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International Conference Pre-Announcement
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Preface

Why Networks?

Networks are a very innovative and commonly adapted strategy to fund research within both basic and applied research. In this newsletter, we discuss two programmes in the field of basic research: the Austrian Science Fund's Research Networks and the German Collaborative Research Centers. Many more examples of network programs can be found at the national and European (e.g. networks of excellence) level.

Networks, as a funding mode, have become so commonplace that some researchers have raised objections. For example, "Networks, Fretworks"¹, has been used by Gottfried Schatz, the former president of the Swiss Science and Technology Council, to express his displeasure with the widespread use of networks. Recently, in this most remarkable article (that can be seen as a reproach to science and research policy people) he complained that modern funding modes for basic research forces scientists to *"play along with such official network programs because they cannot afford to ignore the carrot dangling in front of their nose."*

Schatz's statement is accurate but only in reference to those science policy stakeholders who overdo the designing of network programs and not to those who are responsible for

network programs in general. One criticism is that there is not enough space left for classical project funding allowing people to work independently and with no interference on their own ideas (on their own carrots, so to speak).

"There is nothing inherently wrong with scientific networks. On the contrary, they can be powerful instruments of scientific innovation." says Schatz in the same article. Obviously, there is a trade off between overdoing (forced) networks and initiating powerful instruments of innovation..

John Rigby of PREST and his co-workers from Fraunhofer ISI were requested to investigate this issue for the Austrian Research Networks. In this newsletter, he describes how such an effort can be started. Rudolf Novak of the Austrian Science Fund comments from the client's point of view, whereas Rolf Greve (DFG) and Rainer Lange (German Science Council) discuss in detail the German Research Foundation and its programmes.

Please also devote some attention to Alfred Radauer's review of an OECD workshop on behavioural additionality, which took place in Vienna in January; as well as to the Platform conference announcement "New Frontiers in Evaluation."

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¹ Jeff's View: Networks, Fretworks. In: FEBS Letters, Vol. 553, 2003

John Rigby

Evaluating the FWF's Research Networks

BACKGROUND

In 2004, a team of researchers from PREST and Fraunhofer ISI were commissioned to carry out a review of the Austrian Science Fund's research networks programmes, the Forschungsschwerpunkte (FSP) and the Spezialforschungsbereiche (SFB). At the time, an international consortium led by Technopolis was conducting a high level review of Austrian science and technology funding organisations. This review included a broad examination of the FWF research funding activities and its position, role and mission within the range of organisation funding science and technology in Austria. The study by PREST and ISI was established to contribute to this overall review by examining the role of network funding by the FWF in promoting scientific excellence in Austria.

Our study took around six months and involved seven people in total, spread across each organisation. A bibliometric study was carried out under contract by Evidence Ltd, a UK based bibliometrics and scientific information company. The FWF was also to contribute considerable time and effort to the review, preparing and collating information for the study team from its excellent archive of programme records and outputs. In this short article I describe some of the steps we followed in preparing and carrying out our study, and some

of the findings that were made. As the report we wrote for the Science Fund is available in English on a number of web sites, it is better if I focus on how the research was done and the steps we took, rather than on the findings.

THE OBJECT OF THE EVALUATION AND CONTEXT

The FWF carries out a full range of support activities to science and the humanities through a wide range of programme instruments. Financial support, sometimes in conjunction with other funds, is given to research centres, research networks, to individual researchers and scholars and to specific groups for disciplinary and interdisciplinary research, and also for technology transfer and enabling activities for specified groups such as women researchers. Applications for support from FWF programmes are made through open competition and are evaluated for their scientific excellence. Successful projects can be funded for up to ten years. FWF operates three types of research network, special research programmes, joint research programmes and graduate programmes.

The two major research funding programmes for networks on which we were focusing support long term scientific activity in areas where there are significant intellectual challenges and where advances in knowledge in disciplinary or interdisciplinary forms and effective dissemination are most effectively pursued through networking and collaborative activity. The SFB has existed for around 10 years while the FSP has a much longer history, funding research since the 1970s.

While FSPs and SFBs share a number of goals, they also address specific goals, mainly in regard to the scope of their action, with SFBs operating at local rather than at national levels. Both programmes fund research activities for periods over 5 years, with SFB grants intended for periods up to 10 years and FSP grants intended for up to 6 years. Research funding to these kinds of networks takes around 25% of the total FWF support to research with the other 75% taking the form of support for single projects.

