



CTI – Start-up and Entrepreneurship,
R&D Funding, KTT Support

2017 to 2020

Multi-year programme



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs,
Education and Research EAER
Commission for Technology and Innovation CTI
Innovation Promotion Agency

The CTI is the Confederation's innovation promotion agency. It provides consultancy and networking services and financial resources to help turn scientific research into economic results. Making the Swiss economy strong.

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The CTI in the Innovation Landscape

By Walter Steinlin, CTI President

Switzerland is a highly industrialised nation, enjoying considerable freedom and material prosperity. Despite the dearth of physical raw materials on its own territory, it has achieved these things by acquiring knowledge and skills, developing a sense of diligence and adopting conducive civil principles.

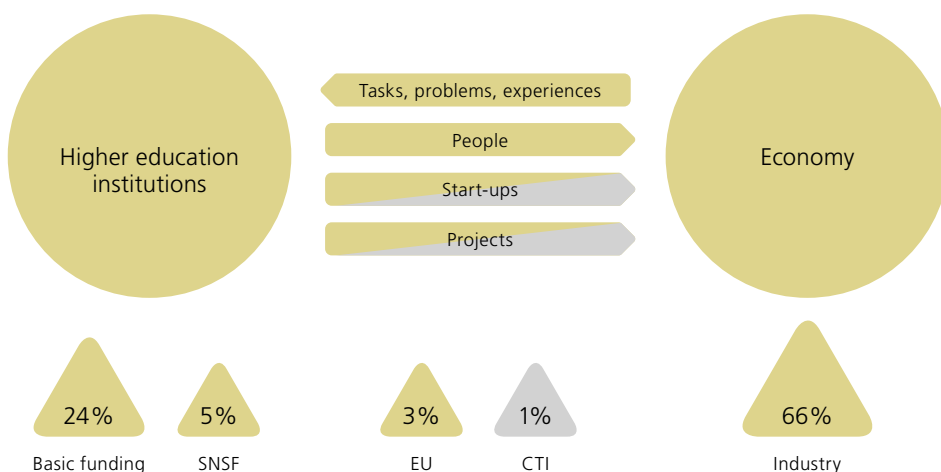
Switzerland is also aware that it needs to continue to invest in its knowledge and skills base. Switzerland currently invests about 3 per cent of its GDP in research and development, one of the highest figures for any country in the world.

The Commission for Technology and Innovation uses the term “innovation ecosystem” to describe the interaction between all the elements that contribute to creating and implementing knowledge and skills in the economy. Higher education institutions and research facilities generate knowledge and skills which specialists, spin-offs and start-ups then turn into added value for the economy in innovative projects.

The CTI is the federal agency promoting innovation in the Swiss innovation ecosystem, acting as a link between higher education institutions and the private sector.

The CTI in the Swiss innovation ecosystem¹

Percentage of total research and development spending in Switzerland



¹ ERI Dispatch 2013–2016, year under review 2009

The CTI's role in innovation policy

In Switzerland, there is widespread confidence in decision-making at grassroots level: this is true in politics, and is also the case when decisions are made regarding research and economic policy. For this reason, the state gives those involved the greatest possible freedom in selecting and prioritising the topics they wish to research and the innovative products and services they wish to develop. At the same time, emphasis is put on quality and fostering competition.

Private industry also plays an important role in financing research and innovation, covering around two-thirds of all R&D spending. The state provides support in areas where without its support, potential would otherwise go untapped (principle of subsidiarity).

This is where the CTI steps in, providing advice, networks and targeted funding in cases where innovation is hampered or knowledge is not being turned into practical applications.

The CTI's vision, mission and guidelines

The CTI has a statutory basis upon which it has developed its own vision (who do we want to be?), a mission (what do we do that is special?) and guidelines (what do we pay specific attention to?), and it aims to act according to these. They reflect unwritten policy values and the CTI's many years of experience of operating successfully.

Vision

The CTI is one of the world's most successful state funding agencies for innovation in a free market economy.

Mission

The CTI develops and operates the most effective and efficient measures and instruments to turn untapped scientific innovation potential in Switzerland into value for the economy.

The CTI in Swiss legislation

The CTI is the federal agency responsible for innovation promotion. Its work is based on Article 64 (Research) of the Swiss Constitution. "The Confederation shall promote scientific research and innovation." Since 1 January 2011 the CTI has operated as an independent federal commission with its own secretariat. It is affiliated to the Federal Department of Economic Affairs, Education and Research (EAER). Special legislation is being drawn up to turn the CTI into an institution under public law. This sets out the legal framework for the way in which the CTI will be organised in future. The Federal Council is expected to consider a draft for consultation in mid-2015. Parliament is expected to debate the new legislation in 2016.

Guidelines

We foster the following key competences:

- Profound ability to recognise innovation excellence
- Well-founded knowledge of the activities we fund
- Extensive knowledge of the Swiss and international research and economic landscape
- Expertise in entrepreneurship
- Broad networks
- A critical and visionary approach, always looking to the future

We are:

- efficient
- market-oriented
- customer-friendly and helpful
- trustworthy
- independent

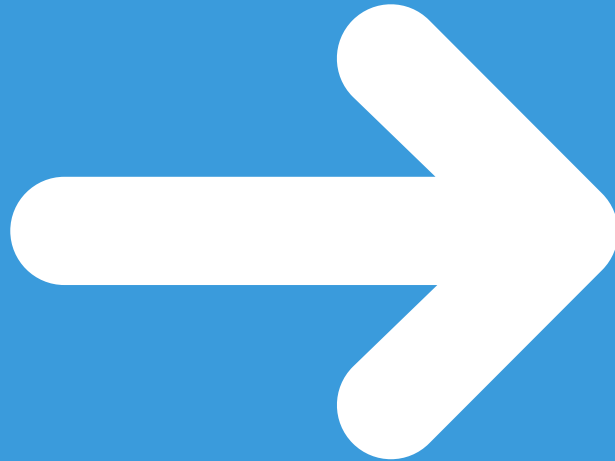
Current funding areas and strategic focus

The CTI's current funding areas (R&D Funding, Start-up and Entrepreneurship, KTT Support) cater to the needs of the CTI's target groups. They have developed in an organic process of adaptation, as the result of discussion, external input and the CTI's own initiative, and reflect past experience and present needs.

The 2017–2020 multi-year programme has evolved from this background, although the planned activities described here look forward to the future. They have been developed independently of current structures, taking the most reliable findings and predictions about the future needs and possible requirements of the innovation ecosystem in Switzerland into account. Some strategic focus areas therefore relate to several funding areas. The processes to develop and optimise innovation promotion described here are largely independent of internal organisational changes or the CTI's possible new status as an institution under public law, which is still under debate as a result of the Federal Council decision of November 2014.²

² See the Commission for Technology and Innovation CTI's organisational structure. Report for the Federal Council on Implementation of the Gutzwiller Motion (11.4136) of 22 December 2011; the change is subject to a decision by parliament regarding amendment of the legal basis.

R&D Funding



**Targeted support
for innovative
developments.**

By Martin Riediker, Martin Müller, Beda Stadler, Martina Hirayama and Raymond Zehring, presidents of R&D Funding

In 2014 Switzerland once again confirmed its top position in innovation on the EU's Innovation Union Scoreboard, ahead of all the EU member states. Switzerland comes out top for nine indicators, for example in international scientific co-publications and for the number of new doctorate students. The report makes particular mention of the excellent conditions for research and the high economic return from innovation in Switzerland. Of all the countries under review, Switzerland has the highest proportion of the workforce employed in knowledge-intensive professions and generates the greatest revenue from licences and patents.

