



January 2017

# Interim evaluation of Horizon 2020 and direction of FP9

## Position of Switzerland. State Secretariat for Education, Research and Innovation

Participation in the European Framework Programs is one of the priorities of Swiss science policy. The EU Framework Programs are an important funding source for Swiss researchers and innovators, as well as a strategic element for research promotion for universities in Switzerland. Horizon 2020 is the biggest EU Research and Innovation program ever. With nearly €80 billion of funding available over seven years (2014 to 2020) it promises more breakthroughs, discoveries and world-firsts by taking great ideas from the lab to the market.

With this position paper, the State Secretariat for Education, Research and Innovation (SERI) wants to contribute to the interim evaluation of Horizon 2020 and the direction of the next Framework Program for Research and Innovation (FP9). Views and recommendations presented in this paper are the result of a comprehensive national consultation. Contributions to this consultation come from approximately 200 researchers from, universities, Schools for Applied Science, SMEs and industry, as well as Swiss NCPs, and stakeholder institutions (swissuniversities, Swiss National Science Foundation, SwissCore, Euresearch, and Swiss Academies of Arts and Sciences).

Switzerland's views and recommendations to the European Commission on the European Innovation Council (EIC)<sup>1</sup>, and proposals for future FET Flagships are presented in separate position papers, available [here](#)

## Key recommendations

Drawing on the recommendations presented in this document, we want to highlight below the most important set of actions that Switzerland proposes for the second half of Horizon 2020 and next Framework Program for Research and Innovation (FP9).

### Streamline funding initiatives; maintain the three pillar structure

- Keep Horizon 2020's structure in the next Framework Program (FP9). Improve consistency and interaction between the three pillars and the additional programs and funding instruments.

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<sup>1</sup> [European Innovation Council. Position of Switzerland. State Secretariat for Education, Research and Innovation SERI and the Swiss Innovation Promotion Agency CTI](#)



- Offer fewer and more streamlined instruments with harmonized rules reducing as much as possible the administrative burden for researchers. Provide a more clear and coherent description of the objectives of the different funding instruments and a comprehensible overview on the complementarity amongst them.

#### Maintain the right balance between support for fundamental and applied research, and innovation:

- Provide sufficient funding to fundamental research through individual and collaborative research across the Framework Program, e.g. through the ERC but also Pillar III
- Consider the entire innovation cycle, making sure that an adequate balance between market and non-market oriented research is achieved. Consequently, increase the funding support for projects involving technologies with lower TRL (TRL 1 to 3).

#### Ensure the support for various forms of bottom-up research

- Secure balanced support for collaborative and individual research, bottom-up driven research focused on clearly defined and globally relevant objectives.
- Offer more opportunities in Pillar I for collaborative research, such as the ERC Synergy Grants and FET Open. Implement more funding opportunities such as the Proof of Concept grants in the ERC in other different parts of the Framework Program e.g. Pillar III.

#### Better integration of Social Sciences and Humanities

- In order to benefit from SSH as a tool to help addressing great challenges (such as migration and radicalization), stakeholders and groups involved in the development of the work program (e.g. evaluators, advisory groups) should include relevant SSH experts from the very beginning.
- SSH experts should be systematically included in evaluation panels to ensure adequate evaluation of proposals with an SSH component.

#### Foster further simplification of application and participation

- Implement simpler audit practices and straightforward rules to report internally invoiced costs.
- Allow for smaller consortia in collaborative projects to reduce administrative burden due to the constantly growing size of research project consortia.
- Improve tools that enable participants identifying appropriate funding opportunities, such as the search function in the participant portal to find information about new calls, explicit link the electronic version of the work program with the call reference in the participant portal.

#### Tackle oversubscription and low success rates

- Articulate more clearly the expected “impact” in the calls. This will allow scientists to draft proposals that are more consistent and prevent them from submitting out-of-focus proposals.



