



Research for you

The National Research Programmes (NRPs)



SWISS NATIONAL SCIENCE FOUNDATION



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Research where it is needed most

The National Research Programmes (NRPs) are the only funding instruments whose topics and budget are defined by the Federal Council. As part of the programmatic research funded by the Swiss National Science Foundation (SNSF), the NRPs have a precise positioning in terms of their objectives. Their mission is to solve problems. This sets them apart from the National Centres of Competence in Research (NCCRs), which are intended to sustainably influence and structure the Swiss research landscape.

Ever since the inception of NRPs as an instrument in 1975, their mission has been to generate scientific knowledge aimed at solving Switzerland's most pressing problems. Needless to say, they cannot provide ready-made solutions during their running time of five years. But they are capable of issuing valuable recommendations and creating new incentives. They have also enabled researchers and stakeholders from many different areas to communicate and exchange views and opinions. These programmes, which are generally endowed with a budget of between 10 and 15 million Swiss francs, represent a unique opportunity to fine-tune research in Switzerland to highly specific and urgent societal and political issues.

A quick glance at the 69 NRPs launched up to now reveals the complexity of their research topics: social integration and social exclusion, violence in everyday life or sustainable water management – such topics can only be studied using an interdisciplinary approach. At the same time, highly inter- and transdisciplinary NRPs require stringent coordination and leadership if they are to succeed. Synthesis is one of their defining features, i.e. they merge results from different projects and integrate them within an overall framework.

This process involves intensive communication between researchers and stakeholders, who offer joint proposals for discussion within the NRP. The recommendations for action ultimately issued by the programme are derived from these proposals.

Knowledge transfer and public science communication have always been high on the NRPs' agenda. With the help of professionals, the NRPs have successfully carried out such activities for many years. This is reflected in the media relations work of the SNSF: between 2006 and 2010, no less than 60 press releases addressed topics from the NRPs; this corresponds to 40 percent of all press releases issued by the SNSF (157). All but one of the 14 press conferences held by the SNSF during the same period were devoted to NRP topics.

If you attempt to describe the NRPs with only a few adjectives, the three that immediately come to mind are: solution-oriented, useful and communicative. That is not quite enough though. It is a proven fact that successful programmes generate added value, i.e. they are more than the sum of their individual projects. This is why NRPs have strategic steering committees: teams composed of representatives from the scientific and practical realms who issue the necessary guidelines, perform quality checks and offer specialised as well as financial support. If research is to create practical benefits, it must set itself high quality standards to begin with.

Thomas Bernauer

President of the Programmes division
of the National Research Council of the SNSF



1 Solution-oriented

National Research Programmes (NRPs) investigate problems emanating from society, politics and the economy. These problems are often complex and can only be solved if a variety of research perspectives are combined. NRPs are contributing scientifically to the solution of such problems, for example by developing action plans, providing political advice or creating special research infrastructures.



Kathrin Mühlemann is a professor and researcher at the University of Berne and the University Hospital of Berne, where she also treats patients. She is in charge of the national monitoring system for antibiotics resistance.

Big Brother for bacteria

The “Anresis” database tells doctors which bacteria across Switzerland are resistant to antibiotics. This is an important asset in the fight to overcome one of the biggest problems in modern medicine. The database was developed by the National Research Programme “Antibiotic Resistance”.

Antibiotics are among the most frequently prescribed medicines in the world. They can be used to fight dozens of bacterial diseases. But the bacteria are extremely quick to adapt: the strains that remain unaffected by antibiotics have increased rapidly in recent years. Such antibiotic-resistant bacteria pose a severe

medical problem. The inability to find an effective medicine to fight certain germs can even result in the death of patients.

Only ten years ago, the extent to which bacteria were resistant to antibiotics was largely unknown in Switzerland. “It was a frustrating



situation. We had only fragmentary information – say for adults in a particular region,” says Kathrin Mühlemann, head of the Institute for Infectious Diseases at the University of Berne.