The report also indicates Switzerland's weaknesses, namely, that it is no longer so far ahead of the EU average. In 2008 the Swiss innovation index was 57 per cent higher than the EU average; in 2013 this advantage had dropped to 51 per cent. The proportion of small businesses cooperating with other SMEs is, at 9.4 per cent, lower than in the EU, where the figure stands at 11.7 per cent. At 25 per cent of total service exports, the export of knowledge-intensive services is markedly lower than the EU average of over 45 per cent. Switzerland will therefore have to make additional efforts in future in order to remain innovative and competitive.

Continued focus on project support

From 2013 to 2016, CTI R&D Funding accounted for about 77 per cent of the CTI budget – by far the lion's share. In the coming dispatch period the CTI wants to continue to focus on this area, even expanding it moderately in carefully selected areas. For several reasons, the CTI expects both a greater number of applications and an increase in the quality and complexity of the project proposals, generated by activities in other funding areas (e.g. KTT Support) and additional awareness-raising among SMEs. More service innovation projects are also expected. As Switzerland's position in international research programmes is now uncertain, those involved in innovation are now more likely to turn to the CTI as the national innovation promotion agency, as it offers alternative opportunities for innovation projects with other countries.

From 2017 onwards the CTI is legally required to pay an overhead contribution to all higher education institutions. This increases the funding awarded to individual projects. In order for project support to continue at the same level as in 2016, the budget must increase markedly.

Cooperation between the Swiss National Science Foundation and the CTI

In partnership with the Swiss National Science Foundation (SNSF), the CTI plans to make an active attempt to fill the funding gap between basic research and application-oriented innovation promotion. In order to ensure that findings from basic research can be turned into marketable products and services, the SNSF and the CTI have developed a series of measures under the title "Bridge". It is planned to introduce these in the next funding period.

Current activities

The CTI fosters the development of innovative products, processes and services, encouraging business partners to work on innovative projects with higher education institutions. In particular, the CTI helps SMEs with limited resources to access infrastructure and research expertise in higher education so that they can turn their innovative ideas into marketable products and services more rapidly.

Companies apply for CTI funding from a wide range of different starting points. For example, they may not have yet set up a partnership with a higher education institution. The CTI therefore offers innovation players an introduction to the CTI funding programmes tailored to their individual needs

Joint innovation projects between higher education and the private sector

Once they have found a suitable partner, Swiss companies and research institutes can submit a joint application for funding for their application-oriented research and development project. Ideas are turned into marketable innovations as rapidly as possible. CTI funding is awarded to the higher education institutions only. Companies are required to cover at least 50 per cent of the project costs themselves. The major part of CTI R&D Funding is awarded to these innovation projects.

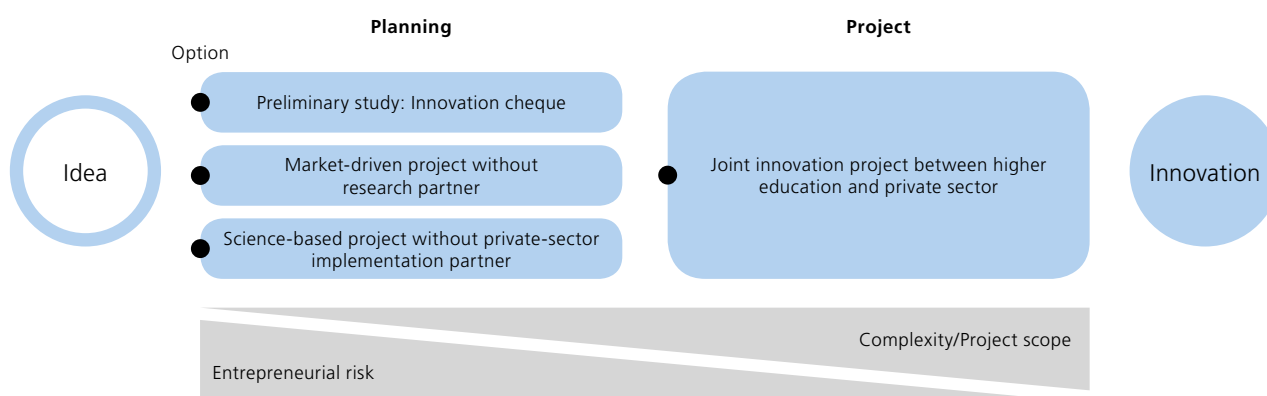
Preliminary studies: Innovation Cheque

The Innovation Cheque gives companies which have not previously invested in science-based innovation projects an easy introduction to the world of research. It gives businesses a maximum of CHF 7500-worth of R&D services from research institutions. The Innovation Cheque encourages businesses to work with research partners in preliminary studies on the planning and development of new products, processes and services. The Innovation Cheque has been very successful so far. Since it was introduced in 2009, 120 cheques have been awarded each year, and demand continues to rise. In 2014 about 80 per cent of all approved applications were from new CTI clients.

Market-driven project without research partner: CTI Voucher

The CTI Voucher allows businesses to submit a grant application to the CTI without already having selected a research partner. If the CTI experts approve the innovative project, the business receives a credit to cover costs in the form of the CTI Voucher. It can then go about finding a suitable research partner with the help of the CTI's experts, and apply for funding via the regular funding process. The instrument was launched in 2011 as part of the measures to mitigate the effects of the strong franc, and was established as a regular funding instrument in 2014. It is hoped that the CTI Voucher will be used more widely in future.

Four ways of accessing CTI funding



Science-based project without a private-sector implementation partner

The CTI also funds projects with considerable innovative potential which are submitted by higher education institutions who have not yet found a partner in the private sector. Proposals may include feasibility studies, prototypes and pilot installations at an early stage of development designed to lead to a future CTI project. CTI support is usually limited to a period of 18 months (36 months for energy-related projects). In 2014, 24 such projects were carried out.

Support measure: Patent searches

The CTI and the Federal Institute for Intellectual Property together help small businesses looking to improve their competitiveness on international markets or intending to submit a funding application within the next six months to carry out half-day patent searches. These assisted patent searches give the applicant an introduction to patents and the current state of technology in the field of their intended project. In 2014 the CTI helped 44 companies to conduct a patent search.

Medtech networking event and biotech report

Medical technology and biotechnology have a long tradition in Switzerland, and play a vital role in the country's economy. The CTI has given its backing to a biotech report which increases transparency in the field of biotech. And in order to increase competitiveness in the medtech sector, the CTI organises an annual networking event, stimulating additional projects and fostering knowledge transfer between the relevant players. Since the CTI Medtech initiative was launched in 1997, more than 150 medtech projects have received federal funding to the tune of over CHF 50 million. Along with the private funding generated, over CHF 120 million in research investment has been released.

Innovation projects with international involvement and cross-border calls

Since 1 January 2014, the CTI has been able to fund projects in which research partners from abroad are involved, provided that the cooperation can be shown to bring added value to the partner company and the Swiss higher education institution involved. This is the case when the Swiss higher education partner is responsible for the main part of the project but the foreign research partner contributes expertise to the cooperative project which is not available in Switzerland. The CTI is currently involved in some promising partnerships with foreign funding partners on this basis; the latest example is a partnership with Japan.

In recent years the CTI has also been involved in developing several ERA-NETS and processing applications for this programme, and has participated in other European programmes such as EUREKA. ERA-NETS are networks comprising several national funding agencies which launch joint calls for project proposals on a specific innovative topic and coordinate the research activities in the different countries. In the SynBio and WoodWisdom+ ERA-NETS the CTI plays a coordinating role for Switzerland and so is actively involved in setting the call specifications. In other ERA-NETS and in EUREKA, which are coordinated by the State Secretariat for Education, Research and Innovation SERI, it evaluates the applications received and finances the projects approved.