All research funding organisations face the challenge of ensuring that their research programmes have the most appropriate form for generating knowledge. Research networks are widely recognized to be an effective method for generating new knowledge both of a theoretical and applied nature in a wide range of research areas and for implementation and dissemination purposes. Research networks provide, in addition to material resources, opportunities for the exchange of tacit knowledge which cannot so easily occur when work is undertaken alone. They also facilitate engagement between different groups of researchers and between users of research and those developing solutions, giving rise to the claim that research is increasingly multi-disciplinary and even trans-disciplinary or Mode 2 in form. This claim, which is still seen by many as controversial, leads to the policy prescription that increasing levels of scientific funding should be directed towards the support of research networks whose explicit goal is to develop trans-disciplinary knowledge.

However, research networks are one of a number of tools to support research and their capability to meet the organisational goals set by the FWF was something that we felt could not be assumed unquestioningly. We considered that a programme evaluation must look therefore at a wide range of issues including the rationale of the programme but also at the wider picture in terms of the other programmes operated and the implications of any alternatives proposed upon the FWF's capability to pursue its mission.

For example, research networks may be unable to address all of the goals which are set by FWF: they may have ceased to be the most appropriate way of reaching some or all of the goals; they may be ineffective in the way in which they address the goals of the FWF; and they may be inefficient, in cost-benefit terms. Furthermore, their role within the context of the full range of portfolio of FWF programmes and research activities needs to be considered. Their relation to other policy initiatives, such as attempts to ensure that the role of women in science is not marginalized, also needed to be assessed. The purpose of programme evaluations is to investigate these major areas and, where necessary, to make recommendations for change. We therefore conceived the study as involving both formative and summative evaluation, in that we might well propose changes and we were also concerned with the final outputs of the networks, in terms principally of their scientific impacts.