Nationwide monitoring system

Against this backdrop, the Federal Council asked the Swiss National Science Foundation (SNSF) to launch the National Research Programme “Antibiotics Resistance” (NRP 49). One of the main goals of this programme was to set up a nationwide monitoring system for resistances. “The NRP gave us the resources to create this far-ranging system,” says Mühlemann, who established the “Anresis”

database between 2004 and 2007 in the course of the NRP. Data from 22 clinical microbiology labs have been fed into “Anresis” since 2007. The data cover approximately 80 percent of the hospital days in Switzerland and at least 30 percent of the practising doctors. The results of over three million resistance tests on 548 different types of bacteria and 137 antibiotics are available for the year 2010 alone.

A boon to doctors

The database can be queried free of charge via the Internet. This is useful for doctors in their daily work – for instance, if their patient is diagnosed with a rare germ. Thanks to the large amounts of data collected in “Anresis”, doctors can rapidly assess the resistance situation across Switzerland. They can then decide which antibiotic is most likely to have the desired effect. The data in “Anresis” also allows



Antibiotic resistances are a health problem that require a great deal of fine-tuning at regional and national level.

General practitioners are important partners for the Federal Office of Public Health as they are the first to gain information about germs through daily testing.

Physicians can retrieve data on existing resistances from the “Anresis” database. This enables them to use antibiotics more efficiently and sparingly.



doctors to track the strains of bacteria in Switzerland that are becoming increasingly resistant to treatment. Or how the situation with regard to particularly dangerous germs is developing. According to Mühlemann, we now have better control over so-called MRSA – staphylococci that are resistant to a number of antibiotics and can cause skin inflammations and pneumonia. Gram-negative bacteria, on the other hand, are an ever-increasing cause for concern.

Additional data for vets

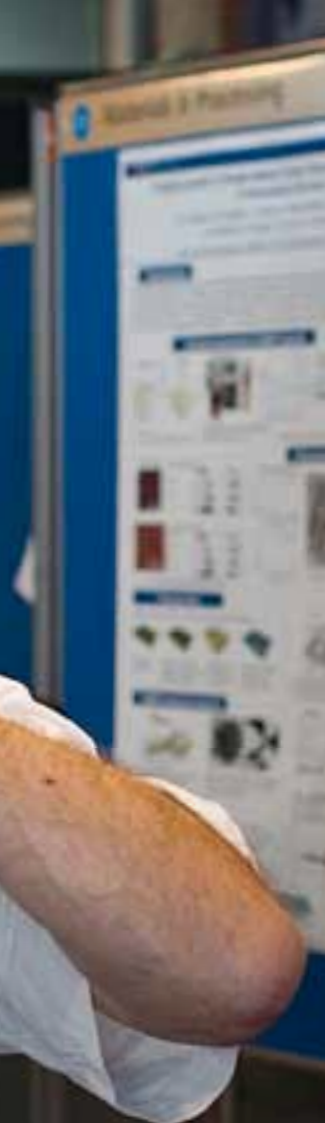
“Anresis” also contains data on how antibiotics are used in Switzerland. Researchers have used this data to compare hospitals, thus enabling the latter to reassess their prescription practices. Mühlemann praises the hospitals for having massively raised their quality awareness when it comes to using antibiotics. This was a neces-

sary step: experts agree that certain antibiotics must be used sparingly in order to not to provoke new resistances. This would benefit not only humans, but also animals. Indeed, the Bernese infectiologist stresses the wide scope of NRP 49, covering both human and veterinary medicine. The NRP also generated a monitoring programme for antibiotic resistances in farm animals, which is closely linked to “Anresis”.



2 Useful

If research is to contribute to the solution of a problem, it is crucial that new insights and technologies are communicated to interested parties. For this reason, National Research Programmes (NRPs) place particular emphasis on early contacts between researchers and industry partners/practitioners from a variety of backgrounds. This is the only way to ensure that knowledge from the relevant spheres can contribute to the solution of a given problem.



Innovative materials for industry

In the National Research Programmes (NRPs), researchers involve people from the practical realm from day one. In case these partners come from industry, the NRPs now also work together with the Commission for Technology and Innovation (CTI). NRP 62 “Smart Materials” is a good example of the routes that research can take, from the initial idea through to product development.

In NRP 62, proximity to practice was already a criterion for the selection of projects. “We consider projects that show a concrete potential for practical application – for instance in the form of a ‘letter of intent’ from an industry partner,” says Martina Hirayama from the Zurich University of Applied Sciences, a CTI expert and member of the NRP’s steering committee.