Financial requirement 2017–2020

(CHF 136.9 million subsequent payments from previous periods)
CHF 358.4 million

Developments in established project funding

The main barriers to companies undertaking innovative activities were a lack of capital and long amortisation times, a recent study has shown.³ The already considerable demand for project support will therefore continue to grow in future. The CTI's other support areas and the funding programme for energy projects also stimulate applications proposing new, high-quality projects of economic significance. The special measures to mitigate the effects of the strong franc introduced in 2011 also boosted applications over a long period, raised the profile of the CTI and encouraged many first-time project applications from businesses. This lowered the entry barrier for further applications. The figures demonstrate this development: there were about 20 per cent more applications in the years 2012 to 2014 than in the three years before the special measures against the strong franc were introduced (2008 to 2010). The special measures also showed that there is considerable innovation potential in Swiss higher education institutions and businesses, which can be activated by the appropriate measures.

Greater focus on SMEs

Small and medium-sized enterprises (SMEs) have a flexibility which allows them react rapidly to changes in the market. They can often introduce new technologies and processes more quickly than large companies are able to do. SMEs form the backbone of the Swiss economy, making up 99.8 per cent of all businesses. Activating their innovation potential is therefore key to the country's economic competitiveness. But as the structural report cited above shows, small businesses in particular often lack the financial resources to carry out innovative projects. They rely on support involving as little bureaucracy and red tape as possible. CTI funding can help to stop any financial gaps experienced by businesses engaged in research and development partnerships with public research institutions. However, the CTI intends to do even more to sensitise SMEs to the issue of innovation, explain the funding options available and encourage them to carry out their own innovative projects.

³ Structural report 51, Die Entwicklung der Innovationsaktivitäten in der Schweizer Wirtschaft 1997–2012, KOF commissioned by SECO, 2014.

Extending cooperation in cross-border projects

The CTI focuses in particular on international networking. As the process of globalisation gains pace, it is all the more important to foster links with partners abroad. Some Swiss companies require knowledge and expertise which cannot be met within Switzerland itself, and so can greatly benefit from R&D partnerships with foreign companies and research institutions when looking to enter foreign markets. The CTI is now permitted to help fund cross-border projects and so is planning to expand its links with its funding partners abroad. This form of cross-border cooperation is becoming established as a non-bureaucratic, complementary alternative to other funding initiatives in Horizon 2020, the European research and innovation promotion programme. At the same time, the growing uncertainty regarding Switzerland's participation in Horizon 2020 is pushing Switzerland towards developing a reliable national funding programme with international options. However, the CTI is still considering taking part in the five-year continuation of Horizon 2020 projects ERA-NETS SynBio and WoodWisdom+ as an ERA-NET cofund.

More service innovations encouraged

The Innovation Union Scoreboard has shown that Switzerland is well below the European average in the export of knowledge-based services. The structural report shows that industrial companies received more public funds for innovation promotion than service companies. Project funding follows the bottom-up principle, and is open to innovative projects from all fields. The Enabling Sciences funding area, for example, provides grants for projects involving service innovations, which are often IT-supported and related to the health, social, art and design sectors. The CTI therefore expects to receive more applications from these areas in future, and hopes to encourage innovative players to realise project ideas for knowledge-based service innovations.

CTI to pay overhead contributions from 2017

In addition to the direct R&D costs, the salaries of researchers and material costs, research institutions also incur indirect costs. The more successful applicants are in obtaining project funding from the CTI, the larger the overall bill for the group or institution if the indirect costs are not also met, at least in part.

Foreign funding organisations have long met this gap. The CTI, on the other hand, has only taken rudimentary account of the general costs incurred by higher education institutions, by paying a surcharge to the normal hourly

rate for researchers. It is only thanks to these additional funds that universities of applied sciences have been able to conduct R&D projects with implementation partners. From 2017 onwards the CTI is legally required to pay an overhead contribution to all higher education institutions, and this increases the amount of funds awarded to each project carried out. The CTI would like to award an overhead rate of 20 per cent, although this is still less than the full costs borne by the higher education institution. As it does not wish to reduce the number of projects awarded funding, more money is required.

Financial requirement 2017–2020

CHF 5.2 million

Financial requirement 2017–2020

CHF 61.8 million



Development focus

Building Bridges

Background

An analysis of the current situation showed that there is a systematic gap in funding between the Swiss National Science Foundation SNSF and the CTI. This was identified in cases where the research could potentially lead to practical application, but the necessary feasibility studies and development of the applied research with partners from industry are lacking. At this point, knowledge-based research has been concluded from the the SNSF's point of view, but it is unlikely to qualify for regular CTI project funding as no meaningful business plans are available.

Measures

The "Bridge" programme is designed to help researchers form a bridge between their research and turning this into a marketable innovation. They receive step-by-step assistance from experts in preparing a project for one of the following two funding levels:

- Proof of Concept for young researchers wanting to exploit the potential of their scientific findings and to continue their career outside of higher education.
- Pre-competitive projects for individual funding applicants or smaller collaborations between inter-disciplinary research teams with complementary expertise looking to combine excellent research with a clear innovative idea.

The "Bridge" programme is open to all scientific disciplines. It is aimed at researchers from universities, universities of applied sciences and public research institutions. On the basis of preliminary work and experience to date, it is expected that at least in the initial stages mainly researchers from technical disciplines will take part. Scientific excellence, innovation potential and the expertise of the researchers taking part are key criteria. Close monitoring of the research projects ensures that the work focuses on developing products for the market.

Funding result

Knowledge-based basic research finds a practical implementation in the Swiss economy.

Financial requirement 2017–2020

(further amount from SNSF)

CHF 33.9 million

Start-up and Entrepreneurship

Adapting the established programme to demand.



By Lutz-P. Nolte, President of the Start-up and Entrepreneurship funding area

Innovation is the driver of economic development. Without innovation there is no “creative destruction”, which according to Joseph Schumpeter is the basis of all economic development. Innovation arises when companies develop and market new ideas and products. They may be existing businesses or start-ups. Innovations with a large impact on the economy and our everyday lives are often generated by start-ups; CTI-award winning start-ups such as Doodle, Sensirion and Molecular Partners are a few well-known examples.

Adapting the existing programme to demand

A healthy entrepreneurial culture is therefore key to a country’s competitiveness and innovative strength. However, in comparison with other countries such as the US, in Switzerland this culture is not particularly strong. This is where our funding area’s traditional activities lie, in supporting companies in the start-up and pre-start-up stages. The CTI Start-up and Entrepreneurship programmes already reach a large number of potential entrepreneurs, but the aim is to raise their profile in the future and expand them in response to the expected increase in demand. The funding area organisers also hope to tap innovation potential by improving opportunities for women intending to set up a new business. In the coming dispatch period, new content will be added to the existing offering for women and the programme will be expanded.

Greater focus on internationalisation and growth

Besides expanding and optimising the current programme, the CTI wants to concentrate on two development focuses in the Start-up funding area.

The Swiss market frequently proves too small for highly specialised young companies, but if they are able to launch their products on global markets, many companies have great development potential.

The second focus is on introducing a programme of measures to help start-ups overcome the kind of barriers that they are frequently confronted with in the growth phase. If the Swiss economy is to flourish, simply having a large number of new small businesses is not enough – these businesses need to grow, create jobs and generate turnover.

Current activities

CTI Start-up and Entrepreneurship is aimed at (potential) founders of technology- and science-based start-ups. The overriding aim of this funding area is to promote entrepreneurship, encouraging people to set up and develop new businesses in Switzerland.

