monetary resources which also leads to frustration on the part of applicants. There is a danger that world-class European researchers and highly innovative businesses in particular will refrain from submitting applications in future.

The Commission must make use of the interim evaluation to illustrate how the high levels of over-subscription and the declining success rates can be actively counteracted in the further implementation process. Starting points are a stronger thematic focus or a reduction in the number of call topics on themes promising considerable European added value and/or adequate financial resources for the various budget lines to ensure that a sufficient number of applications will be funded under each topic. Another potential option would be to reduce the number of person-months per project in the Innovative Training Networks (ITN) under the Marie

⁷ For example, the latest rate for FET Open 1.4 percent; Phase II of the SME Instrument 5.8 percent; MSCA-ITN 7 percent. The situation is slightly better in the case of collaborative research instruments with success rates of 12.5 percent for "Innovation Actions" and 9.6 percent for "Research and Innovation Actions", but these figures, too, are lower than for comparable national programmes.

Skłodowska-Curie Action (MSCA) (which would reduce the number of funded persons per project, but increase the total number of funded projects).

In times of ever shorter innovation cycles, it is important for applicants to be able to start their R&I projects as soon as possible. We are currently observing that the maximum time-to-grant of eight months as stipulated by the Rules for Participation is fully exhausted in many cases. The Fast Track to Innovation pilot stipulates a limit of six months, demonstrating that the time-to-grant in innovation funding can be reduced. Specific proposals should be made as to how this objective can be reached across all pillars of the programme as part of the interim evaluation.

c) No Substitution of R&I Grants with Risk Financing Instruments

Access to venture capital (both equity and borrowed capital) for R&I projects is a key element in increasing Europe's competitiveness and innovative strength.

However, loan-based financing should only be used in cases where its full potential can be harnessed and where it benefits user interests. High-risk research, technological developments and laboratory-scale pilots can hardly lend themselves to such funding instruments, not even in the private sector. The use of these financing instruments within the framework of Horizon 2020 should be limited to near-market investment activities primarily in the private sector. This is all the more important as public institutions are often not allowed to take up loans for legal reasons or only allowed to do so to a limited extent.

Measures to substitute R&I grants with loans must be avoided as the two financing lines are not simply interchangeable. Nevertheless, loan-based financing instruments are currently being expanded in a number of work programmes.

In its conclusions of 27 May 2016, the Council rightly stressed that “within the framework of Horizon 2020 care should be taken to ensure that loan-based financing is not further expanded to the detriment of grant-based R&I funding”.

d) Raising the International Attractiveness of the Programme

Horizon 2020 has become significantly less attractive for research players from outside Europe. The goal of at least maintaining international cooperation at the level of FP7, which was formulated in the Specific Programme, is clearly not being achieved at the moment. While the rate of third-country participation was still 4.9 percent under FP7, it has so far only reached 2.2 percent under Horizon 2020. The reduction in the number of financing options (in particular for BRIC countries and Mexico) can only partly account for this. Key partner countries such as the United States, Canada or Japan are considerably less involved in Horizon 2020 than in FP7 although they also did not receive any funding under FP7.

A thorough analysis - particularly of the rules for third country participation in Horizon 2020 - is required to establish why so little use is being made of the opportunities for international cooperation offered by Horizon 2020. The decline in third-country cooperation under Horizon 2020 is inconsistent with the European Commission's research policy leitmotif “Open to the World” which expresses the aim of finding joint solutions to societal challenges and maintaining and expanding relationships with third countries through “science diplomacy”.

The EU Framework Programme must not lose its visibility outside Europe and with this its position as a global “brand”. Establishing international cooperation as a mere cross-cutting research aspect under Horizon 2020 does not do justice to its actual relevance. Cooperation with third countries should be more strategically oriented. Moreover, the visibility of international

cooperation in the sixth Societal Challenge (“Europe in a changing world”) must be improved by taking concrete action and underpinned with sufficient funding. Advantage should be taken of the opportunities offered by specific elements in calls recommending the participation of third countries where this serves the desired purpose, for example with regard to the Sustainable Development Goals. It should be considered whether initiatives led by the Member States, such as EUREKA and COST, can be opened further to international cooperation, in addition to the Joint Programming Initiatives aimed at addressing the Societal Challenges. In this context, it should also be examined in how far coordinated calls for proposals in thematic areas with a narrow focus on specific target countries and a major research component (<TRL 5) can be increased. The effort/benefit ratio should be assessed to this end. The Strategic Forum for International S&T Cooperation (SFIC) should play a greater role as an advisory body in elaborating the international dimension of Horizon 2020.

e) Good Access Opportunities for all Member States and Regions

Member States continue to differ greatly in terms of their participation and successful applications for EU funding under Horizon 2020. Five countries receive approximately two thirds of the funding granted under Horizon 2020. Compared to FP7, the share of grants to EU13 countries remains low at just over 4 percent. The promising measures in the area of “Spreading excellence and widening participation” must be continued and expanded in order to put the participation of the Member States and Regions on a broader basis and take effective action to close the innovation gap. First outcomes should be analysed within the framework of the interim evaluation and be fed into the further development of these measures.