A number of promising research projects are being conducted under the umbrella of NRP 62. These projects are aimed at developing materials that change their properties in response to external influences. This could result in the production of, for instance, carrier materials that could transport medicines to specific



Martina Hirayama is responsible for the funding area “micro and nano technologies” at the CTI and member of the Steering Committee of NRP 62 “Smart Materials”.



Researchers are using computer models to develop innovative materials for aircraft building.

An important milestone will be reached when the first field tests are performed on the materials.

The success of the project depends on close collaboration between researchers and industry partners.



points in the body or that might be used for aircraft building. For instance, materials with an adaptive form and rigidity might be used to make wings that do not require mechanical flaps for steering: the wing itself would change its form in response to electrical impulses.

A budding partnership

NRP 62 is the first research programme to be conducted by the SNSF in collaboration with the CTI. The CTI supports research projects during their transition from academic research via further development through to the final product crafted by an industry partner.

The two partners will promote such projects somewhat in the manner of a relay race: the programme is supported by the SNSF for the first three years, at the end of which the first practical tests are carried out. Projects with good chances of becoming a cooperation project with industry are then funded for a further two years by the SNSF. The CTI takes over the baton in the final phase, the “finish”, supporting those projects that do indeed strike up a cooperation with industry. By this time, at the latest, the private sector will be investing in the projects as well.

From the lab to the factory

“The effort to add value is central to the projects supported by the CTI,” Martina Hirayama explains. The CTI only becomes involved if an industry partner has a substantial stake in the project. How quickly research travels from



the laboratory to the factory strongly depends on the project, of course. “After just one year, two projects should now be ready for transfer to a CTI project,” says a satisfied Martina Hirayama. One of them focuses on the development of artificial muscles, the other on superelastic, malleable surgical instruments.

Nanoparticles as storage

Quite in contrast, though, some projects will still be in their initial stages when the NRP comes to an end. This does not imply failure, however. NRP 62 includes a module for completely new research areas that still have a long way to go till implementation. Nano metal particles intended for use in minute electronic storage and circuit elements are just one example.

A model for new NRPs

The practice-oriented funding approach applied in NRP 62 seems to be catching on – a further NRP (“Resource Wood”) under the aegis of the SNSF and the CTI is already in the starting blocks.



3 Coordinated

Research activities of a National Research Programme (NRP) always represent a collaboration between renowned researchers from a variety of disciplines. They join forces to work towards the solution of a problem under the guidance of a steering committee. This approach implies that researchers sometimes establish new forms of collaboration with a wide range of partners.



Heidi Simoni is a psychologist and head of the Marie Meierhofer Institute for the Child. The institute aims to improve the lives of children by means of research, advice and teaching.



“It was a functioning marriage”

In the context of the National Research Programme “Childhood, youth and intergenerational relationships in a changing society” a psychologist and a lawyer analysed the rights of children in divorce proceedings. In a combined effort, the two specialists with very different backgrounds formulated recommendations for affected children.

“It was an arranged marriage, but it functioned well,” says psychologist Heidi Simoni jokingly when describing her collaboration with lawyer Andrea Büchler. The two researchers jointly led a project of the National Research Programme “Childhood, youth and intergenerational relationships in a changing society” (NRP 52). The focus of their project was the rights of children in divorce proceedings.

Both women had originally submitted a proposal with different collaborators to the Swiss National Research Foundation (SNSF). “We were told that our ideas sounded interesting but that we ought to consider working together,” remembers Heidi Simoni, head of the Marie Meierhofer Institute for the Child. This is what they did. Within a few weeks they put together a team and a joint proposal, which was later accepted.



In divorce proceedings, it is important not to neglect the rights of the affected children.

The best solutions for children are those that consider their psychological well-being.

By analysing the situation from different perspectives, it is possible to find a workable solution that focuses on the child's actual needs.



Heidi Simoni acknowledges that Andrea Büchler went beyond purely legal thinking due to an approach firmly based in the sociology of law. Together they explored the question of what families experience during and after divorce proceedings – an area where law and psychology become closely entwined.

A transitory stage

How can divorce be defined? “We do not see it as a cataclysmic end but as a transitory stage in the life trajectory of a family during which everyone has to readjust.”

On the basis of this assumption they decided to analyse the rights of children in divorce law on three levels: a legal team focused on legal documents from three cantons, two sociologists

wrote to divorced parents asking them to complete a questionnaire while others interviewed parents, children and judges in person. “The great variety of methods and perspectives was inspiring,” says Simoni.

