



25 years Scientific cooperation between Eastern Europe and Switzerland

Summary of the conference on 20 January 2015 in Bern

Conference programme

25 years Scientific cooperation with Eastern Europe

Tuesday, 20 January 2015, 13:30-17:45

Kursaal, Kornhausstrasse 3, Bern

13:00 Registration

13:30 **Welcome address**

Martin Vetterli, President of the National Research Council of the SNSF

13:40 **Opening statements**

Significance of international cooperation

Mauro Dell'Ambrogio, State Secretary, State Secretariat for Education, Research and Innovation (SERI)

Research in and with developing and transition countries

Elisabeth von Capeller, Vice-Director, Swiss Agency for Development and Cooperation (SDC)

14:00 **EU policy on research and innovation for Eastern Europe**

Science in Eastern Europe

Jean-Pierre Bourguignon, President of the European Research Council, Brussels

Linking science to innovation through smart specialisation: a new regional policy approach in the EU

Dominique Foray, EPFL, member of the SNSF Research Council

15:00 Coffee break

15:30 **State of play from the perspective of Eastern European researchers**

Alexander Shengelaya, Department of Physics, Tbilisi State University, Georgia – Natural sciences

Gabriela Tejada, EPFL

Elena V. Zaklyazminskaya, Russian Research Centre of Surgery, Moscow, Russia – Life sciences

16:30 **Round table: current and future challenges**

Three representatives from research funding agencies in Eastern Europe & three researchers from Eastern Europe

17:30 **Conclusion**

Q&A, contributions by participants

17:45 Reception

Moderation: Muriel Siki

Welcome

On the occasion of the 25th anniversary of cooperation with Eastern Europe, the SNSF organised a conference in Bern to share experiences and opinions and discuss future challenges. The four main topics of discussion were: the importance of basic research, the promotion of young scientists, the advantages and disadvantages of mobility as well as internationalisation and competitiveness. The workshop focused on the current state of the sciences in Eastern Europe and their integration into the European Research Area. This booklet summarises the main insights gained from the contributions and discussions. I wish you an interesting read.

Martin Vetterli, President of the National Research Council of the SNSF



Background

It has been 25 years since the fall of the Iron Curtain, which for decades separated Eastern Europe and the Soviet Union from the West. This was a historic moment, and the beginning of a difficult process for the former communist countries. From one day to the next, they had to switch from a planned economy to a market economy. Their industries suddenly had to cope with global competition. The result was economic meltdown in many Eastern European countries. It was in this context that the Swiss parliament approved a financial contribution to help the countries that were suffering an economic downturn. As part of these efforts, the idea arose to strengthen the scientific community in the countries affected. For this reason, the Swiss Agency for Development and Cooperation (SDC) and the Swiss National Science Foundation (SNSF) launched a joint programme for Scientific Cooperation between Eastern Europe and Switzerland in 1990.

Reasonable investment in basic research is essential for the future

The main aim of basic research is the acquisition of new knowledge. The curiosity of researchers leads for example to new medical treatments, promising technologies or a novel understanding of social phenomena. Basic research and the associated human capital is essential in unlocking the potential for innovation, economic growth, better quality of life and social development and can be seen as an essential contribution to the transition of these countries to democracy.

However, it often takes many years before investments in basic research pay off. Discoveries often happen unexpectedly and there is no guarantee that investments will yield direct results. Especially in times of budgetary restrictions, funding for basic research can face high pressure. Researchers therefore need to be tenacious visionaries.

In Switzerland, investment in research and development (R&D) represents

nearly 3% of the GDP (general expenditure on R&D, public and private combined), which is the target set for the EU member states in the EU2020 strategy. Investments consist of 2/3 private and 1/3 public contributions. The OECD average is around 2.4%, and the EU average is around 2%. Investments in R&D within the Central and Eastern European countries are much lower.

These countries should focus on finding a good mix between pure basic research and result orientation. Also, prioritising and concentrating on certain scientific areas would allow for a more effective and strategic use of the limited funding available. Even though basic research creates new knowledge with an application potential in the long-term, immediate effects in terms of capacity transfer, disciplinary competences, international reputation and visibility need to be considered as well when deciding to invest in research.