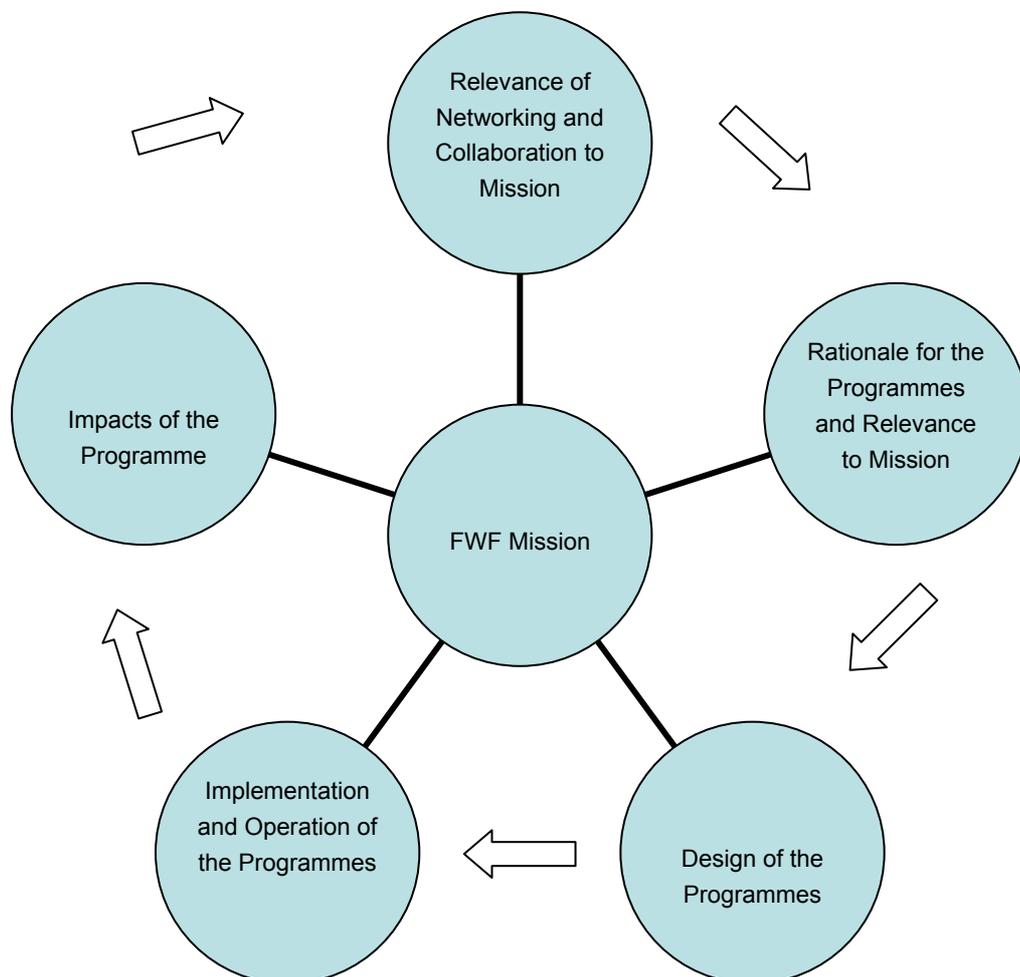
SPECIFIC DIMENSIONS FOR THE EVALUATION

The analytical framework developed by the study team is shown in the following figure, Figure 1. This fivefold framework was used to explore aspects of the Programme's performance and sought to identify the extent to which goals were met, where modifications were possible to various aspects of the programmes, where developments were occurring which could require modifications in the future, and how changes could be implemented in response. These questions therefore supported the two main activities of the review, i.e. an assessment of how well the

programmes were performing, and what, if anything needed to be done to improve them. As noted above, in concerning itself with both function and results, the review had both formative and summative aspects.

Our analytical model also suggested that while each dimension affects how well the programmes support the mission of the FWF, there are links between the dimensions. This is particularly true of the design and implementation of the programme which strongly affect the impacts of the programme in terms of publications and also in terms of human capital development.

Figure 1 Five Themes Affecting Programme Performance



The Five Dimensions of the Research

The themes which organized our thinking for the evaluation and from which we developed our questions are outlined below. The first of these was that we should look closely at the role of the programme within the overall Austrian Research system and the relevance of the programme goals within this context. The second detailed research area was concerned with the soundness of the programme concept and its appropriateness to the existing goals and any new goals proposed. The third area for detailed examination was to look at the effect of design upon programme operation and the fulfilment of programme goals. The fourth area we proposed to examine was the effect of programme implementation upon programme goals, and the fifth was to examine the extent to which outputs and impacts from activities funded by the programme match the goals outlined and envisaged by the FWF.

The first of these themes or dimensions is that of the logic, adequacy and relevance of the concepts upon which research programmes are based, in this case for the Austrian context, of how well programmes are structured and conceived to meet the goals set for them by their funding bodies, managers, programme participants and other stakeholders and users. Under this theme, we aimed to consider how the two Programmes of the FWF in fit within context of FWF's overall portfolio of research activities and its general mission.

Under the second theme, we aimed to consider the question of consistency of the programme concept with the programme goals – issues referred to in evaluation terminology as appropriateness, (OECD, [Gibbons and Georghiou] 1987). The relevance of a contextual review to our study became very evident to us during the review as we examined

changes to the operation of the universities in Austria, and the development of plans to collaborate in European programmes through the DACH Agreement and through the ERA.

Under the third theme we considered design of the programmes and the implementation and procedures for programme management, including the question of how evaluation activities contributed to the achievement of programme goals. The issue of design and concerns the way in which the practical rules under which the programme operates contribute to or undermine effectiveness.

Under the fourth dimension, we aimed to consider the area of implementation. This dimension is of immense importance and policy makers and governments can easily overlook how the arrangements for application of funding, the selection of proposals, the allocation of funding and the monitoring and management of scientific projects affect scientific output, the scientists themselves and their institutions. Only those concerned with these arrangements intimately, as either scientists or science administrators, are in a good position to understand how best to design this process, although they are themselves sometimes too close. We also suggested that the training, capability building and structural characteristics of the networks should be thoroughly investigated as these are aspects of scientific collaboration that can be overlooked, but which are, in fact, of major importance.

Finally, we aimed to examine the outputs and the impacts of the Programmes and to assess to what extent these met the expectations of the funding bodies, managers, programme participants and other stakeholders and users.