Coaching: CTI Start-up

Ideally, a start-up begins with a central idea and develops to become a successfully growing business with a commercial product: the development process leads from the laboratory to the sales point. The CTI and its coaches support young companies in this process. CTI Coaching helps businesses to overcome major obstacles to innovating and becoming established. New businesses are given help free of charge by experienced business coaches and experts from relevant fields and industries. Their task is to support start-ups with their specialist knowledge and networks. The three-stage coaching process leads to the “CTI Start-up label”, which is awarded to the most promising young businesses by a jury of experts from industry. The label is a sign of confidence in the business and furthers the chances of start-up owners in their search for investors and new contacts in their field.

Internationalisation: CTI Market Camps

The CTI Market Validation Camps and the CTI Market Entry Camps were introduced into the Coaching programme in the current dispatch period. These are first steps taken by the CTI to support start-ups in entering international markets. The CTI Market Camps are pilot cooperation schemes with selected swissnex and Swiss embassy partners. They are aimed at start-ups which have undergone the CTI coaching process and help these young businesses to become established in new markets abroad. The activities in the Market Camps are exactly tuned to their needs: if start-ups require market validation – help in deciding whether they actually want to try to enter a market – they can test the suitability of their product and business model for the target market by contacting potential customers, investors and partners as well as experts who know the market well. If they have already made the decision to enter the market, in the Market Entry Camps they can make specific prepara-

tions for a successful start. They can hire their first employees or contact customers without already having to be well established locally. Pilot co-operation schemes are currently being run in major sales markets such as China (Shanghai), India (Bangalore), the USA (Boston, New York, San Francisco) and Great Britain (London, Cambridge, Oxford).

Training programme: CTI Entrepreneurship

CTI Entrepreneurship is the federal training programme for fostering new businesses. It is aimed at persons with innovative vision in higher education institutions and at founders of technology- and science-based businesses.

Some courses in the programme are designed to raise awareness of and interest in entrepreneurship and provide the necessary foundations. Further courses can be taken later on, possibly at the same time as coaching, and offer concrete and practical assistance in developing, planning and implementing start-up ideas. Approximately 120 proven experts train around 4000 participants in entrepreneurship annually. The CTI-financed courses are run throughout Switzerland by regional consortia of universities and technology parks as well as by private providers. Currently over 80 courses are run at 16 higher education institutions.

The CTI also supports a few individual industry-specific events and courses, which supplement the CTI Entrepreneurship programme.

Support in finding venture capital and building-up the start-up ecosystem.

“From Science to Money to Market” is the motto by which the CTI hopes to help close the funding gap companies often experience in the start-up phase. To achieve this, it supports platforms which give young businesses the opportunity to present their business ideas to a broad public of business angels and national and international venture capitalists, and to convince them of the power of Swiss innovation. An example of this type of CTI-supported platform is “CTI Invest”, an association of investors which operates to this end. The CTI also helps ease access to venture

capital by approaching private investors directly, organising awareness-raising events and training courses to draw their attention to the specific nature of start-up funding.

In addition to these programmes, the “Acceleration”, “Development & Networking Platforms” and “Start-up Newsnet” instruments are further measures to foster the Swiss start-up ecosystem. These involve assisting incubators and technology parks in running networking events and promoting web-based and mobile platforms which are of value to young companies, for example the CTI-supported “Startupticker”.

Financial requirement 2017–2020

CHF 53.1 million

Developments in Start-up and Entrepreneurship

The culture of entrepreneurship in Switzerland has development potential in an international comparison. According to the Global Entrepreneurship Monitor 2013, compared with the situation in the EU above-average numbers of people in Switzerland believe there are opportunities for innovation (CH: 41.5%, EU: 28.7%). However, below-average numbers of people actually intend to found a business (CH: 9.8%, EU: 13.5%). Furthermore, setting up in business is regarded as a less attractive career opportunity in Switzerland than in the EU (CH: 40.5%, EU: 56.9%). One of the CTI's main tasks is therefore to try to change this culture and to remove obstacles to founding a business.

Rising student numbers increase demand

Several factors suggest that there will be an increase in demand for existing CTI programmes. The number of students at the federal institutes of technology and cantonal universities will continue to rise in the future: the Federal Statistical Office FSO predicts a 1.8 per cent increase in student numbers for 2015 (+ 147,000). In coming years the number of students is predicted to grow annually by approximately 0.7 per cent. The greatest increase is expected in the technical sciences, natural sciences, and business studies and economics. The FSO also expects there to be a rise in the number of students taking a master's degree at the universities of applied sciences.⁴ As a result of these developments, there will be a much larger pool of potential and actual founders of technology and science-based companies who could be interested in entrepreneurship courses and start-up coaching.

Moreover, in 2013 evaluations of the Entrepreneurship modules 3 and 4 showed that 98 per cent and 83 per cent respectively of respondents would recommend the course they attended. A substantial proportion of course participants also applies for CTI Start-up Coaching, and larger numbers of course participants are likely to mean that more start-ups will make use of the CTI Coaching programme.

CTI prognoses, which are based on developments in past years, also point to increased demand. Thus between 2012 and 2013 there was a 15-per-cent rise in the numbers attending the four modules of the Entrepreneurship courses. The prognoses for the Coaching programme suggest that the number of new start-ups engaging in the coaching process will grow by approximately three per cent annually.

More women in start-ups

Gender equality is also one of the central themes in start-up promotion in the coming dispatch period. Empirical studies and the experiences of CTI experts show that women are under-represented among entrepreneurs. In a study conducted in 2014, the CTI therefore looked for ways of reducing obstacles to founding a business which affect women in particular.⁵ The CTI intends to apply the recommendations from the study by introducing a range of new measures in its programmes. Apart from general awareness-raising measures (such as more success stories about women who have founded start-ups), the Start-up funding area plans to introduce additional, custom-made pitching courses, greater coverage of topics specifically relevant to women and a streamline peer-mentoring programme which will bring young female entrepreneurs into contact with other women who have successfully set up in business.

Improving information

In addition to the recommendations for improving support for female entrepreneurs, the study refers to further, gender-neutral ways of optimising support for start-ups. Based on these recommendations the CTI plans to improve dissemination of its information about Start-ups and Entrepreneurship among students in other disciplines, such as medicine and the natural sciences.

⁴ Cf. SFOE middle scenario 2014–2023

⁵ Cf. «FEMTech-Entrepreneurs, Analyse der Bedürfnisse und Hemmnisse von Unternehmensgründerinnen im technischen Feld zur Entwicklung neuer Impulse für Diversity@CTI», Rütter Soceco AG, 2014.

Financial requirement 2017–2020

CHF 1.3 million



Development focus

Opening up international markets

Background

CTI start-ups often manufacture products for which the Swiss market is too small. Gaining early access to the right markets can be vital for the success of a product. This gives start-ups feedback from the market early on, helping them to develop their product accordingly.

Measures

The CTI wants to help start-ups to access new markets and enter them successfully. It is building on experiences gained in pilot studies in the current dispatch period in order to consolidate and expand its programme:

- The CTI Market Camps are no longer pilot programmes but a permanent part of the CTI portfolio; cooperation is being made more professional and extended to further countries.
- The CTI supports the newly launched Venture Leaders – Swiss National Start-up Team programme, a ten-day training camp in the USA for carefully selected start-ups.
- The CTI gives selected start-ups the opportunity to take part in carefully chosen, highly relevant international trade fairs, where they can network and position themselves.
- The CTI helps start-ups to carry out feasibility studies in international markets at an early stage and to set up research partnerships. Start-ups can make use of existing networks and funding instruments.

Conclusion

More and more CTI-supported start-ups gain a foothold in foreign markets and have greater international presence than is currently the case.

