

Towards 9th EU Framework Programme: Input of the Czech Republic to interim evaluation of Horizon 2020

1. European added value: Seeking joint solutions to common European challenges

Science facilitates addressing the socioeconomic challenges, which Europe is facing, by means of knowledge based solutions. In this way, science contributes to **development of knowledge based society and economy in Europe**, its immediately neighbouring regions and worldwide. As the socioeconomic needs in the areas of energy, environment, health, food, security and others have become very demanding in terms of financial, material and human resources needful for their solution, **importance of cross-border and international cooperation in the areas of research, technology development and innovation** grew significantly in recent years.

The EU Framework Programmes have always represented one of the main incentives, which triggered the cooperation of European countries in research and innovation. Focus of the EU Framework Programmes put on the development of excellent human resources for science, building the top-class pan-European research infrastructures, strengthening the public-public and public-private partnerships and facilitating the open circulation of ideas and knowledge within Europe led the European stakeholders to the creation of the concept of the European Research Area. After more than one decade spent by making this concept real and genuine, significant progress has been achieved, without any doubts. However, there is still a number of **deficiencies and shortcomings that forbid us to make full use of the overall potential of excellence in European science**.

The next, already 9th EU Framework Programme for research, technology development and innovation brings another opportunity to resolve these lacks and to further develop the European Research Area so that it responds to European needs in the most efficient and suitable way. Only with such an approach will the 9th EU Framework Programme facilitate reaching joint knowledge solutions to our common European socioeconomic challenges.

Regarding the cornerstones of the 9th EU Framework Programme, from the point of view of the Czech Republic it is very important that the Framework Programme focuses primarily on the **topics, the addressing of which will bring significant pan-European added value**. That means that the European countries should not try to shape the Framework Programme so that it responds to national needs of rather local nature. Instead of that, joint efforts should be made to seek **responses to pan-European challenges common to all European countries and all European citizens**.

2. Excellence: Building the pillars of European science

The EU Framework Programmes for research, technology development and innovation have been built upon the pillar of excellence. Excellence means excellent research infrastructure, introducing the **cutting-edge technologies** to the scientific world, as well as excellent human resources, being the actual holders of **break through ideas**, who breathe life into the most up-to-date technology devices we manage to develop, construct and operate.

Thus, the 9th EU Framework Programme should continue to support the **capacity building of pan-European research infrastructures** as well as invest into the **development of excellent researchers' careers**. Only in this way Europe may keep its technological capacities at the top-class level and complement those with excellent human skills and capabilities.

The financial instruments of the 9th EU Framework Programme should therefore enable to finance the preparatory phases and networking of **pan-European research infrastructures** while securing their construction and investment costs should remain the main responsibility of host countries. Moreover, it would be very beneficial both for the research infrastructures' operators and their user communities if the costs related to the usage were included into the portfolio of eligible costs that might be claimed by the Framework Programme grant holders. On the same line, mechanisms must be found how to share the costs of international access. These measures will contribute to a more effective use of research infrastructures in Europe and to their long-term sustainable development.

Apart from the investments in the capacity building of pan-European research infrastructures, the 9th EU Framework Programme excellent science pillar should be based on development of excellent human resources for science and innovation. In this respect, funding instruments of **Marie Skłodowska-Curie (MSCA)** and **European Research Council (ERC)** have proved to be able to attract and keep the most talented researchers in Europe, support their international mobility and finance their projects extending the frontiers of human knowledge. Therefore, as such both these instruments should continue to be the founding pillars of European science since they play not only an irreplaceable role in knowledge circulation and funding of frontier research in Europe, but have become also a criteria for measuring the research performance in many European countries.

Last but not least, the 9th EU Framework Programme excellent science pillar should pay very particular attention also to **Future and Emerging Technologies (FET)** so that Europe is able to catch up with the most recent technology trends and become the worldwide leader in this field. In this respect, since some of the individual implementation tools of FET instrument (e.g. FET Open) suffer from severe oversubscription a more strategic approach is needed when defining the FET priority areas and budgetary allocation for individual calls.