Were there moments when the psychologist and the lawyer found it hard to relate to each other's approach? “I remember a key moment,” says Simoni. “The legal perspective was that a change in the custody rules was justified if the child was in danger. The psychological perspective was that the best possible solution for the child must be sought.” In the end they agreed that the goal should be a viable solution focusing on the needs of the child.



Great effort from everyone involved

The final report was published as a book and, with the support of UNICEF and NRP 52, a product of practical relevance was created: brochures containing advice on how to listen to children of all ages. Most of the publications were finalised after the project had ended. "Everything was down to a mammoth effort by the Faculty of Law at Zurich University and the Marie Meierhofer Institute for the Child," says Simoni.

She feels that the results of a collaboration, for instance publications, should be available as soon as possible after a project. Also on a critical note she adds: "It is regrettable if an interdisciplinary team has to break up after one or two projects. Many interesting questions that arose during the joint research remain unanswered."

In conclusion Heidi Simoni asserts that the Marie Meierhofer Institute for the Child regularly uses an interdisciplinary approach, but she bemoans the lack of opportunities for in-depth research in her daily work. "It's mostly about hard work and there are many lean periods in-between. But at the end there is new room for thought. All in all, the joint project was a challenging but rewarding experience."



4 Communicative

From the beginning, researchers of a National Research Programme (NRP) are in contact with their target public and communicate research objectives as well as results. They can rely on a variety of communication tools ranging from brochures popularising science to workshops with practitioners/industry partners as well as films, websites and presentations before parliamentary commissions.



A dark chapter in the history of Switzerland

Books, films and exhibitions: there is widespread interest in the results of the National Research Programme “Social integration and social exclusion” (NRP 51). One subject of the NRP was the history and social position of the Swiss Jenische, a minority people of traditional travellers.

In 1972 and 1973, a number of articles published in the monthly magazine “Beobachter” catapulted the history of the Jenische in Switzerland into the realm of political controversy. Up until that time, few people had known that the charity Pro Juventute, backed by the Swiss state, had taken close to 600 children away from their parents between 1926 and 1972. The so-called relief programme was called “Children of the Highway” (Kinder der Landstrasse). Despite the controversy, it took a surprisingly long time before this particularly dark chapter in the history of minorities and social policy in Switzerland became the subject of historical analysis: in 1998 a state commissioned historical study into the “Children of the Highway” programme was published.

The federal authorities produced a popularised version of the study in German and French, which has been used in schools and continues to find readers.



Paul Fink is deputy section head at the Federal Office of Culture and responsible for the dossier “Travellers”.



The study triggered a wide-ranging discussion. “The need for further studies was huge,” says Paul Fink, responsible for the dossier “Travellers” at the Federal Office of Culture.

In 2000, the Federal Council instigated the National Research Programme “Social integration and social exclusion” (NRP 51), which was to allow for further studies into the history of the Jenische in Switzerland.

Damaging entries

Three research projects of the NRP set out to further investigate the subject. Before historians viewed the documents stored at the Swiss Federal Archives, they sought permission from traveller’s organisations. “Based on the documents,” Paul Fink says, “historians were able to show that the judgemental and discriminating entries often had a disastrous effect on

the biographies of the people affected.” Attributes such as “bad character”, “spineless” or “retarded” contributed to this effect.

It became increasingly clear that the repressive social policy was underpinned by an entire system: “Local authorities, doctors, psychiatric clinics, legal representatives as well as teachers and vicars – they were all involved,” says Paul Fink. Since the 19th century, compulsory school attendance had been used as a repressive instrument against travellers. The need to purchase cantonal business licences further inhibited their mobility. It is therefore hardly surprising that of 35,000 Jenische currently living in Switzerland only approximately 3,000 are still living the traditional life of a traveller.



The history of the Jenische in Switzerland remained concealed from the public eye for a long time.

Not only have the researchers of NRP 51 “Integration and Exclusion” studied their story in depth, they have also brought it into public view through exhibitions and books.

Many people have become aware of the Jenische thanks to the activities of NRP 51, which has thus helped to redress some of the wrongs suffered by these travellers.