- Encourage evaluators to describe the limitations of a proposal more precisely and to avoid including overall generic feedback. This will reduce the risk of smoothening out the proposal shortcomings and help applicants to understand what is needed to improve their proposal.
- Implement a two-stage submission procedure more regularly. Whenever possible shorten the time for the first stage while extending the time between first and second stage.

#### Support research through grants, not loans

- For academic and non-for profit institutions, keep grants instead of loans as the main funding model. Whenever appropriate, consider loan models to fund market-oriented research.

#### Continue supporting Open Science

- Continue stimulating the dialogue between stakeholders, researchers, data specialists, policy-makers and publishers. Avoid duplication of efforts by developing a joint strategy that helps synchronizing the working activities and establishing a platform to ensure cross-fertilization between the groups. Act as a facilitator of the discussion among stakeholders not only at European, but also at global level.
- Offer funding opportunities to research on Open Science to generate scientific evidence on the challenges and benefits of open access at different levels (e.g. researchers, funders, society, consumers, etc.), as well as on the cost-effectiveness of the Horizon 2020 measures.
- An important goal of Open Science is to increase the value and sustainability of scientific results, and reduce waste in research. Consequently, more funding opportunities to “Research on Research” would allow, researchers to take the time to assess quality and consistency of scientific results, to round up research conducted on a particular topic, to determine what the common themes are, and whether there is a common answer that has been discovered on the topic.

#### Strengthen Open to the World Policy

- Strengthen the ERC and MSCA instruments by increasing or at least maintaining the respective budgets. Open up the instruments (under certain conditions) to third countries participants to increase prestige and competition.
- Keep excellence as main criterion for funding. Strengthening scientific excellence in Europe should remain a fundamental goal.



## Lessons learnt from Horizon 2020 and proposals for FP9

### **Streamline funding initiatives; maintain the three pillar structure**

Swiss scientists and stakeholders highly appreciate the Horizon 2020's structure designed around three pillars: I. Excellent Science, II. Industrial Leadership and III. Societal Challenges. They described this structure as appropriate and efficient. Several Swiss scientists and stakeholders pointed out that the number of additional programs and funding instruments (such as JPIs, JTIs, Art.185 initiatives EIT, etc) makes it complex to navigate the overall program and to identify where adequate funding opportunities exist.

#### **Recommendations:**

- Switzerland welcomes the core structure of Horizon 2020, consisting of three Pillars. We recommend maintaining the same structure in the next Framework Program (FP9) but improving consistency and interaction between the three pillars and the additional programs and funding instruments.
- We see a need for a clear and more coherent description of the objectives of the different funding instruments and a comprehensible overview on the complementarity amongst them.
- In order to increase the impact of the different funding opportunities and avoid fragmentation, we recommend streamlining or merging similar instruments and initiatives.
- Opportunities funded through the ERA-NET instrument could be streamlined for example by launching larger calls. This will help to reduce administrative costs in the individual countries.

### **Maintain the right balance between support for fundamental and applied research, and innovation**

Applied research and activities close to market directly contribute to solve short-term societal and commercial challenges. Fundamental research is the foundation on which applied research builds, and it serves to feed the pipeline for products and services we consume. Approaches in fundamental research are long-term oriented and build up the basis for more sustainable and goal oriented innovations. Funding support in Horizon 2020 should serve to stimulate the link between fundamental, applied and impact oriented research, thus illustrating the whole innovation chain - from the foundation to bring products and services effectively to the market and closer to the society.

Horizon 2020 offers support for fundamental research primarily in Pillar I (Excellent Science), through the European Research Council (ERC), the Marie Skłodowska- Curie Actions (MSCA) and the Future Emerging Technology (mainly FET Open and FET proactive). In contrast, Horizon 2020 support for applied sciences and research activities close to the market is mostly offered in Pillar II (Industrial Leadership) and III (Societal Challenges). Calls for proposals in these two Pillars often require products



to be at a high Technology Readiness Level (TRL 5 or higher). A TRL higher than five requires that a specific technology has been validated at least in a relevant environment. Consequently, focus on high TRL limits the potential of research, hampers participation and holds back contribution from technologies from lower TRLs.