Financial requirement 2017–2020

CHF 5.0 million



Development focus

Take-off programme: encouraging start-ups to grow

Background

It is known that fast-growing start-ups contribute to a large degree to the positive development of the economy. They are drivers of innovation and economic growth and create new jobs. A study produced by the Organization for Economic Cooperation and Development (OECD; Young SMEs, Growth and Job Creation) has shown that in 18 of the countries studied, although only about 17 per cent of the labour force is employed in recently established companies, the latter account for about 42 per cent of all newly created jobs. Until recently the CTI focused primarily on the start-up and pre-start-up phase in its promotion programme. Recent evaluations confirm that CTI start-ups are robust, but indicate that there is unexploited growth potential and that many companies are sold at an early stage.

Measures

In order to encourage growth, the CTI has introduced the Take-off programme, a new element in start-up promotion. This programme is addressed primarily at technology- and science-based start-ups with the CTI Start-up label which show considerable growth potential and are actively trying to grow. It is planned that the programme will run for between 18 and 24 months.

The programme involves individual modules on scaling, market access, team and organisation development, and financing growth. The modules are taken either in a team or on an individual basis. Further central elements in the course are networking, access to mentors and coaches, peer learning, case studies and interaction with industry. Some modules may be offered abroad as part of established CTI Market Camps.

Conclusion

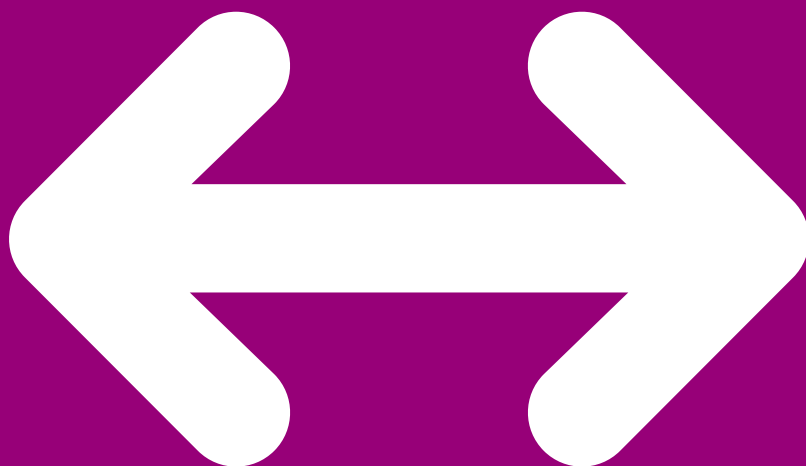
Long term, more technology- and science-based start-ups experience strong growth, creating jobs in fields in which knowledge and experience of innovation is required.

Financial requirement 2017–2020

CHF 8.9 million

KTT Support

Developing main areas.



By Myriam Meyer, President of the KTT Support funding area

Knowledge and Technology Transfer (KTT) describes the mutual exchange of knowledge and technology between industry and higher education institutions. On the one hand, it allows technologies developed in higher education and newly generated knowledge to be turned into marketable products. On the other, research activities can be coordinated with the needs of the economy. The CTI's KTT Support funding area covers activities that facilitate this exchange, creating fertile ground for successful innovations to emerge.

New strategy enthusiastically received

The KTT Support funding area has evolved considerably since the last dispatch period, and a major strategic realignment took place in 2013. Implementing the new strategy required a huge effort from everyone involved. It is therefore very gratifying that this strategy, which is based on the three domains of innovation mentors, National Thematic Networks (NTNs) and thematic platforms, has been enthusiastically received by SMEs and is already bearing fruit. In only two years these support instruments have motivated many new SMEs to push ahead with innovative projects.

Expanding the three domains

In the coming dispatch period, the organisers of this funding area are planning to expand some of the activities in the above three domains. Since there are still many interested SMEs that have untapped innovation potential, a few additional innovation mentors are planned. There will also be a call for a limited number of new National Thematic Networks on innovation topics which are likely to be of considerable economic importance in the coming years. The thematic platforms and innovation maps will be developed further in the coming dispatch period. The pursuit of the set objectives – to provide clearer information about innovation funding opportunities, facilitate contacts between innovation actors and knowledge-based SMEs and encourage the transfer of knowledge – is thus ongoing.

Current activities

In 2013 began with the implementation of a new strategy in KTT Support. The funding area supports SMEs in launching research and development projects. Innovation mentors IMs provide help in setting up innovative projects, and National Thematic Networks (NTNs) and thematic platforms bring together research partners and companies in workshops and other activities in key business areas. The funding area encourages representatives from industry and research to engage in an ongoing dialogue and brings them together for knowledge and technology exchange.

Innovation mentors (IMs)

Nine IMs, three of whom are head IMs, began their work in 2013, and were joined in 2014 by a further four. IMs have experience both in research and in the corporate world. They provide advice on CTI funding opportunities, tailored to the individual needs of the SMEs. They inform companies about the full range of funding opportunities available for innovation projects in Switzerland and the EU and offer support in networking with research institutions. They therefore help to set up partnerships in science-based innovation projects of national and international importance between companies and public-sector research. There is huge demand for IM support. In the first two years of the programme, IMs supported about 80 requests for R&D projects at the CTI on average each year. About two-thirds of the companies whose applications were approved had never before made an application to the CTI.

National Thematic Networks (NTNs)

In 2013, following a two-stage evaluation process, the CTI set up the first eight NTNs in its funding programme. Each network is dedicated to an innovation topic which is of particular national relevance in both economic and research terms.

The following NTNs receive CTI funding:

- Carbon Composites Schweiz
- Inartis
- Innovative Surfaces
- Swiss Biotech
- Swiss Food Research
- Swiss Wood Innovation Network
- Swissphotonics
- Association for Network Logistics

The NTNs are associations which receive an annual funding grant for their activities from the CTI. The amount is set individually and ranges from between CHF 200,000 and CHF 400,000 a year. It comprises a basic contribution (60%) and a performance-related contribution (40%). In 2014 the NTNs helped with over 100 CTI funding applications, the quality of which was considerably higher than in the rest of the R&D Funding area: 64 per cent of the applications were approved, compared to the overall average of 55 per cent.

Thematic platforms

Thematic platforms are primarily selected trade events in clearly identified topics, which will be of considerable relevance in the SME innovative business environment in coming years. They provide an opportunity for face-to-face discussions about important new technologies. Contacts are made and cultivated and SMEs can discuss their main technological and organisational challenges. The CTI does not itself act as an organiser of trade events, but it covers up to 50 per cent of the costs. In 2013 and 2014, six platforms received this kind of support. For example, in the field of textile research there is the Empa Science Day, the design seminar run by the Products & Textiles competence centre at the Lucerne University of Applied Sciences and Arts and the Swiss Symposium on Lab Automation on the topic of "Robots in laboratory automation".

These “physical” trade events are complemented by the virtual electronic Innovation Map. The map was created by the CTI in cooperation with other federal agencies active in research and innovation funding. It responds to a wish long since expressed by SMEs for a centralised and clear overview of funding opportunities and sources of information in the field of innovation. The innovation map provides information on research institutions and companies in key innovation areas and a compact and clear overview of federal funding opportunities to foster knowledge and technology transfer. The map also gives those interested abroad an idea of the diversity of innovation in Switzerland. In collaboration with the University of St. Gallen, the data is updated every six months using a scientific methodology.

Financial requirement 2017–2020

CHF 19.9 million

Developments in KTT Support

The way in which innovation comes about is changing. Innovation no longer takes place in a linear process, but more usually in networks of several players, who contribute specialist knowledge from a range of disciplines or technological fields. The more complex the project and the more people involved, the greater the need for information, for support in searching for the right partners and for platforms where debate and discussion on a specific topic can take place. In response to these developments and the new challenges they pose to the Swiss economy, in 2013 the CTI relaunched its KTT funding programme in a completely new form. In the 2017–2020 dispatch period the CTI plans to pursue this model and to make further improvements within the scope of the current budget.