CARRYING OUT THE REVIEW – SOURCES OF DATA

The aim of our study was to answer our questions about each of the five dimensions of the programmes using as many sources of data as possible to provide cross checking and validation. We sought our data in the form of interviews, the analysis of project records, a bibliometrics study, and a meta-analysis, using literature and reports of previous studies.

A Documentary Review

The documentary review was based on end of project reports containing information about programme impact and other documentation concerning programme design and programme procedures. It identified information relevant to other parts of the study, including interviewees, but also the bibliometrics analysis. It was also used to collect information concerning the operation and procedures of the programmes and their noted effects.

An Interview Programme

The interview programme included just 30 face to face and telephone interviews with the following groups (an indication of the number of interviews is given in brackets): Programme Managers/ FWF staff [4], Austrian experts [5], International Experts [4], Participants [12], Applicants and Non-applicants [4] and Rejected Applicants [2-3] to the two research programmes. The interviews were carried out with a mix of people of different types in order to gather a sufficiently broad range of information relevant to the dimensions of the programmes, and to ensure that we could cross check different sets of answers with each other. The FWF kindly informed those chosen for interview of our activities and this greatly facilitated our access and improved our

progress.

A Bibliometrics Study

The part of the review, which examined how far the impacts of the programmes met expectations, directly addressed the question of added value through a review of publication activities of researchers involved in the networks. This bibliometrics review was based on a method employed by PREST for comparing scientific outputs under programme funding with those outputs arising without funding. The method has been used to examine the net effect of programme funding on research.

The method involves three types of analysis: a) a review and assessment of the differential citation rates between the authors' project and non project publications; b) a review and assessment of the difference in citation rates between those papers published by the authors and those published by non-project authors (in this case also from Austria, but from no other countries) within the same journals; and c) a review and assessment of co-publication patterns from within the project. All the analysis is subject to the availability and the reliability of the data provided by the project interim and final reports under the two programmes.

The bibliometrics review was carried out under contract by Evidence Ltd, a bibliometrics company based in the United Kingdom with a strategic alliance with Thomson ISI, the world's leading provider of scientific information. The analysis carried out was intended to cover publications arising in two years, the first being 1996, the second being 2001, thus providing opportunities to construct comparison groups and an inter-temporal comparison. The third section, on co-publication, was also undertaken Evidence Ltd.

Data input for all three sections of the bibliometrics was generated through analysis of the programme's project documentary records.

The bibliometrics analysis work carried out by Evidence Ltd. also included some baseline comparisons between the Austrian publication activity and that achieved in a number of other important comparator countries of relevance to the FWF. These countries included: Switzerland, Sweden and Finland. It should be noted however, that comparisons between any country's records and Swiss publication and citation data can be erroneous because of the concentration within Switzerland of large international research facilities and commercial (pharmaceutical) research facilities.

A Meta-Analysis

As the study involved an international comparative aspect, part of which was carried through within the interviews themselves, we proposed a meta-analysis to incorporate relevant studies of research programmes operating in similar manner as those operated by FWF. The meta-analysis was undertaken in conjunction with the FWF which was invited to suggest relevant example studies and to identify relevant comparator programmes. Again, the countries used in the bibliometrics study were closely examined for examples of comparable programmes.

CARRYING OUT THE REVIEW

Our review began with an appreciation of the role of the networking projects within their contexts and was based a review of the literature, including other studies and reports on like programmes. This meta-analysis was the first step and it oriented our research for the study of the five dimensions.

From this starting point we analysed the data held by the FWF itself on its network programmes, creating, in a lengthy but ultimately valuable process, a number of detailed databases of key project information from the original FWF data. This information provided us with a detailed set of perspectives on our five research dimensions and we were able to use this data in conjunction with the interview material and the findings of our bibliometrics review in our analysis.

Our initial review of the data held by the FWF generated the following data:

- number of subprojects;
- scientific disciplines represented within the subprojects;
- participating scientists, differentiated for their role, title, and gender;
- participating institutes and hosts (mainly universities);
- project leader activities;
- publications generated;
- budgets asked for and budget granted.