„There are strong ties between Eastern Europe and Switzerland. The Swiss success story owes a lot to our country being the most internationalised science nation in Europe. Cross-border cooperation is one of the key factors enabling Switzerland to achieve impressive research output levels. A large number of excellent researchers from abroad have settled here and contributed to innovations. And let us not forget that about a third of Swiss researchers work abroad and benefit greatly from the excellent opportunities for mobility in place today within Europe and beyond.“

Martin Vetterli, President of the National Research Council of the SNSF

„Modern states are only functional and sustainable if they have a powerful education, research and innovation system. Higher education and research in Eastern Europe must be able to connect and to compete internationally in the medium and longer term. There is no magic formula for this. It is clear that this is an extremely challenging and complex task, both scientifically and politically. **However, the long-term collaboration with Eastern Europe should definitely be continued in one way or another.**“

Mauro Dell'Ambrogio, State Secretariat for Education, Research and Innovation (SERI), Bern





„The Swiss Agency for Development and Cooperation sees its role in the Western Balkans as supportive of developing functional country systems, stimulating dialogue between researchers and governmental partners and encouraging citizens to participate in democratic processes. **Research communities will be strengthened by orienting themselves towards transition- and reform-relevant research**, and decision-makers encouraged to take decisions based on scientific findings. Interconnections between research and politics are considered essential for sustainable transformation processes.“

Elisabeth von Capeller, Swiss Agency for Development and Cooperation (SDC)

„For centuries, Europe has been playing an important role in the development of science, Eastern and Central Europe being at the forefront of these contributions. The ERC supports frontier research through a bottom-up, individual-based, pan-European competition. Unfortunately, not all countries in the EU are equally successful.

Measures must be taken at the EU and national levels to contribute to a truly inclusive culture of competitiveness in science shared across Europe. The aim is to increase the number of ERC grantees coming from Europe’s presently less research-performing regions. A step in this direction could be to facilitate systemic debates and interactions with relevant stakeholders and to promote local support for promising scientists trained there.“

Jean-Pierre Bourguignon, European Research Council (ERC), Brussels



Promotion of young scientists

In the late 1980s, the Soviet Union was among the foremost leaders of world science, thanks in large part to its heavy involvement in military programmes. Eastern European countries inherited a long-standing scientific tradition, which was built during the period of communism. In the last two and a half decades after the fall of the Soviet Union, many countries in Eastern Europe carried out reforms in the R&D sector. These, however, have been relatively modest and rather unsystematic.

It is crucial in this context to (re)establish a close link between research and tertiary education; the best researchers have to be involved in training the next generation of scientists. The distribution of governmental funds in many cases is still not based on quality criteria, nor is it allocated on a competitive basis. In addition, excessive bureaucracy drives creative people away. A liberal environment and a streamlined bureaucracy would also contribute to fostering talent in science.

Setting clear objectives for the development of national science systems in Eastern Europe is also of paramount importance. The creation and improvement of relevant institutes, the facilitation of local knowledge and technology transfer, broader involvement in international

collaborations, and the introduction of adequate legal protection for intellectual property rights are all of critical importance for science and technology institutes and other research organisations.

At the same time, careers in academia are full of uncertainties which reduce the attractiveness of a scientific path compared to other career opportunities. There is a risk that not enough people pick up the scientific path. Encouraging young talents to consider a career in research should therefore be the uppermost priority of all funding agencies. In Eastern Europe, many senior scientists remain in permanent positions, thereby restricting access for young people. As a consequence, there is a majority of senior and too few young scientists. Higher education institutions and research funding agencies must collaborate more closely to create the right incentives for the promotion of young researchers.

The SNSF therefore decided last year to launch the initiative “Promotion of Young Talents in Eastern Europe”. It supports excellent young researchers by financing their project at an Eastern European institution (CHF 5 million for roughly a dozen five-year individual grants). A call will be launched in May 2015.

Mobility of scientists and brain drain

Scientific mobility is usually considered to be positive. Switzerland greatly benefits from the support given to young Swiss scientists to go abroad (second biggest scientific diaspora abroad in terms of % of national scientists after India). Attractive conditions for research also contribute to the influx of talent (nearly half of the researchers in Switzerland come from abroad).

Eastern European countries, however, are battling against a massive brain drain that started in the nineties and is still on-going. There is growing concern about the increasing number of intellectuals who have either already left or are going to leave these countries in the near future. The main reason for migration lies in the fact that top-level scientists have always been drawn to countries that offer more in terms of facilities, salaries, career prospects, satisfaction and prestige. The migration

of professionals reflects the operation of an international market for specialised human capital. For a country's economic development, a minimum level of human capital is needed. A loss of skilled human resources will ultimately have a grave impact on the economy and jeopardise development programmes.

For Eastern Europe, it is important that scientists can go abroad, but they should be able (and motivated!) to come back to their home country. Drastic changes are needed in the official policy towards R&D in Eastern European countries to counter these pull factors. Framework conditions and attitudes must be changed to make it more favourable for intellectual work. At the same time, international agencies and governments of developed countries should help less research-intensive countries reduce or even reverse brain drain.



