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Swiss Science: Quo Vadis after Exclusion from the European Framework Program?

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member of the research council and President of the Division for Mathematics, Natural Sciences and Engineering of the Swiss National Science Foundation (SNF). Since 2011 he is member of the Executive Board of the University of Bern, serving first as Vice-Rector for research and as of August 1, 2016 as Rector of the University.

Introduction

On July 14, 2021, it became official that Switzerland was dropped from the list of non-EU countries which are to engage in negotiations with the European Community for association to the European research network Horizon Europe and the student exchange program Erasmus+. The reason being the unilateral abandonment of the framework contract between Switzerland and the EU by the Swiss government. Switzerland with its internationally very competitive, world-class research capacities has been associated since 2004 to the European framework programs. With the degradation to third country status, it has lost its access to the prestigious grants of the European Research Council (ERC), it has only very limited access to the Marie Skłodowska-Curie actions (MSCA) for young researchers and it can no longer lead cooperation projects and only participate in such projects in a limited way. What does this mean for the future of academic research and education at Swiss universities?

Current Situation

Unfortunately, this situation is not new. Already in 2014, after the Swiss people accepted the initiative against mass immigration, Switzerland was excluded completely for a short period of time from the previous program *Horizon 2020*. By intervention of the Federal Council for Economy, Research and Education, the Swiss National Science Foundation (SNSF) was mandated to set up a temporary backup scheme to fund Swiss projects that

were positively evaluated by the scientific panels of the ERC. In 2016, full association of Switzerland could be re-established. An evaluation by the SNSF four years after exclusion showed that the Swiss scientific community did not fully recover from the negative consequences of the lock-out as its participation in projects dropped from 3.2% to 2.4% relative to the previous funding period, and fewer Swiss scientists obtained invitations to join cooperation projects.^[1]

Today we are facing a very similar situation in which it is expected that the State Secretariat for Education Research and Innovation (SERI) will mandate again the SNSF to introduce a similar temporary backup scheme. What is now different? The trust of our European partners in having Swiss groups reliably integrated in cooperation projects is already damaged. This will have a potentiating effect on the known negative consequences from the 2014 exclusion.

Switzerland with its very innovative scientific contributions to areas such as climate science, space science, biomedical science or chemical and material sciences is dependent on the possibility to be part of large, international research consortia, as those funded by the Horizon program, to maintain or further strengthen its world class position in research. Such programs are based on longstanding commitments of its partners and severely suffer from stop-and-go politics that we have faced now twice since 2014.

Reactions of our European Research Partners

Already in 2018, the SNSF warned about the consequences of a renewed exclusion of Switzerland from *Horizon Europe*.^[1] Earlier this year, Swiss universities, the roof organization of all Swiss higher education institutions, also expressed its concern, just before the Swiss-EU framework agreement was abandoned.^[2] But what is the view of the European research community?

Fortunately, there is overwhelming support by the European University organizations offered to Switzerland, despite the political differences in Swiss-EU relations. In an open letter of June 7, 2021,^[3] no fewer than 15 European science organizations expressed their concern about the exclusion of Switzerland, pointing to the strength and competitiveness of the Swiss science landscape and the lose-lose situation the exclusion would create for the whole European Research Area (ERA). Not to forget the open statement of April 23 of five research-intensive university groups, namely the German U15, the Russell Group, the UDICE, the LERU and The Guild, that even urged the EU commission to reconsider its stance in the context of restricting access of UK, Switzerland and potentially other countries to certain parts of the ERA.^[4] In addition, the exclusion of Switzerland gained a lot of attention in the scientific press as can be seen by articles in *ChemistryWorld*,^[5] *Science Business*,^[6] *University World News*,^[7] and others. This support clearly highlights the negative impact that the exclusion of Switzerland has for both Switzerland and the EU.

Alternatives

It is a paradox that Switzerland, being geographically at the heart of Europe and culturally and economically strongly connected to the EU, should no longer be part of the European research network. By speaking to persons in Swiss politics or

economy, one often hears the question on why not instead associate with countries outside the EU. Very often these questions originate from a negative view of Europe's capabilities to become a game changer in research and innovation in the future. Typically, the US and the southeast Asian countries, including China and India are mentioned here as potential partners.

One of the strengths of the Swiss academic system is its openness and its strong connections worldwide, including all relevant countries. This is reflected by our academic staff and our PhDs and post-docs in which the degree of internationality is close to or above the 50% level in many of our universities. Fact is, however, that there does not exist a similar network. The Horizon Europe program is with € 95.5 billions the largest financed, international research network in the world. Its instruments in funding basic research and innovation in a competitive way, in all societally relevant fields respecting the freedom of academic research, committed to open science and inclusiveness are unparalleled. The same holds true for the student exchange program Erasmus+. Participation is essential for a small country like Switzerland being a big international player in science. Thus, there is no alternative with similar impact available.