Regarding the budgetary allocation, even though many Member States have developed ways how to implement the "Seal of Excellence", **funding for the excellent science pillar of the 9th EU Framework Programme should be proportionally increased** so that there is a higher success rate and a major part of the well-evaluated proposals (i.e. ranked above threshold) is funded directly from the Framework Programme without need to search for further financial resources. This applies in particular to the MSCA instrument with both high number and high proportion of successfully evaluated applicants, eventually ending up on the reserve list.

3. Cooperation: Strengthening the public-public and public-private partnerships

The EU Framework Programmes are based on **supporting the cross-border and international cooperation** and on putting the emphasis on forming the international consortia, which would comprise partners from all over Europe (and outside), coming both from public and private sector. Numerous public-public and public-private partnerships have been established so far

under various legal frameworks. Furthermore, the Cofund instrument has become frequently used in Horizon 2020, complementing the Article 185 based Programmes, Article 187 based Joint Technology Initiatives and Contractual Partnerships financed under the Horizon 2020 or Joint Programming Initiatives funded by the Member States. Europe has found various ways of implementing the public-public and public-private partnerships. However, huge diversity of individual implementation tools is making the EU Framework Programmes more and more complex, less comprehensible for applicants and less manageable for public administration offices of European countries.

As a result of this complexity, well-balanced and fully complementary approach becomes very difficult to achieve. For sure, the “one-fits-to-all” strategy would be rather straightforward and insensitive way of simplifying the current very broad portfolio of Horizon 2020 public-public and public-private partnerships instruments. However, their implementing rules, varying a lot across individual initiatives and programmes, cause difficulties on the side of national funding authorities, and more importantly, on the side of participants. Therefore, **portfolio of public-public and public-private partnerships implementation tools should be narrowed down** in the 9th EU Framework Programme, jointly with further simplification and unification of their rules. This applies also to the Cofund instrument, whose rules should be unified across all the Cofund based initiatives and programmes. In the end, these measures may lead to an even more extensive use of the Cofund instrument in the 9th EU Framework Programme, compared to Horizon 2020, and higher attractiveness of the public-public and public-private partnerships implementation tools for their administrators and research and innovation communities.

In this respect, **Joint Programming Initiatives** have introduced a very adaptive instrument for addressing the grand societal challenges, providing the national funding authorities with full flexibility in terms of grouping the interested national stakeholders, defining the priority areas for calls, stipulating the eligibility criteria for national participants and allocating the budgetary resources. Consequently, this flexibility may make the Joint Programming Initiatives the most efficient public-public instrument for addressing the grand societal challenges in Europe.

4. Innovation: From brilliant ideas to innovative products and services

The EU Framework Programmes play a substantial role in **bridging the innovation gap** so that the brilliant innovators’ ideas and business plans do not end up in the so called valley of death. While being a leader in the field of production of high impact scientific publications, Europe is facing the challenge of becoming the worldwide innovation leader. Thus, debate on the topic of increasing the innovation capacities, capabilities and skills throughout Europe is supposed to further evolve during the preparations of the 9th EU Framework Programme. Nevertheless, emphasis on the innovation shouldn’t endanger the balance between research and innovation achieved and developed under Horizon 2020 in the 9th EU Framework Programme.

The Czech Republic is satisfied with the current architecture and instruments of Horizon 2020 devoted to industry, to strengthening their competitiveness and to providing them with risk capital necessary for the development of goods and services of high added value, which would be widely applicable on the marketplace. Besides that, taking into consideration the growing importance of **Industry 4.0**, it would be beneficial if the next EU Framework Programme paid

a particular attention to the robotics issues, which phenomenon is expected to have essential impact on the European industry infrastructure and related socioeconomic areas.

Regarding selected topics, Horizon 2020 provides the **ICT** research and innovation community with a wide range of incentives. Besides many efforts that have been already made, portfolio of ICT instruments is still quite fragmented and their further concentration and better mutual coordination within the Framework Programme is needed. More emphasis should be placed also on the issues related to digital connectivity and the area of **Safety and Security** in digital domain, which Horizon 2020 does not reflect correspondingly to their increasing importance.