#### **Recommendations:**

- Switzerland very much seconds Horizon 2020's objective to bridge the gap between fundamental research and implementing innovation, and supports opportunities for applied research and innovation activities. Nonetheless, we observe with concern the limited support offered to collaborative fundamental research, which serves to answer scientific questions and is long-term oriented. Hence, in the second half of Horizon 2020, we strongly encourage offering more funding opportunities for collaborative fundamental research with no primary market orientation in Pillar II and III.
- Lack of support for research on technologies with a lower TRL (1 to 3) automatically results in holding back technologies from reaching a higher TRL. Switzerland strongly recommends increasing the funding support for projects with a lower TRL in Pillar III. Calls including low TRLs will enable Europe to cover the whole scope of scientific excellence and to contribute to solutions for short-term as well as long-term societal challenges.
- Excellent bottom-up, investigator-driven fundamental research must remain a central backbone of Horizon 2020. Sufficient funding to fundamental research should be further provided through the ERC, but also through other parts of Horizon 2020.
- Consequently, FP9 should prioritize excellence, bottom-up, fundamental and multidisciplinary research. It should include sufficient funding to fundamental research for individuals and collaborative project, appropriate opportunities for research involving low TRL technologies

#### **Ensure the support for various forms of bottom-up research**

Horizon 2020 offers funding opportunities for excellent individuals (bottom-up, investigator-driven research) and collaborative projects (mainly top-down oriented).

On the one hand, there is prominent support for fundamental, bottom-up, investigator-driven research projects in Pillar I. ERC and MSCA are highly relevant instruments given their bottom-up nature. They attract the best scientific talents worldwide, thus supporting the raise of a new generation of top researchers. Excellent researchers benefit from substantial grants, pan-European competition, excellent reputation and simplicity of the instrument, which would be difficult to replace at national level. ERC and MSCA respond especially to expectations of young researchers who seek opportunities to pursue new ideas that may enable breakthrough discoveries. Scientific excellence as the main evaluation criterion ensures genuine competition among researchers and research institutions.



On the other hand, a tremendous potential of collaborative research projects has been proven successful in Pillars II and III. Collaborative projects support cross-border and interdisciplinary cooperation, leading to cross-fertilization between disciplines, as well as cross-country learning and networking opportunities. They enable researchers from different regions (in Europe and beyond) and backgrounds (public, private) to work together. Collaborative projects are essential for addressing societal problems in Europe, which no country or researcher can solve alone.

#### **Recommendations:**

- Switzerland considers that collaborative research clearly reflects the real European added value. The remarkable potential of the combination of collaborative projects and bottom-up research and innovation should be strengthened and effectively supported across Horizon 2020 and the future FP9. We strongly support offering more collaborative research opportunities in Pillar I, such as the ERC Synergy Grants and FET Open.
- Switzerland is convinced that bottom-up, investigator-driven research is a very effective manner to foster real innovation. We strongly encourage supporting bottom-up research for collaborative projects in Pillar III.
- Funding opportunities such as the Proof of Concept grants in the ERC should be implemented across Horizon 2020 and FP9.

#### **Better integration of Social Sciences and Humanities**

It goes without saying that a critical validation and an in-depth understanding of societal and economical challenges requires exhaustive analysis and expertise from the Social Sciences and humanities (SSH). Beyond understanding these challenges, SSH enables translating scientific results to society, consequently allowing scientific results reach a higher societal and economic impact. Horizon 2020 aimed at better integrating SSH as an essential part of the activities in all program sections.

Despite this intention, which Switzerland very much welcomes, synergies are still not visible and interdisciplinary research fully including SSH is not yet funded at its potential. This does not necessarily mean that there are not enough calls or topics with an SSH component. According to the EC, 41% of all Horizon 2020 topics in Pillars II and III (WP 16-17) include an SSH component and are “SSH-flagged”. Swiss SSH stakeholders believe that the SSH component is often described with a rather vague formulation such as “consider gender dimension” or “consider social acceptance of xy”. Furthermore, SSH-flagged calls and topics do not require the involvement of SSH in research consortia, making an effective contribution by SSH to a proposal rather scarce.