IM: more support for SMEs

In Switzerland there are now more than 10,000 SMEs which are able to innovate and could benefit from a partnership with a higher education institution.⁶ As the result of ever stronger international competition, more and more small businesses will find themselves needing to invest in innovation. In 2014 the CTI's thirteen innovation mentors (IMs) were in contact with more than 350 Swiss SMEs and advised them on the funding opportunities available for innovation projects; the capacity of this free consulting offer was fully reached. However, there are still many potentially interested businesses and plenty of innovative ideas that remain untapped. In order to offer further innovation support for Swiss SMEs, the CTI is therefore looking to engage a small number of additional innovation mentors, at the same time taking account of the regional innovation funding opportunities on offer.

⁶ Estimate based on: Business census, FSO, 2008; Innovationsaktivitäten in der Schweizer Wirtschaft, KOF, 2010; F&E in der schweiz. Privatwirtschaft, FSO

NTNs: addressing further innovation topics

In addition to the business sectors covered by the existing National Thematic Networks (NTNs), there are many other innovation topics which are of importance to the national economy. Besides the energy revolution, society faces further challenges which can only be addressed by means of innovative solutions which impact the economy; with such solutions Switzerland can actively position itself both in research and in industry. The CTI therefore intends to extend its high quality support programme by launching a second call for a small number of further NTNs.

Expanding thematic platforms

In response to high demand, the CTI is planning to expand its thematic platforms, an important strategic element in its KTT Support programme. The Innovation Map will be further developed, with more innovation topics being added to it.

Financial requirement 2017–2020

CHF 8.5 million



Expanding energy research, demonstrating findings.

By Walter Steinlin, CTI President and head of the SCCER Steering Committee

There is much discussion about how the energy revolution is to be achieved. Although the target has been set in essence, it is not easy to attain. Security of supply and low resource use are two of many aspects which need to be considered. It is clear that considerable innovation is required in order to affect the energy revolution, both technical and socio-economical. Good, practicable solutions can speed up the process in Switzerland and open up export opportunities on the world markets.

In March 2013, parliament and the Federal Council therefore approved an additional funding programme as part of the special dispatch on the Coordinated Energy Research in Switzerland Action Plan. For the period 2013–2016, the CTI was commissioned with funding (to the amount of CHF 72 million) the Swiss Competence Centres for Energy Research (SCCERs) and funding (to the amount of CHF 46 million) innovation projects in the energy sector. Under the programme, higher education institutions and private businesses also contribute considerable sums to innovative projects. The special dispatch allows for this support to be extended for a further four years. The funds allocated in this dispatch transfer to the ERI Dispatch in the coming dispatch period, meaning that the energy research programme will then be competing with the other ERI tasks for funds.

A good start

The SCCER part of the programme was immediately initiated in 2013, in close cooperation with the Swiss National Science Foundation (SNSF). The steering and monitoring structures and processes are now in operation. SCCERs have been set up and approved in all seven action areas, and began operating in 2014. At the end of 2014 the first planned evaluations were conducted. These focused in particular on capacity expansion, structures and processes, rather than on research results. The outcome is positive: all the SCCERs got off to a good start.

The second part of the programme, the energy projects, runs as part of normal CTI project funding. It is proving very popular and demand for grants is high.

Closing remaining competence gaps and project support

The CTI intends to continue this programme in the coming dispatch period and to continue to fund the researchers active in the SCCERs as planned. Once the current capacity-building phase is complete and projects have been set up between disciplines and higher education institutions, the intention is to intensify research activities and start producing concrete results. The SCCERs will receive additional CTI funding with which they can close any remaining gaps in their competence portfolio and launch more innovation projects.

Current activities

With the Swiss Competence Centres for Energy Research SCCERs, the CTI supports the development of skills and knowledge at higher education institutions for science-based innovations in seven action fields of energy research. The CTI has earmarked a set amount of funds to support innovation projects in the energy sector.

Structure of the SCCERs

Following a call for tenders in May 2013, eight competence centres were awarded the bid and began operations. They focus on seven pre-defined action areas and cover the innovation chain up to actual application of a service or product. All three types of higher education institution – the ETHs, cantonal universities and universities of applied sciences – are involved.

Action area	SCCER
Efficiency	Future Energy Efficient Building & Districts (FEEB&D) Efficiency of Industrial Processes (EIP)
Grids and their components, energy systems	Future Swiss Electrical Infrastructure (FURIES)
Storage	Heat & Electricity Storage: Material, Systems and Modelling (HaE)
Power supply	Supply of Electricity (SoE)
Economy, environment, law, behaviour	Competence Centre for Research in Energy, Society and Transition (CREST)
Efficient concepts, processes and components in mobility	Efficient Technologies and Systems for Mobility (Mobility)
Biomass	BIOmass for SWiss EnErgy fuTure (BIOSWEET)

There are now 804 researchers (or approximately 520 full-time equivalents) working in the eight SCCERs. 146 of these are research professors or assistant professors. The universities cover 66 per cent of the costs of capacity ex-

pansion from their own resources or from competitive funds which they raise themselves (e.g. from the SNSF) and from other sources (e.g. from industry). In order to ensure that they focus on applying research findings, the SCCERs involve appropriate business partners at an early stage and hold a specialist conference at least once a year, to which interested participants from the private sector are invited.

At the end of 2014 the SCCERs were assessed for the first time by an international evaluation panel. The feedback was essentially very positive. The SCCERs are well on the way to gradually establishing the positions planned by 2016 and are building up their research activities. The steering committee decided to make only slight adjustments in this first evaluation round.

46 million francs for energy projects

Project applications in the energy sector are evaluated by the experts in the four funding areas in R&D Funding. There are two additional members in each funding area in order to boost the CTI's competences in this field.

Because of their complexity and interdisciplinary nature, energy projects last somewhat longer than others on average. Since the research in many areas has not yet reached the development stage, the CTI offers researchers funding for projects without an implementation partner (e.g. to carry out feasibility studies) as an important first step towards conducting an innovation project with a business partner. The CTI can support this type of energy research project for up to 36 months instead of the usual maximum of 18. In 2013 and 2014, over CHF 35 million of the CHF 46 million available for energy projects had already been awarded. The CTI will cover the increased demand expected up to 2016 from its regular project funding.

Financial requirement 2017–2020

(CHF 18.3 million subsequent payments from previous period)
CHF 134.4 million

Developments in the energy funding programme

The “Coordinated Energy Research Switzerland” Action Plan is a long-term programme running until 2020. The special dispatch based on it already outlines a budget of funds required for the further promotion of energy research in the years 2017 to 2020. It is estimated that a total of CHF 360 million to CHF 420 million will be required. Approximately CHF 240 to 300 million has been earmarked for use by the CTI. These funds will be used as follows:⁷

- Research groups will continue to receive funding and energy projects will be pursued (CHF 156 million) as in the current dispatch period.
- Further research groups will be created and energy projects will receive additional funding (CHF 84 million to CHF 144 million).

Funding for the current dispatch period was requested in a special dispatch. This special dispatch will be integrated into the ERI dispatch in the coming period. Since there is a ceiling to the ERI Dispatch budget, the energy programme now competes with funds for other ERI tasks.

⁷ Cf. Dispatch on the “Coordinated Energy Research Switzerland” Action Plan, pp. 9050/51.