Meanwhile, the ambition of becoming the worldwide innovation leader has led the European Commission to open a **debate on founding the European Innovation Council**. Since its first announcement a number of public and policy consultations have been organised and held, including the level of EU Competitiveness Council. As a result, the Czech Republic is of the opinion that there is still a space for a thorough analysis of the European innovation landscape, which should at first identify what the main lacks of the current set of innovation supportive measures are. Only once all the necessary findings are gathered, European stakeholders may agree upon a most fitted solution, either consisting in establishing the European Innovation Council or not.

One way or the other, Europe should focus on a **better coordination and complementarity** between the individual Framework Programmes innovation tools, including those, which do not fall explicitly under the industry pillar. Further **simplification and streamlining** thus remain to be one of the challenges for the 9th EU Framework Programme.

5. Widening: Bridging the innovation divide in Europe

Besides the European added value or excellence principles the cornerstones of EU Framework Programmes should always be based on the **inclusiveness and promotion of the cooperation across Europe and behind the European boundaries**. In this respect, the next EU Framework Programme should continue in attracting as many partners coming from different European and non-European countries as possible while emphasis should be placed on increasing the participation of under-represented Member States and implementing the related “Widening” measures.

During the current programming period the inclusiveness has been reflected by means of the **“Spreading Excellence and Widening Participation”** specific goal, accompanied by a set of instruments gathering not only incentives of truly financial nature (Teaming, Twinning and ERA Chairs), but also instruments consisting in assistance in the research and innovation policy development, which is managed under the umbrella of Policy Support Facility.

On one hand, under-represented Member States are facing the challenges of implementing structural reforms in their research and innovation policies and the Czech Republic is not an exemption. On the other hand, it would be naive to suppose that structural barriers causing lower participation of the under-represented Member States in EU Framework Programmes might be resolved in a short-term period. **Implementation of structural policy reforms** usually requires reasonable horizon, during which the system is gradually altered by using rather an

evolutionary “step-by-step” approach. Desired impacts and effects may be then expected not in the horizon of months or a few years, but rather in a decade or even more.

Bearing this in mind, the Czech Republic highly appreciates that Horizon 2020 includes the “Widening” instruments, which recognise the importance of inclusiveness within EU and the **necessity of bringing the European countries closer together in terms of their research and innovation performance**. Without any doubts the “Widening” instruments play a very positive role in the long-term process of upgrading the level of research and innovation landscape of the European moderate and modest innovators and, in more general perspective, in bridging the innovation divide in Europe. Therefore, the “Widening” instruments should be maintained as an integral part of the 9th EU Framework Programme.

As for the **Teaming**, it is very important to maintain an instrument supporting the long-term strategy partnerships developed between research organisations coming from the under-represented Member States with research institutes from the pool of strong innovators and innovation leaders. Europe needs flagships showing good practice examples of upgrading the European research landscape. Therefore, the Teaming instrument should be kept as one of the “Widening” implementation tools of the next EU Framework Programme.

Being in the position of a little brother of Teaming in terms of budgetary allocation per project, the **Twinning** instrument does not attract such political attention. Nevertheless, compared to Teaming the Twinning may have even more general impact on under-represented countries as there are more potential grant holders and beneficiaries financed from this instrument. In order to maximise the potential of Twinning, the Czech Republic would welcome switching its nature from the currently used Coordination and Support Action (CSA) to the Research and Innovation Action (RIA). Such alteration should be accompanied by an appropriate increase of the budgetary allocation per Twinning project and for the Twinning instrument as a whole, even at the costs of decreasing the budgetary allocation for the Teaming or ERA Chairs tools.

Regarding the **Policy Support Facility** (PSF) and potential of the Czech Republic for making use of its research and innovation policy development services, it is needful to emphasize that the Czech Republic still quite recently (2011) commissioned the Technopolis Group to perform an overall international audit of the Czech national research and innovation system. As there are recommendations resulting from this audit, which still need to be implemented, the current potential for using the PSF services is limited by the already delivered findings. Nevertheless, the Czech Republic considers the PSF services very beneficial for development of research and innovation policies in the Member States and supports the idea of preserving them also within the 9th EU Framework Programme. Following the above-mentioned, the PSF should help the under-represented Member States to prepare, implement and evaluate the impact of reforms introduced to their national research and innovation policies, which, in the end, should help the under-represented Member States to boost their research and innovation performance and, in consequence, to be more intensely involved in the 9th EU Framework Programme.