From this data was carried out analyses, often at a very detailed level of the following:

- the structuring effects of the networks and their sub-projects;
- an assessment of the regional embedding of the networks;
- a collaboration analysis;

- an assessment of the international scope of the networks in terms of their membership;
- an assessment of the degree of interdisciplinarity of the networks;
- the development of human capital;

We were also able to generate from our review of the FWF data a database of information on how the projects had been peer reviewed during their whole cycle, including ex ante review, the formative evaluations and monitoring, and final review.

Our data from bibliometrics provided us with evidence that we could use to answer questions about the performance of the networks in terms of research quality, a whole set of international comparisons and variations by academic subject. But we were also able, because of the way in which the data had been

collected, to use the bibliometric data directly with our own databases of information to make further analysis. This analysis included a study of the role of the relationship between the extent of collaboration activity on the quality of outputs within the network, and the role of geographical distribution of networks on quality, and the effect of interdisciplinarity on the quality of the scientific outputs generated.

USING INFORMATION TOGETHER

Our belief was that we should use, wherever possible, different types of information to ground our findings within the different themes. In the following table we show which types of information were used to contribute to our answer for each theme. The order in which the sources of information are shown reflects the priority of each source within the investigation of the theme.

Figure 2 Use of Data and Priority for Each Theme

Mission	Concept	Design	Implementation	Impact
Interview	Meta-analysis	Interview	Interview	Bibliometrics
Meta-analysis	Interview	Meta-analysis	Documentary Review	Interview
Bibliometrics		Documentary Review	Meta-analysis	(Documentary Review - preparatory)

FORMULATING RESULTS AND RECOMMENDATIONS

Our aim in the preparation of our results and recommendations was to ensure that we were able to use all of the available information, whether from our analysis of the detailed records of the FWF or from the bibliometrics or from interviews. In practice this meant that we were preparing our recommendations in draft form relatively early, but that we did not finalize them until a point quite close to the submission of our draft final report.

Briefly, our findings were that the programmes were guaranteeing research excellence and that the principles, rationales and performance were sound. We noted the continued relevance of response mode funding as a mechanism for engaging the best scientists and obtaining the best ideas. Our view, based on the bibliometrics research and also on interviews was that there was a relatively low weight for collaborative funding in FWF, and that some further emphasis upon collaborative research might be appropriate, under certain conditions. We noted the importance of international links and made suggestions that the Austrian system should become yet more open.

We were able to demonstrate that the network programmes were of vital importance for the training of new researchers and existing academic staff, giving them insight into a number of key aspects of their fields, including funding, research strategy, and general domain knowledge. The differences in the way in which each programme operated - SFB answers the need of institutions to build their capacities, while the FSP answers more specifically the needs of subject areas – we regarded as complementary and of continuing justification, given the new context in Austria, particularly arising from the new University Law.

We also made some detailed recommendations concerning the peer review process, confirming the value of international peers, and suggestions about the feedback on proposals to applicants both successful and non-successful. We also made recommendations on the allocation of funding to projects, particularly in relation to the issue of how to pare down the funding to a network without undermining its ability to deliver scientific excellence.

POSTSCRIPT

We were glad that the FWF received our report positively and has begun to make use of the findings. We remain very interested in the state of Austrian science and hope that our work contributes, albeit in a small way, to its continued success. Our report is now available on the web at the FWF and also at the PREST and Fraunhofer web sites with the following ISBN number: ISBN 0 946007 13 6. Dr Edler and I are both willing to respond to questions.

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Rudolf Novak

Evaluation of FWF Funding Programmes for Research

The Austrian Science Fund (FWF) is Austria's central body for the promotion of basic research. The FWF is equally committed to all branches of science and is solely guided by the standards of the international scientific community in all its activities. Within the framework of the Programmes for Research Networks the most challenging, extensive and costly projects of the FWF's funding portfolio are financed. From 1993 to 2003, the FWF spent approximately 140 million Euros on two programmes, the Spezialforschungsbereiche, SFB, and the Forschungsschwerpunkte, FSP. In 2003, after a scheduled duration of 10 years, the first ever funded SFBs came to an end. The FWF felt that this provided an ideal opportunity to investigate the performance of both programmes and commissioned a comprehensive program evaluation. According to approved standards for good evaluation practices of the Platform Research and Technology Policy Evaluation, the program evaluation was long overdue.