The insights gained through NRP 51 were not only published in journals but also communicated to a wider public. As a result, the situation of the Jenische has remained in the public eye.

Events and activities

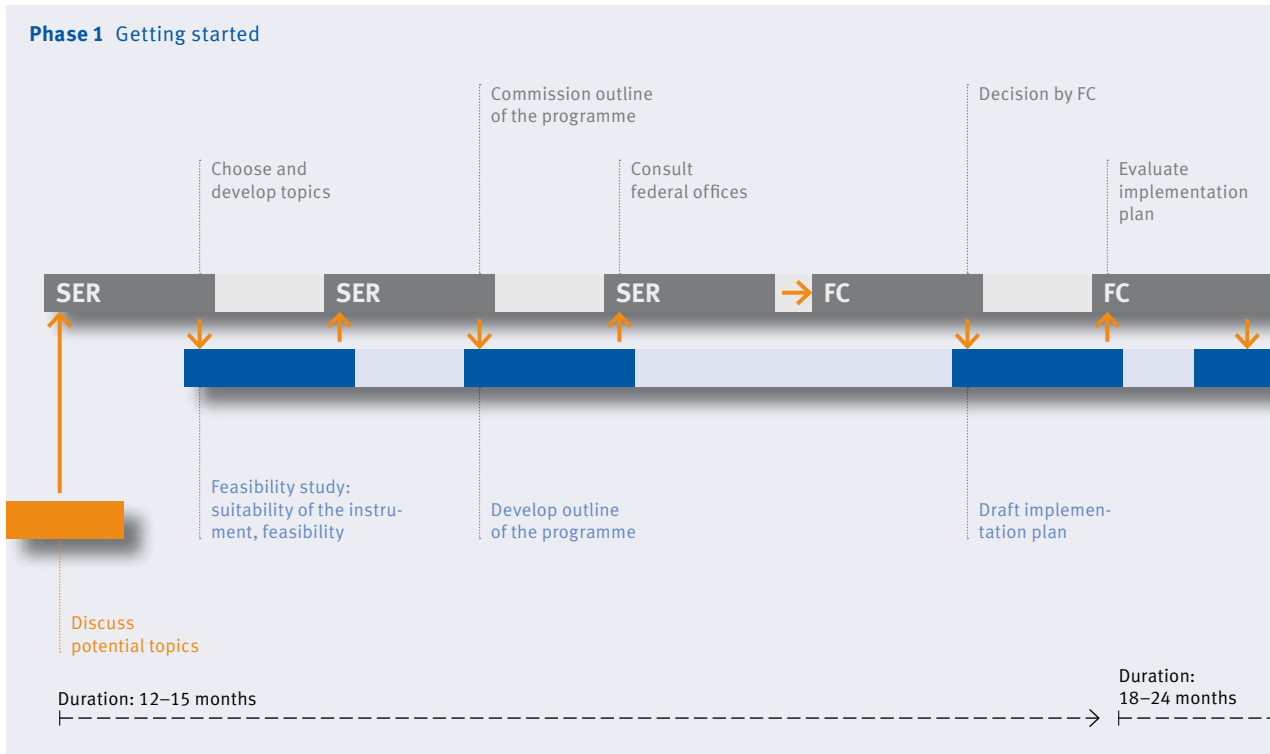
In 2009, the exhibition “Farmer and Tinker – sedentary people and travellers in Graubünden” in Chur dealt with some of the issues. In the same year, the historical collection “Of People and Files” was published. For 2012, an exhibition with the title “Children of the Highway” is planned in Zurich. Furthermore, the virtual exhibition “Swiss Travellers Past and Present” will go online towards the end of 2011.

Paul Fink is pleased that the NRP was so productive: “On the one hand, many people are now aware of the history of the Jenische. On the other hand, the programme contributed to-

wards reconciliation. It had a psychohygienic effect for many Jenische.” Fink even believes that it led to a paradigm shift and mentions the documentary “Young and Yenish” (“Jung und jenisch”), in which a generation of young Jenische look back at their history with pride. He also mentions Willi Wottreng’s biography of Robert Huber entitled “The Gypsy Chief – from child of the highway to spokesperson of the travellers” (“Zigeunerhüptling. Vom Kind der Landstrasse zum Sprecher der Fahrenden”). He presents Huber’s life as a story of emancipation, and not victimisation.