Closing gaps within the approved SCCERs

The first evaluation confirms that the eight SCCERs got off to a good start. Competence and capacity expansion at the higher education institutions began according to plan. Since the action fields are large and even more capacity is required, additional research groups will close existing research gaps and move energy research forward in the next dispatch period. The CTI expects that there will be a need for more resources: over time, the SCCERs will engage in more international partnerships with leading research groups in other countries, in order to benefit from foreign skills and expertise in their research and development activities. Furthermore, in the coming dispatch period it is expected that additional efforts will need to be made to link research activities not only within but also between the different SCCERs. Finally, inflationary tendencies may cause salaries to rise slightly over the next few years, which means more money will be required for each funded position.

In the coming dispatch period the CTI plans to set aside CHF 106 million to continue running the SCCERs and approximately CHF 109 million for additional competence and capacity expansion.

Financial requirement 2017–2020

CHF 109.0 million

Additional funds required for energy projects

On average, energy projects last longer than regular innovation projects funded by the CTI, and involve higher costs. As a result, energy projects tend to attract higher levels of funding. With approximately CHF 35 million already awarded in 2013 and 2014, by the end of 2016 the CTI will have overrun its budget of CHF 46 million for energy projects and will have to meet the shortfall from the regular project funding budget.

The ongoing expansion of the SCCERs will result medium-term in a rise in funding applications received for energy projects. It is expected that the amount of funding awarded to approved SCCER projects will rise as a proportion of the overall energy project budget. The Action Plan assumes that CHF 117 million will be required for energy projects from 2017 to 2020, according to the middle scenario selected by the Federal Council. According to its own prognoses, the CTI expects that a further CHF 43 million will be required in line with the 2013–2016 dispatch period.

Overheads in energy projects

As with all innovation projects, from 2017 the CTI is legally required to pay overhead contributions for energy projects. Approximately CHF 12 million is additionally required to cover these overheads (of 20 per cent) in the energy projects.

Financial requirement 2017–2020

CHF 43.4 million

Financial requirement 2017–2020

CHF 12.3 million

General topics

By the CTI President

In addition to developments in the individual funding areas, there are some general issues which the CTI wants to address in the coming dispatch period. In the main, these relate to staffing, with the exception of promoting talent in innovation.

The CTI wants to make its innovation promotion activities even more efficient and more effective in future. It is improving its impact controlling and communication about funding activities, and conducts thorough interface management with its partners.

At an international level, the totally revised legislation introduced in 2014 created greater clarity and expanded some of the CTI's competences. Innovation promotion needs to obtain a more international focus, and so the CTI is not only increasing its activities in this area, but is also taking on new tasks.

As the central player in innovation promotion, the CTI develops and expresses its position on topics relevant to its business. For example, it welcomes the reform of the CTI approved by the Federal Council and in connection with the changes to legislation that this entails, recommends that the CTI should be given a "refinancing" option. Furthermore, inspired by the experience with the Swiss Competence Centres for Energy Research (SCCERs), the CTI would like to consider adopting a totally new, topic-based approach to its funding activities.

Thanks to the success of the SCCERs, the CTI is also planning a scheme to promote innovation talent, supporting active drivers of innovative activity at the interface between research and development in higher education and in businesses.

Assessing the impact of innovation promotion

In-depth qualitative and quantitative information about the impact of innovation promotion provides a basis for evaluating, developing and successfully introducing new funding instruments. As a key player and knowledge-carrier in the field of innovation promotion, the CTI requires information on the impact and results of its funding activities so that it can make these more effective and efficient. In knowing its “clients” – higher education institutions and businesses – the CTI can design its assessments and studies in such a way that they do not involve too much red tape.

The CTI is therefore planning to extend its existing monitoring and impact controlling system. This will provide the CTI with a better basis on which to optimise existing instruments and support measures, and to introduce new ones. The CTI is improving the availability of its information for all stakeholders interested in knowing the impact of the CTI's work: politicians, the government authorities, partners, beneficiaries and the media.

Improving communication

In Switzerland there are over 10,000 companies which are capable of innovating in the scientific field. Many of these businesses are unfamiliar with the CTI and its funding programmes, although the national innovation promotion agency has existed since 1943 – albeit under a different name.

For this reason, the CTI wants to actively develop its media presence in the coming dispatch period in order to make its funding instruments better-known among science-based SMEs and so ultimately help SMEs compete in international markets. In order to achieve this, the CTI would like to work more closely with SME specialist media and to provide more targeted information. The new-look website, redesigned in 2015, also provides up-to-date and relevant information tailored to the needs of the target groups. In order to become more of a household name, the CTI also intends to expand its presence at events aimed at SMEs.

Expanding cooperation with partners

The innovation landscape is in constant flux: new players get involved, others form partnerships, some change their organisational structure and the focus of their work. One of the CTI's tasks is to work as constructively as possible with agencies with a public mandate outside of the Federal Administration – such as the Swiss National Science Foundation (SNSF), the Institute for Intellectual Property (IIP), Eurosearch and some of the cantonal business promotion agencies. Within the Federal Administration, the CTI also coordinates closely with the State Secretariat for Education, Research and Innovation (SERI), the State Secretariat for Economic Affairs (SECO), the Federal Office of Energy (SFOE) and the Federal Office for the Environment (FOEN). Exchange takes place when CTI members meet with their counterparts on the various panels and committees or at other events.

The CTI would like to continue to cooperate with the non-federal and federal partners in the coming dispatch period and where possible to strengthen these links. It wants to exploit synergies and establish even better coordination and networking with key players in national and international innovation promotion. Forming closer ties with the SNSF is an important step in this direction.

International cooperation

As value-added chains become more globalised, innovation in some areas is increasingly taking place in cross-border partnerships. Since the Federal Act on the Promotion of Research and Innovation (RIPA: SR 420.1) was totally revised in 2014, the areas of responsibility in the state promotion of innovation are now more clearly defined. The CTI now has new opportunities to cooperate on an international level.

This is already manifesting itself in the activities of the funding areas; in particular, the CTI plans to cooperate with other funding agencies to support cross-border innovation projects and is expanding its programme for start-ups.

There is also potential for development in the way in which international innovation promotion is carried out, with tasks being divided more appropriately between the CTI, the State Secretariat for Education, Research and Innovation SERI and other relevant federal agencies.⁸ The CTI took an important step in this direction by adopting responsibility for implementing the EU Enterprise Europe Network (EEN) programme in Switzerland. EEN is an initiative under COSME⁹ to foster cooperation among SMEs in different countries. In the current dispatch period the CTI has already taken on the coordination of the Swiss EEN Consortium and the development of a network of regionally based innovation players. The CTI will eventually be fully responsible for the Swiss EEN, possibly from the beginning of the new dispatch period in 2017. The CTI budget should include the resources required from 2017.

The following activities will also be pursued and built up:

- exchange of best practices with other funding agencies and active participation in TAFTIE, the European network of national innovation agencies
- co-steering of SwissCore, the Swiss National Science Foundation's information and contact office for Swiss research, innovation and education in Brussels¹⁰
- dissemination of information about Swiss innovation promotion to interested representatives from foreign ministries and institutions

Up until now, no one person in the CTI Secretariat has dealt specifically with international activities. If these are to be well coordinated and developed, the CTI requires appropriate staff resources.

⁸ Cf. "Organisatorische Ausgestaltung der Kommission für Technologie und Innovation KTI". Report to the Federal Council on the implementation of the Gutzwiller motion (11.4136) of 22 December 2011.

⁹ COSME is an EU-financed programme aimed at SMEs. It supplements Horizon 2020.

¹⁰ The CTI's involvement will be evaluated in 2016.

Optimising structure and governance

The main instrument of the CTI is and remains the funding of projects. The Commission is also developing some additional tools. The growing importance and flexibility of the CTI mean that the greatest possible autonomy, good transparency and efficient processes are necessary.

The current structure of the CTI is no longer appropriate, as a comparison with the Swiss National Science Foundation with similar functions shows.