One goal of the program evaluation was to inform research policy-makers, stakeholders and interested third parties about the objectives, operational procedures and impacts of the two programmes. Another goal was to provide the FWF with the information necessary to make any decisions regarding whether or not and in what form the

programmes under discussion are to be continued, improved or restructured.

To ensure top quality of the study the FWF wanted the evaluation of the two large funding programmes to be performed by independent and experienced evaluators. Furthermore, only non-Austrian candidates were considered in order to guarantee full impartiality. John Rigby's article in this volume of the "Platform Newsletter" gives a clear impression of the complexity of the matter, the extent of material produced and work performed by the evaluation team in only about a half year's time.

From the FWF's point of view, the study is an impressive example of an evaluation that was conducted at the highest international standards. Based on a comprehensive and detailed analysis of documents, figures (including bibliometric analysis) and interviews, the study comes up with a number of concrete results regarding the performance and impact of the programmes and the quality of scientific work that has been performed by the funded projects. In addition to providing results which include international comparisons and a meta analysis, the study also details a list of specific recommendations for modifications and improvements.

We are glad to report that the majority of the recommendations of the study have already been, or will be, implemented. This demonstrates that the FWF is dedicated to implementing changes recommended by the study as quickly and comprehensively as possible.

Major Improvements implemented by the FWF

CHANGING THE EXISTING TERMINOLOGY

Due to differences between the SFB and FSP networks, in terms of their goals, it is important to distinguish between them in terms of terminology as well as in context. Therefore FSPs (“Forschungsschwerpunkte”) are now called National Research Networks.

DIFFERENCES BETWEEN FSP AND SFB

SFBs receive long-term funding which allows them to build up a critical mass centred in one location. A strong commitment of participating institutions involves positive cooperation and concentration of efforts. Alternatively, FSPs seek network partners with complementary capabilities across country. Striving for excellence within research should allow different variations of network structures to remain beneficial.

INCREASING FUNDING VOLUME

After regarding the recommendations of the evaluation team the FWF increased the FSPs funding volume per project and year by nearly 35% and the SFBs by 72% in 2004.

FURTHER MODIFICATIONS

To ensure training of young researchers the FWF introduced Doctoral Programs (DK) which should take further advantages of the networks. Opening up the networks to international frameworks like ERA-NET and the D-A-CH scheme is an important step in the right direction. The FWF invited university leaders to a working group in the hopes of achieving a stronger commitment for funded research programmes. Furthermore several modifications of procedures and methods were conducted by the FWF.

A comprehensive evaluation study – of top quality is neither free, nor cheap. The direct costs of the present evaluation study were 90.000 Euros (not including the work of FWF staff members who were involved in the process). However, this sum is equivalent to only 0.06% of the funding volume of FWF research networks. Considering the wealth of information and advice we were provided, this investment was absolutely justified from the FWF’s point of view and it will serve as a benchmark for future evaluation studies of other FWF funding programmes. Our congratulations and thanks go to the evaluation team of PREST and ISI for their outstanding work and also the constructive and friendly atmosphere they created while the evaluation was underway .

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Rolf Greve

Development of coordinated programmes of the DFG

DEUTSCHE FORSCHUNGSGEMEINSCHAFT

The DFG is the central public funding organisation responsible for promoting research in Germany. Its activities focus on funding research projects carried out by scientists and academics working at universities or research institutes and on selecting the best projects in a process of fair and transparent competition. The work of the DFG serves all branches of science and the humanities to reflect its role as the self-governing organisation of German science and research. Its legal status is that of an association under private law. DFG membership is made up of German universities, non-university research institutions, scientific associations as well as the Academies of Science and Humanities. The DFG receives its funding from the federal (Bund) and state (Länder) authorities, which are represented on all decision-making bodies, whereas scientists and academics hold the majority.

The DFG promotes scientific excellence through competition: Scientists and academics submit proposals in which they present their projects. Peer reviewers, all experts in their respective fields, evaluate the quality of these projects. Their reviews serve as the basis for funding decisions.

The DFG advises parliaments and public authorities on questions relating to science and research. It contributes its

scientific expertise to political and social discourse by advising and accompanying the political decision-making processes. Consultations in the DFG's Senate commissions and publication of the results enable the DFG to comment on questions relating to science policy and the responsible use of scientific findings in society. The DFG's guidelines on good scientific practice provide an internationally recognised frame of reference.