Fink is convinced that the NRP contributed significantly to this change.

The NRP process



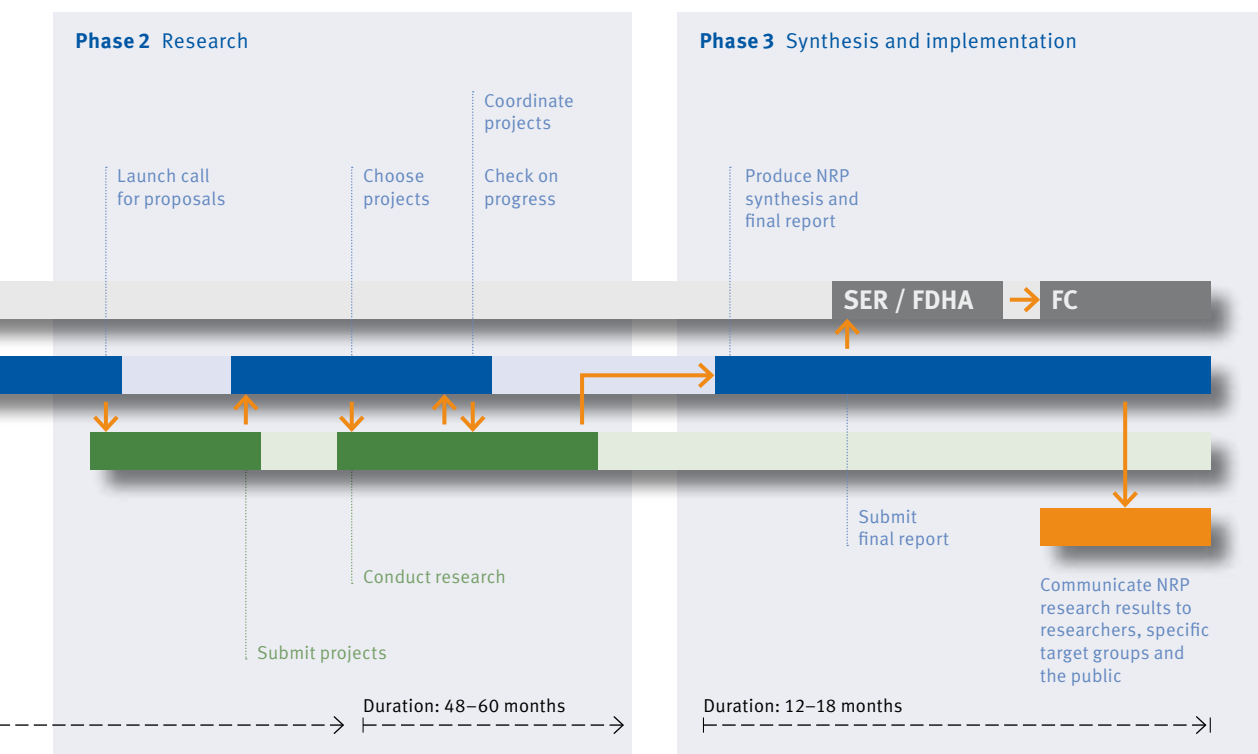
- Universities, other institutions, administrations, trade associations, individuals
- Researchers
- **SER** State Secretariat for Education and Research
- **FC** Federal Council
- **FDHA** Federal Department of Home Affairs
- **SNSF** Swiss National Science Foundation

Phase 1 Getting started

Citizens, researchers and politicians in dialogue

Any natural and legal person as well as any federal office can submit suggestions for NRPs at the SER. Right from the start, the process is characterised by a bottom-up approach. Suggestions are generally submitted by members of university staff and – to a much lesser degree – by employees of the administration.

The Federal Council ultimately chooses the NRP topics but scientists have a substantial say in the evaluation (feasibility study, programme outline). The Federal Council usually commissions two to four NRPs at a time with a budget of 10 to 15 million Swiss francs each.