We need additional efforts beyond this programme area. Compromising the principle of excellence under Horizon 2020 in favour of cohesion is not the solution. Instead, widening participation should be developed further as a cross-cutting measure. Moreover, support measures, for example specific topics with the recommended and thematically justified participation of “widening” partners, are to be considered for all programme areas.

Horizon 2020 and the European Structural and Investment Funds (ESIF) should be used to strengthen R&I investment on the whole. Various calls for proposals issued under the EU Framework Programme already include references to ESIF and the Strategies for Smart Specialisation (RIS3). These references could be expanded to cover other programme areas, while avoiding duplications and overlap of project funding and maintaining the thrust of the instruments according to their specific goals. It should be established in how far synergies between different funding lines have already been achieved and how these can be strengthened in the future.

f) More Cohesive Interpretation and Modalities of Implementation

Several different Commission offices are involved in the implementation of Horizon 2020. German programme participants have expressed their discontent with diverging interpretations and modalities of implementation, particularly in the pillars “Industrial Leadership” and “Societal Challenges”. Particular problems arise with the cross-cutting calls in the so-called “Focus Areas”, whose purpose is expressed differently by the various configurations of the Horizon 2020 Programming Committee. The communication of financial, content-related and administrative competences should be improved.

g) Facilitating Participation of Companies

The participation of industrial enterprises in Horizon 2020 is essential for the successful translation of research findings into marketable products as well as for generating private follow-up investments. To this end, it must be examined how obstacles to participation (e.g. high rate of oversubscription and lengthy time-to-grant) can be reduced further and how the programme can be made more flexible. Industrial research in the “Industrial Leadership” pillar must once more place a stronger general focus on strengthening competitiveness.

h) Enhanced Integration of the Social Sciences and Humanities

The integration of the social sciences and humanities (SSH) as a cross-cutting topic is being realised in different ways in the various programme areas (e.g. the “flagging” of topics connected with the SSH). The monitoring report⁸ published by the Commission in autumn 2015 shows that 28 percent of projects funded under topics flagged as SSH do not involve the social sciences or humanities at all. The expert reviewers must be carefully briefed to pay attention to the integration of the SSH. At least one of the experts reviewing areas involving the SSH should have relevant specialist knowledge in this field. We welcome the fact that the monitoring process will be continued as this ensures a valuable evaluation of this new approach under Horizon 2020, the identification of weaknesses and the initiation of measures to achieve the integration of the SSH.

i) Clear and Simple Programme Structures

A number of different new instruments or modifications of existing types of measures were introduced in the first years of implementing Horizon 2020.⁹

It is difficult for both the users of the programmes and the advisory institutions to understand the development and testing of new instruments. Horizon 2020 now features funding instruments for all user groups, technology readiness levels et cetera. The introduction of new instruments following the interim evaluation would run counter to the objective of developing an effective and efficient programme. What is required instead is a thorough analysis of the effectiveness of the many instruments (e.g. the Inducement Prizes) in the various programme areas as well as their compatibility and mutual complementarity. Instruments that are proven to be ineffective must, in consequence, be dispensed with.

j) Simplifying Processes Further

A clear and simple set of rules is a decisive factor for the attractiveness and acceptance - and thus the success - of any Framework Programme. That is why Germany supports the Commission’s simplification efforts aimed at facilitating access to Horizon 2020 and project implementation in particular for small institutions with limited administrative EU expertise and newcomers to the programme. Horizon 2020 has already played a major role in achieving this.

The areas of internal cost allocation, staff costs and depreciation of equipment also harbour a great potential for simplification. There should be even greater acceptance of the internally tried-and-tested and nationally recognised procedures of the institutions and companies. The retroactive introduction of modifications to the Annotated Model Grant Agreement which make it no longer possible for research and industrial partners to charge internal costs to projects under Horizon 2020 could deter applicants with highly specialised resources in particular from

⁸ INTEGRATION OF SOCIAL SCIENCES AND HUMANITIES IN HORIZON 2020: PARTICIPANTS, BUDGET AND DISCIPLINES - Monitoring report on projects funded in 2014 under the Societal Challenges and Industrial Leadership priorities, European Union, 2015

⁹ These include, for example, the measures of the European Joint Programming Co-fund, the introduction of topic-specific risk financing facilities (IDFF, FDP) and the FET Launchpads.

participating. The additional burden of “EU-specific” accounting practices must be systematically reduced. Streamlining administrative processes would also be a possibility with regard to staff turnover and the transfer of applicants and consortium partners to other institutions in the course of a project.