In all its programmes, the DFG actively promotes collaboration between researchers in Germany and colleagues abroad. Special importance is given to strengthening European cooperation.

The DFG promotes the advancement and education of young scientists and academics by offering programmes which provide appropriate support throughout their qualification phases: In particular, the DFG encourages the early independence of young scientists and academics. The DFG endeavours to recruit talent from home and abroad to engage in science and research in Germany.

DEUTSCHE FORSCHUNGSGEMEINSCHAFT IN BRIEF

The legal status of the DFG is that of a private association. As such, the DFG can only act through its governing bodies, in particular through its Executive Board and General Assembly. The DFG meets its various responsibilities by drawing on the advisory and decision-making competence and expertise of its scientific and academic bodies.

The DFG's head office is responsible for managing the foundation's daily business and affairs. The work of this office is directed by the Secretary General of the DFG. The office,

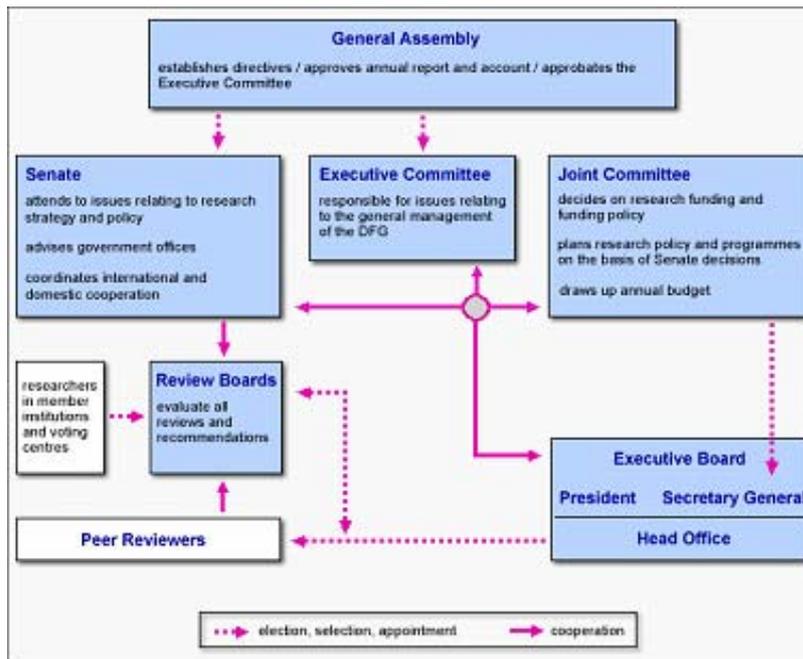


Figure 1 DFG's Organisation Chart

located in Bonn-Bad Godesberg, has three departments, where 650 staff work for and on behalf of science and research.

COLLABORATIVE RESEARCH CENTRES (SONDERFORSCHUNGSBEREICHE)

Collaborative Research Centres (Sonderforschungsbereiche) are joint interdisciplinary research centres based in universities, initiated by researchers to pursue research issues with a far-reaching and long-term perspective. The maximum funding duration is twelve years. Proposals have to be submitted by universities; neighbouring research institutions may participate with the consent of the university.

The universities and other participating research institutions are required to provide adequate cost-sharing for staff, infrastructure, and equipment for the duration of funding. Proposals must meet high scientific standards. Collaborative Research Centres enable the universities to pursue ambitious and costly research undertakings through a local concentration and coordination of effort and

available resources. Specific attention has to be paid to the promotion of young scientists, as well as to the enhancement of gender equality. A characteristic feature of Collaborative Research Centres is cooperation across the boundaries of disciplines, institutes, departments, and faculties. The centres are encouraged to collaborate with researchers in other universities and research institutes in Germany and abroad as well as with industry and other partners in the private sector. The scientists involved in a Collaborative Research Centre decide on the scientific development and on all ongoing matters of their centre. To this end, they lay down their own bylaws, subject to approval of their university and in consultation with DFG.