Consequences

If the exclusion of Switzerland from the European research network persists it will have severe negative consequences for the quality and the competitiveness of the Swiss academic system. These consequences will not be visible today or next year, but they will gradually become apparent over the next 10 years.

In the previous program Horizon 2020, the University of Bern, for example, has gained 175 projects (2014–2020) with a total financial volume of 120 MCHF. Amongst these projects were 37 ERC starting, consolidator or advanced grants, 66 Marie Skłodowska Curie grants as well as 72 collaboration projects. For many of the latter, we were the leading institution. If this is compared to the total funding of UniBE by the SNSF in the same period of time of 688 MCHF, this corresponds to 16.5% of total competitive funding for basic research. Thus, it becomes evident that the financial loss is severe, but will not be the game changer, given that the SERI and the SNSF will cover most of the financial losses by their projected backup schemes.

The real threat is the loss of reputation and attractiveness of the Swiss academia. Roughly half of all 12 Swiss universities are among the top 150 Universities worldwide in the Times Higher Education (THE) or the Quacquarelli Symonds (QS) ranking. These rankings parametrize not only scientific output and citations, but also international staff and scientific reputation. If we are now excluded from the European research community, we will lose attractivity for foreign staff and partnership in collaborations. Thus, it will only be a question of time when this will be reflected negatively in the rankings.

As just mentioned, being excluded from the ERC program will reduce the attractiveness of the research location Switzerland for the best European talents. Why should a researcher who earned a prestigious ERC starting, consolidator or advanced grant be attracted to Switzerland? Even if this researcher gets financial reimbursement by the SNSF, he or she will be excluded from other funding possibilities of the Horizon network. And why should a young investigator be attracted to a Swiss University if he or she cannot apply for a Marie Skłodowska Curie grant? Especially for

young investigators, this highly competitive reward is important for their future academic career.

The same is also true the other way round. Why should a Swiss young or advanced scientist remain in Switzerland if his or her career opportunities are brighter at the research-intensive European Universities?

Being excluded from the Erasmus+ program will also lead to a loss of attractiveness on the level of Bachelor and Master students. Already in Horizon 2020, Switzerland was excluded from this program, but could still be associated *via* the Swiss-European Mobility Program (SEMP). The mutual recognition of academic credits between European and Swiss institutions is at risk in the future, as the European academic system is constantly evolving its policy on university cooperation. In other words, the future of SEMP is not guaranteed at all.

The mobility of students, however, is important for their future professional careers. Swiss students can take advantage to become integrated in international scientific networks at the best European institutions and the European students have the possibility to become integrated in the Swiss research environment, becoming optimally prepared for an academic or professional career in Switzerland, thus alleviating the skilled workers shortage in the high-tech Swiss economic environment.

Conclusions

For ten years now, Switzerland is the Champion in the ranking of the global innovation index. This has been mainly achieved *via* high investments in research and development and with the high quality of Swiss universities attracting human capital. Why put this at risk by the exclusion of Switzerland from the world's largest academic research and education network Horizon Europe? The mutual political understanding between Switzerland and the EU is currently at odds, yet this understanding is necessary to establish long-lasting, stable relations. This in turn is needed to keep the Swiss academic system fit for the future challenge to maintain and even improve its scientific quality and competitiveness. Therefore, the only option for the Swiss academic system is to get associated to Horizon Europe as soon as possible. For this to happen the political authorities are asked to provide the corresponding framework.

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- [1] Interview with A. Kalt, director of SNSF <https://www.snf.ch/de/MGG6HSyJcoSpKfDo/news/news-181102-die-schweizer-forschung-braucht-europa>
- [2] <https://www.swissuniversities.ch/aktuell/medienmitteilung/rahmenabkommen-mit-der-eu-swissuniversities-fordert-die-weiterfuehrung-der-gespraechе-um-die-beteiligung-der-schweiz-an-den-eu-forschungs-und-bildungsprogrammen-sicherzustellen>
- [3] <https://www.the-guild.eu/news/2021/the-guild-supports-switzerland%E2%80%99s-full-association-.html>
- [4] <https://www.the-guild.eu/news/2021/european-networks-call-for-full-access-to-horizon-.html>
- [5] <https://www.chemistryworld.com/news/switzerland-loses-associated-country-status-in-horizon-europe-programme/4014036.article>
- [6] <https://sciencebusiness.net/news/hopes-dim-quick-end-row-keeping-swiss-out-horizon-europe>
- [7] <https://www.universityworldnews.com/post.php?story=20210722144107795>