Furthermore, since the agency became a commission, some tasks previously carried out by the Secretariat have been outsourced to other federal offices, or even temporarily commissioned to private companies (e.g. IT). This is a cumbersome and expensive situation which complicates the functioning of the Commission.

On 19 November 2014 the Federal Council voted to turn the CTI into a public institution, based on the report on the Gutzwiller Motion (11.4136). The State Secretariat for Education, Research and Innovation SERI is now coordinating the drawing up of the relevant legal bases; these are due to be put before Parliament for debate in 2016. A restructured CTI could therefore be operational in 2017 or 2018.

The Federal Council decision to restructure the CTI will meet the requirements stated above. At the same time, the Secretariat's resources will be consolidated and essential functions which are currently outsourced will be re-integrated.

Reaping the fruits of success

CTI funding is an investment in the future, with the state carrying the main risk. So the state should be able to benefit from that success.

The SNSF and the Swiss Academies of Arts and Sciences can demand repayments and a share of the profits if the research they have helped fund leads to economic results (RIPA Art. 39). Other countries have also had this type of refinancing model for some time. The Israeli national innovation promotion agency, according to its own statement, receives on average 30 per cent of the funding it awards as a share of profits. This has been the case for ten years. The CTI does not currently have the legal basis for such repayments, although it is more than likely that the funding it awards leads to sustainable economic results. For example, in the past the CTI has funded start-ups which were then sold for several 100 millions of francs.

In order to achieve greater flexibility and more responsibility, as is generally aimed for in the CTI organisational reform currently under discussion, it should be possible to introduce a system of dividends: the CTI should be able to reclaim part of its grant funds from businesses with successful project results or from start-ups that have received CTI coaching and to reinvest these funds in the promotion of innovation. This would allow the CTI to increase its leverage.

However, companies should not under any circumstances suffer as the result of such a regulation. Repayment should only be made when a funded project or business makes a sustainable profit or is sold at a high price. Any new regulation on this still needs to be carefully defined.

Focus on key topics

The first experiences gained with the Swiss Competence Centres for Energy Research (SCCERs) are positive: they lead to synergies, jointly orchestrate the actions of individuals and bring together different experts to develop joint solutions to a problem. The SCCERs have a positive momentum, which is why the CTI would like to consider investing in key topics and cluster promotion in its innovation support activities. The CTI can select key topics in two ways: either based on the bottom-up principle, with proposals coming from higher education institutions and industry, or by coordinating with the federal offices to identify the challenges to be overcome by means of innovation. These can be challenges in all kinds of areas, either social, economic or environmental – for example, those arising from demographic change.

The CTI's first step is to analyse comparable models: the SCCERs themselves, the Swiss National Science Foundation's National Centres of Competence in Research (NCCRs) and concepts in other countries. Based on the analysis, a programme concept will be developed which will differ from the National Thematic Networks in the KTT Support programme. Analogous to the SCCERs, actively promoting a particular topic should lead to the development of joint roadmaps and models. After completion of the design and evaluation phases, the CTI can decide whether and with what tools it wants to actively promote the topics.



Development focus

Fostering innovative talent

Background

Highly qualified persons and specialists are key players in the development of new, competitive services and products. A lack of R&D staff and specialists was a relatively large impediment to innovation in Switzerland from 2010 to 2012, despite the Agreement on the Free Movement of Persons.¹¹ The impact of the mass immigration initiative and the fact that the baby-boomer generation is now reaching retirement age accentuate this problem.

There is also a lack of staff in higher education: there is, for example, a relatively large number of post-doc positions compared with assistant professorships and professorships. Furthermore, excellent practice-oriented professors in the universities of applied sciences do not have enough opportunities for further training.

Measures

The CTI wants to make it easier for these people to engage in further training and to encourage mobility of highly qualified, practice-oriented people between industry and research, for example by funding short, targeted exchanges. The CTI's funding of individuals complements that of the SNSF and accords with the CTI's subsidiarity principle.

The CTI also intends to promote diversity in all its funding areas.

Result

Many people in higher education institutions, in particular universities of applied sciences, and in companies gain experience in another area or can transfer as required. By paying more attention to diversity, there is greater heterogeneity in the funded teams and groups.

¹¹ As reported by about 15 per cent of companies asked; Structural Report 51, KOF commissioned by SECO, issued 2014

Financial requirement 2017–2020

CHF 7.5 million

Financial planning 2017–2020

Financial planning involves establishing the financial requirements for the activities described. Without the necessary financial means, the CTI cannot realise its plans or can do so only in part. Because there are plans to turn the CTI into a public institution, the CTI is now applying for the funds which it actually requires (budget) rather than the current guarantee credit. This budget covers the money required to meet innovation funding and CTI running costs.

Innovation funding

When innovation projects and other funding applications are approved, the CTI often commits itself to paying out funding over several years. As a result, grants which have been awarded but not yet paid out in the current dispatch period do not affect the financial figures until the next period, raising the financial requirements for the years 2017–2020. This will be the case in particular in 2017 (CHF 85 million) and 2018 (CHF 41 million).

The majority of this money will be used to continue and develop the CTI's established instruments and to invest in new key developments. With the exception of the promotion of innovative talent, implementing the general issues affecting all areas only involves additional staff requirements – i.e., relatively modest financial resources.

Running costs

CTI running costs include staff costs, IT, planned IT investments and rent. It is essential that IT infrastructure operates smoothly at the CTI, which has numerous interfaces with industry, research and administration. The reform to the CTI will mean changes to the IT infrastructure in particular, as some of the existing solutions in the Federal Administration must be replaced by new systems.

Overview of financial requirements *

in CHF million	2017		2018		2019		2020		2017–2020	
Established instruments and their development										
Payments from liabilities in other ERI dispatches	85.1		40.7		21.2		9.2		156.2	
R&D Funding (incl. Innocheque)	42.3		83.1		110.1		126.1		363.6	
Start-up and Entrepreneurship	12.9		13.0		13.9		14.7		54.5	
KTT Support	6.4		6.8		7.3		7.8		28.4	
Energy projects	5.8		14.3		22.3		29.8		72.2	
SCCERs	33.3		49.0		58.8		73.5		214.6	
Overhead additional costs (regular project funding and energy projects)	8.2		16.9		22.5		26.5		74.1	
Sub-total	194.1		225.9		256.0		287.6		963.6	
Development focus topics										
Bridge	3.4	0.6	6.9	0.4	10.5	0.4	13.2	0.4	33.9	1.7
Take-off programme	0.7	0.2	1.0	0.2	1.4	0.2	1.8	0.2	5.0	0.8
Internationalisation	1.2	0.2	1.6	0.2	2.6	0.2	3.4	0.2	8.9	0.8
Promotion of innovative talent	1.0	0.4	1.9	0.4	2.1	0.4	2.6	0.4	7.5	1.5
Sub-total	6.2		11.4		16.7		20.9		55.3	
General topics										
Assessment of funding impact										
Improvements in communication										
International cooperation										
Structure and Governance	0	1.6	0	1.6	0	0.9	0	0.9	0	4.9
Reaping share of profits										
Active topic promotion										
Sub-total	0		0		0		0		0	
Total financial requirement	200.3		237.4		272.7		308.5		1018.9	
Operating expenditure for development focuses and general topics	2.9		2.8		2.0		2.0		9.7	
Other operating expenditure	26.8		27.1		27.7		28.0		109.6	
Total operating expenditure	29.8		29.9		29.7		30.0		119.3	
Total financial requirement	230.0		267.2		302.4		338.5		1138.2	

* Left column: Financial requirements in CHF million for innovation promotion
Right column: Costs in CHF million for operating expenditure, in particular staff costs

Any discrepancies in the totals are due to rounded up figures.

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