Phase 2 Research

Research gets under way

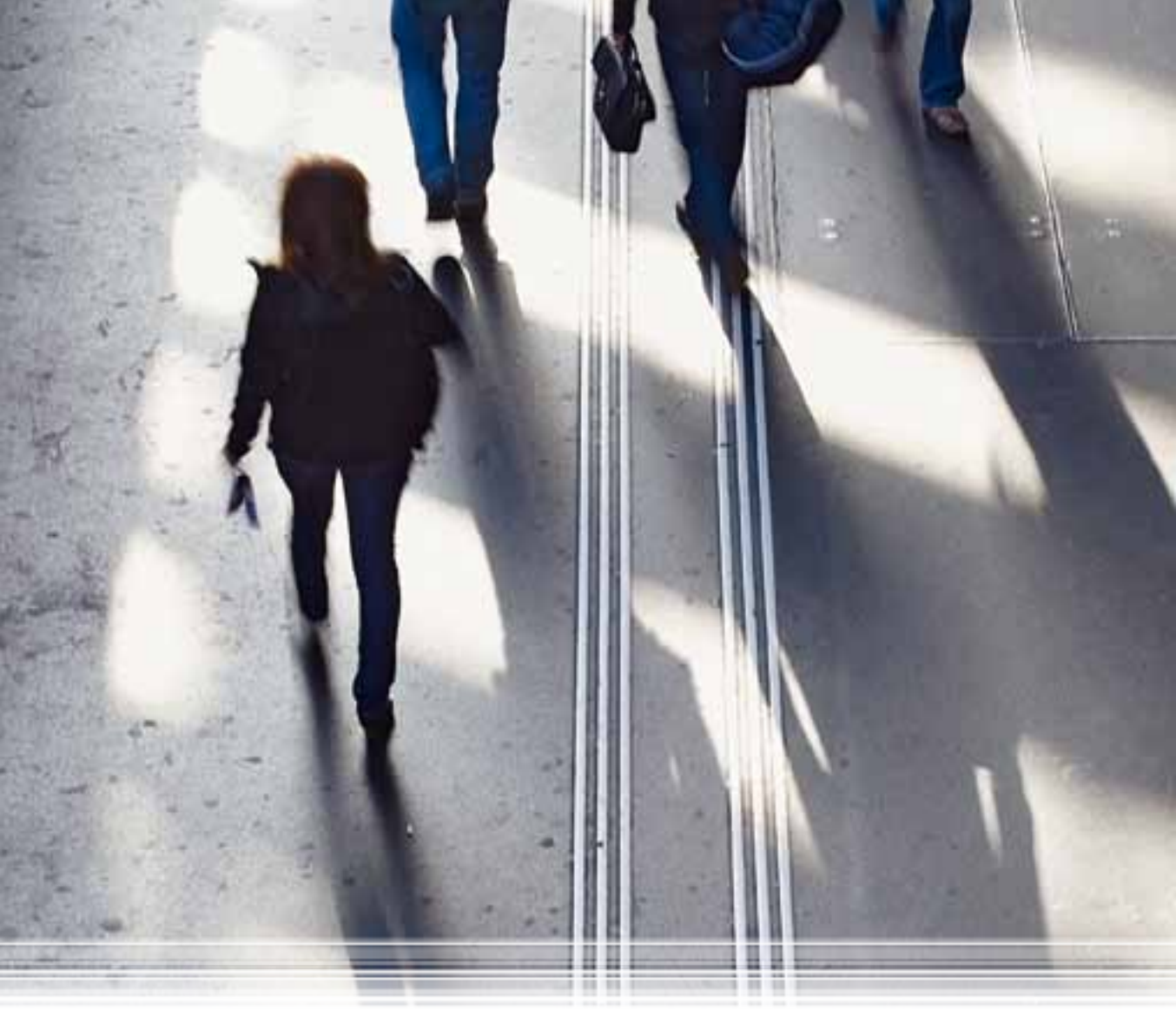
A call for proposal invites researchers to submit project applications. Projects are chosen in a two-stage process (draft proposal/full proposal) to coordinate the individual projects of the NRP. Once research is under way, the Steering Committee follows the progress of the projects and fosters intensive interaction between the researchers.

Knowledge and technology transfer enjoys a key role in NRPs: 10% of the overall budget are earmarked for this purpose. Researchers regularly meet with important stakeholders, including political and economic decision makers and members of the public.

Phase 3 Synthesis and implementation

Wrapping up the NRP

When researchers complete an NRP project, they are expected to answer key questions raised by the programme and issue recommendations. The official end of an NRP is marked by the submission of the final report, in which the Federal Council is informed about the results.



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