#### **Recommendations:**

- Switzerland supports efforts to further integrate SSH in Horizon 2020. In the remaining period of Horizon 2020 and in the future FP9, we strongly recommend encouraging and, whenever appropriate, requiring scientists to involve SSH researchers in research consortia.



- In order to benefit from SSH as a tool to help addressing great challenges (such as migration and radicalization), expert and groups involved in the development of the work program (e.g. evaluators, advisory groups) should include relevant SSH experts from the very beginning.
- As implemented by the EC in the Horizon 2020's calls 2016-2017, evaluation panels should systematically continue including SSH experts. This will enable to adequately evaluate proposals with an SSH component.

## **Foster further simplification of application and participation procedures**

Compared to FP7, Horizon 2020 implemented measures such as the harmonization of rules and fewer funding schemes (RIA, IA, CSA), single participant portal, which significantly streamlined the application process and administration of projects. Simple administrative processes and project management are of particular benefit to those who lack previous experiences and resources to cope with the administrative burden. Further simplification will give real opportunities to excellent newcomers.

### **Recommendations:**

- Switzerland welcomes the measures implemented to simplify and improve the efficiency in application and participation in Horizon 2020. FP9 should continue fostering simplification at various levels.
- We recommend implementing simpler audit practices and straightforward rules to report internally invoiced costs (for example for the use of shared laboratory or testing equipment).
- We encourage improving tools that enable participants to identify appropriate funding opportunities: search function in the participant portal to find information about new calls, explicit link the electronic version of the work program with the call reference in the participant portal.
- Administrative burden is increasing due to the constantly growing size of research project consortia. To enable participants to focus on their research, we suggest keeping the size of consortia within a manageable limit.

## **Tackle oversubscription and low success rates**

Switzerland shares the concerns of other countries about the oversubscription and the low number of successful applications within Horizon 2020. Scientists and stakeholders in Switzerland perceive oversubscription as an additional hurdle to submit project proposals. They pointed out that the unbalanced between the considerable high costs for development of high quality proposals and oversubscription combine with low success rate, clearly affects the motivation to participate. There is concern that oversubscription may have a negative effect on the quality of the evaluation process due to overloaded evaluators. This perception is increased by discrepancies between the rather generic feedback in the Evaluation Summary Reports, the score and a negative funding outcome.



### **Recommendations:**

- Impact is a key element in the evaluation of proposals. However, participants expressed a need to comprehend better what the expected “impact” intends. In some occasions, scientist and stakeholders in Switzerland perceived its meaning rather more politically than scientifically or societal driven. Accordingly, we recommend a more clear articulation of the expected “impact”. This should allow scientists to draft proposals that are more consistent and prevent them from submitting out-of-focus proposals.
- Similar to the ERC system, evaluators should be encouraged to describe the limitations of a proposal more precisely. In this sense, Evaluation Summary Reports should avoid including overall generic feedback, which might result in smoothening out the comments of the evaluators and impeding applicants to understand well enough what is needed to improve a proposal.
- Scientists in Switzerland have a clear preference towards the two-stage submission procedure. In the second half of Horizon 2020 and the FP9, we therefore recommend implementing a two-stage submission procedure more regularly. Whenever possible, time for the first stage should be shorter, and time between the first and second stage extended.
- Despite the relevance of the impact of research and innovation, excellence should remain the main criterion for evaluation.

### **Support research through grants, not loans**

Switzerland observes with concern the increasing trend towards loan-based funding. We consider this a less suitable form to fund research. For the largest part of research as well as non-for-profit and public institutions, grants are the only acceptable and realistic funding model. It is not suitable to implement a loans funding model in an academic, not for profit context. Academic consortia typically share intellectual property rights for products or innovative solutions resulting from their collaborative research. However, for example access to loans under the InnovFin instrument required a member of the consortium to claim for the IPR ownership. The very fundamental “right to fail” of science makes loans a rather less sustainable form to fund scientific research. The nature of research does not guarantee researchers positive results from the beginning. In science, negative results can also be considered a success.