„With smart specialisation, we are suggesting an entrepreneurial process of discovery that can reveal what a country or region does best in terms of science and technology. This idea does not call for imposing specialisation through some form of top-down industrial policy that is directed according to a pre-conceived “grand plan”. Nor should the search for smart specialisation involve a foresight exercise, ordered from a consulting firm. **We are suggesting a learning process to discover the research and innovation domains in which a region can hope to excel.** In this learning process, entrepreneurial actors are likely to play leading roles in discovering promising areas of future specialisation, not least because the necessary adaptations to local skills, materials, environmental conditions and market access conditions are unlikely to be able to draw on codified, publicly shared knowledge. Instead they will entail gathering localised information and forming social capital assets.“

Dominique Foray, Federal Institute of Technology, Lausanne

„During this transition period, support from Western countries is very important for Eastern Europe in order to keep skilled and motivated researchers in the country. An excellent example of such support is the SCOPES programme funded by the SNSF and the SDC. The Ministries of Education and Science in Eastern Europe should play a major role in setting up priorities for the distribution of funds, and more support for education and science at state universities should be available. I love my country and I want to bring it forward, also for my children.“



Alexander Shengelaya, Tbilisi State University, Georgia

„In the last 25 years, Moldova lost 85% of its research and academic staff, but most of them are still in contact with their country and are interested in contributing through knowledge circulation schemes. Both diaspora engagement and return intentions may increase if the country could provide an enabling socioeconomic environment and career prospects so that they can transfer their competences back into the Moldovan context. In the case of our Joint Research Projects, the research results were taken from the Academy of Sciences in Moldova and incorporated into the policy being devised for engaging the scientific diaspora in development strategies.“

Gabriela Tejada, EPFL, Lausanne, Switzerland



„Articles, oral presentations and posters resulted from the trilateral project in medicine with Switzerland and the Ukraine. Thirty-five clinical cases were genotyped. All mutation carriers and their relatives had got genetic counseling and proper therapy/surgery. **Joint Research Projects are a powerful instrument of international collaboration and research infrastructure development.** In Russia, most researchers are still in the habit of publishing in their own language.“

Elena Zaklyzminskaya, Medical Genetic Laboratory, Moscow, Russia



Internationalisation – Competitiveness

Scientific research is progressively shifting from individuals to groups, from single to multiple institutions, and from the national to the international level. Smaller countries tend to have higher rates of international collaboration. According to the OECD Science, Technology and Industry Scoreboard 2013, this may be partly due to the need to overcome limited domestic opportunities for collaboration and to the possible proximity to centres of knowledge located abroad. Therefore a good networking is an advantage.

If we look at the impact and quality of research, it becomes clear that international research collaborations are likely to have a bigger impact, because they share ideas, resources and outcomes (Adams, J., The fourth age of research, Nature, 497 (2013), 557). It has been shown that the research impact of scientists who have affiliations across national boundaries is nearly 20% higher than that of researchers who never moved abroad (OECD Scoreboard 2013).

Most funding agencies in Western Europe offer schemes or specific programmes to support international co-operation with researchers based in other countries. For all schemes including Joint Research Projects, the proposals are evaluated by international peers, which implies that proposals and articles have to be written in English. Being evaluated and integrated in international networks means that the scientific quality

achieved by partners in less research-intensive countries has to rise so that they can compete at the highest level. The SNSF is of the opinion that research funding should be based on excellence only. This helps to maintain competitiveness both globally and in view of the European framework programme Horizon 2020.

Another aspect of the competitiveness of science is the availability and maintenance of infrastructures. Many countries in Eastern Europe made large investments in research infrastructures (e.g. with structural funds), but without developing the necessary competent staff to operate them. There is an urgent need for aligning the presence of high-level research infrastructures and the necessary local competences so that these countries can reap the benefits of their investments.

A correlation has been shown between global competition and the increase in non-OECD countries that generate innovations and penetrate key OECD markets, on the one hand, and their ownership of higher-value patents (i.e. triadic patent families), on the other hand. As they have developed, emerging economies have benefited from technologies and innovations generated elsewhere. It is now very important for these countries to identify the domains and technologies in which they can smartly specialise.



Round table discussion on the four main topics

„International experience is very important at the beginning of an academic career. However, there should be more incentives (in each country) for young talents to return to their countries of origin. Funding measures in Eastern Europe should be based on quality and focused on young people. **In order to acquire skills and achieve international success, you must have a sound national science system.**“

Urs Baltensperger, President of the SNSF Specialised Committee International Cooperation



„In Georgia, there is still a large post-Soviet heritage to be overcome. Research must be translated into knowledge, and organisational structures must be changed. **The integration of higher education and research at universities should be a priority.**“

Marine Chitashvili, Shota Rustaveli National Science Foundation, Tbilisi, Georgia



„In Poland, a government executive agency was set up in 2010 to fund basic research with the ERC as an explicit model. Cooperation is a key element for success. There has been little mobility even within the country and a lot of structural funds have been used for research infrastructures. In the European programmes, **the evaluation of applications should be based more on the quality of the current application than on the track record of the applicant in order to give skilled researchers from less research-intensive countries a chance.**“

Justyna Wozniakowska, Deputy Director, National Science Center, Warsaw, Poland



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