The portfolio of “Widening” incentives encouraging the under-represented Member States to successfully participate in the 9th EU Framework Programme may be then supplemented by a number of indirect measures such as **increasing the minimum number of project partners**

and countries in a consortium or introduction of bonuses for consortia that would comprise a certain number of partners coming from the under-represented Member States.

While debating the “Widening” special attention should be paid also to the **development of an appropriate system of remuneration of participants** so that the remuneration rules are not disadvantageous for participants coming from the under-represented Member States.

A still remaining challenge that might have a serious impact on increasing the participation of under-represented Member States in the 9th EU Framework Programme is a **closer synergy between the EU Framework Programme and the instruments of EU cohesion policy**. Even though there are good practice examples of synergies between Horizon 2020 and European Structural and Investment Funds, the potential of applying the synergies is still underutilised, mainly due to the administrative discrepancies between both financial tools. Their rules thus need to be further streamlined, harmonised and simplified.

Summary

Horizon 2020 Framework Programme is representing the crucial instrument, which promotes the **cooperation in science, technology and innovation within the European Research Area**, bringing significant impacts also on the development of international cooperation between EU Member States and their neighbouring regions or overseas cooperating countries. Within its numerous implementation schemes Horizon 2020 facilitates concentration of knowledge and technology expertise sufficient enough to enable reaching scientific solutions to European socioeconomic challenges.

The next EU Framework Programme should be based on several core pillars. The excellence principle should ensure that the EU Framework Programme contributes to development of European capacities and capabilities so that these are internationally competitive and reach the world-class quality level. Implementation of public-public and public-private partnerships should enable the European stakeholders to **join their forces and resources, when addressing the grand societal challenges**, and prevent them from fragmentation or duplication of efforts. The innovation support schemes should help the European businesses to transfer the scientific knowledge in innovative goods and services and strengthen the competitiveness of European industries on the worldwide markets.

Following the Horizon 2020 “Spreading Excellence and Widening Participation” specific goal, the next EU Framework Programme should focus on further increase of participation of under-represented Member States. Bridging the innovation divide in Europe should be a leitmotiv for introduction of measures **encouraging the consortia to invite partners from less involved countries**. Simultaneously, Member States should strengthen their efforts to realise structural reforms within their national research and innovation systems, as a complementary action to the “Widening” instruments.

As the EU Framework Programmes become more and more complex, European stakeholders should carefully consider the 9th EU Framework Programme overall structure. Its architecture should be streamlined, particularly in the field of instruments supporting the public-public and public-private partnerships. **Simplification of structure, unification of rules** (especially within

the group of Cofund instruments) **and better coordination** of individual schemes with higher level of mutual complementary will make the Framework Programme more comprehensible and attractive.

Furthermore, **better alignment of the EU Framework Programme with instruments of the EU cohesion policy** in terms of their goals and administrative rules would facilitate more synergy approach of relevant stakeholders.

Regarding the openness, the 9th EU Framework Programme should build upon the experience gained during the Horizon 2020 implementation period. It should follow the principles of **open science** and make the research data and scientific results accessible to both professional and non-professional society.

As for the inclusiveness, the 9th EU Framework Programme should continue to apply **gender mainstreaming**, reflect the objectives of **gender balance** in research teams and in decision making processes and support the inclusion of **gender dimension** in research and innovation contents.

In conclusion, the 9th EU Framework Programme should bring the European countries and their citizens a pan-European added value. It should consist in **supporting the excellence and promoting the cooperation**. It should be **open and inclusive**. It should lead to building of top-class capacities and strengthening their competitiveness. In the end, the 9th EU Framework Programme should substantially contribute to **development of European knowledge society** and facilitate further **development of European economy** in order to increase the standard of living and **wellbeing of European citizens** and citizens of cooperating countries.