### **Recommendations:**

- Switzerland strongly recommends to maintain grants as the main source of funding and to reduce loan-based funding to the minimum.

### **Continue supporting Open Science policy**

Switzerland welcomes the measures implemented in Horizon 2020 towards Open Access to scientific publications and Open Research Data. We are convinced that Open Access to scientific results serves to spread knowledge on which further research can build upon. It contributes to better reproducibility





and validation of scientific results, and accelerates the innovation process. Open Research Data has the potential to speed up the research process, improve trust in research, contribute to research integrity as well as foster transparency and ethical scientific conduct.

### **Recommendations:**

- Switzerland participates in the discussion about Open Science in multiple groups initiated by the European Commission, e.g. ERAC working groups, NRP, Open Science Policy Platform (OSPP), and European Open Science Cloud (EOSC). We strongly support efforts to stimulate dialogue between stakeholders, researchers, data specialists, policy-makers and publishers. Switzerland is however of the opinion that there are currently too many groups set up around Open Science without a clear common strategy or goal. In order to benefit from these discussions and to avoid duplication of efforts, we strongly recommend elaborating a joint strategy that helps synchronizing the working activities and establishing a platform to ensure cross-fertilization between the groups.
- In order to avoid fragmentation of the debate and ensure a common, global understanding of the benefits and challenges of Open Science, Switzerland strongly encourages the European Commission to facilitate the discussion among stakeholders not only at European, but also at global level.
- Switzerland welcomes the efforts from the European Commission, through the EOSC, to align existing data infrastructures.
- We welcome Horizon 2020 measures, such as obligation to ensure open access (free of charge, online access for any user) to all peer-reviewed scientific publications relating to its results and the Open Research Data requirement (with opt-out option), to be implemented in 2017. However, Swiss scientists and stakeholders call for clearer information on the following aspects:
  - It should be explained more clearly that funding for publication in hybrid journals in Horizon 2020 is not eligible for funding.
  - Costs for article processing charges (APC) should be allowed as eligible costs.
  - Requirements for Open Data as well as rights and implications for opt-out options should be described more clearly.
  - Eligibility for reimbursement of costs for data archiving in a repository should be explained more clearly.
- Funding opportunities to research on Open Science as such should be provided so as to produce scientific evidence on the challenges and benefits of open access at different levels (e.g. researchers, funders, society, consumers, etc.), as well as on the cost-effectiveness of the Horizon 2020 measures.
- Offering the best platform, Horizon 2020 should pilot new/alternative metrics.
- An important goal of Open Science is to increase the value and sustainability of scientific results, and reduce waste in research. Consequently, more funding opportunities to “Research on Research” would allow, researchers to take the time to assess quality and consistency of scientific



results, to round up research conducted on for a particular topic to determine what the common themes are, and to determine if there is a common answer that has been discovered on the topic.

## **Strengthen Open to the World Policy**

International cooperation contributes to efficiently address societal challenges at a global level and promote international mobility of researchers and innovators. The participation of third countries (not associated to Horizon 2020) in Horizon 2020 dropped to 2.4% compared to 4.9% (collaborative projects) in FP7, despite the fact that the number of topics flagged with international cooperation relevance increased from 12% in FP7 to 27% in Horizon 2020. Various elements may have contributed to this decrease. First, international cooperation had a dedicated funding program in FP7 (INCO). In contrast, Horizon 2020 integrates international cooperation as a transversal issue. Second, the BRIC and Mexico are no longer automatically eligible for funding under Horizon 2020. Third, legal divergences, e.g. in the grant agreement, have until recently hampered the participation of US and Canadian research institutions.

### **Recommendations:**

- For FP9 we strongly encourage the EC to explore co-funding mechanisms with third countries, to offer more flexible framework conditions, to facilitate participation of third countries and to evaluate closely whether a specific instrument to support international cooperation should be re-introduced.