Awards are made for periods of four years up to a maximum of twelve years. Each Collaborative Research Centre is evaluated every four years by a panel of peer reviewers on a two-day site visit. Reviewers are asked to evaluate the

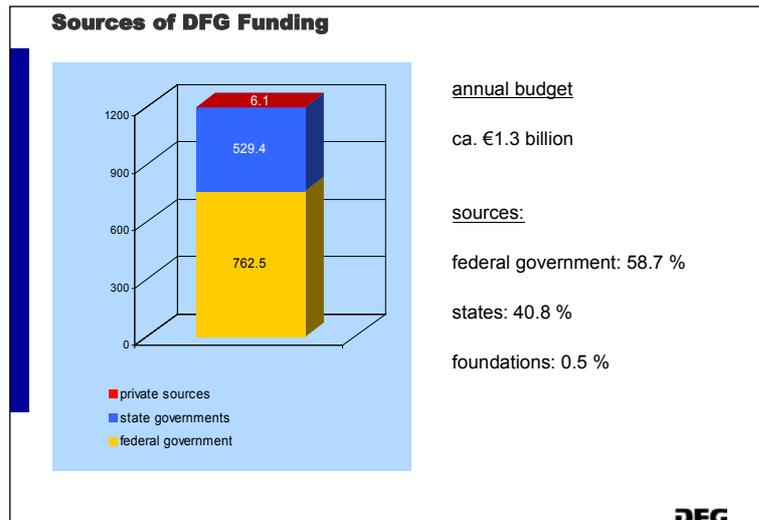


Figure 2 Sources of DFG Funding

results achieved in the preceding funding period as well as the future research programmes and to give recommendations on the budget. The review is the basis for the annual funding decisions of the Grants Committee for Collaborative Research Centres. This committee consists of scientists appointed by the DFG Senate and of representatives of the Federal and state ministries responsible for research and higher education. Two scientific members of the Grants Committee participate in every site visit review.

The programme was established in 1968 and has contributed significantly to sharpening the research profile of those universities successful in constituting highly qualified, cooperating research communities in their midst. For new initiatives, DFG offers the opportunity of a consultation in an advisory meeting on the basis of a pre-proposal.

Programme Variations

Within the framework of Collaborative Research Centres, several variations of the traditional programme are also offered: Cultural Studies Research Centres, Trans-regional Collaborative Research Centres, Transfer Units and Independent Junior Research Groups. All

programmes support and encourage international cooperation.

Cultural Studies Research Centres

The same principles apply to these centres as to the Collaborative Research Centres, with the exception that Cultural Studies Research Centres have to meet certain thematic and structural criteria. The research must be cross-disciplinary and international in terms of thematic focus and cooperation and must encourage advancing young researchers by offering special study programmes.

Trans-regional Collaborative Research Centres

are Collaborative Research Centres based at up to three separate locations. The contributions made by cooperating partners must advance the joint research project by being essential, complementary and synergetic in nature. The programme's structural goal is to develop the networking of cross-disciplinary research interests and material resources.

Transfer Units

serve to transfer the findings of basic research produced by a Collaborative Research Centre into the realm of practical application by promoting cooperation between research

institutes and users (business, industry, etc.). Transfer Units build on successful basic research projects funded within the scope of Collaborative Research Centres. Their purpose is to ensure that scientific research findings are transferred without delay into industry and other applied environments for practical testing. Funding is restricted to the pre-competitive area, extending at most to prototypal results. Transfer Units can range in size from one to six projects, while funding may be provided for between one and three years.

Independent Junior Research Groups

at Collaborative Research Centres encourage the early independence of researchers.

International Cooperation

International cooperation in research is an essential prerequisite for the international competitiveness and appeal of Collaborative Research Centres and Trans-regional Collaborative Research Centres. The advancement of international cooperation in the programme aims to establish and extend international networks between the centres and research partners abroad. In order to foster international contacts and enable the centres to present their findings on an international level, the DFG provides the centres with funding for travel, colloquia and visiting researchers.

COLLABORATIVE RESEARCH CENTRES IN BRIEF

Name of Funding Instrument

Collaborative Research Centre

Purpose

To create core research areas at universities by establishing temporary centres of excellence; to promote interdisciplinary cooperation; to advance young researchers

Eligibility Requirements

Research universities; other research institutes may only be included in the proposal upon consent of the institution applying for funding.

Project Requirements

Scientific merit and originality of an ambitious, extensive and long-term research undertaking at an internationally competitive level

Type and Extent of Funding

Staff funding (including the head of an Independent Junior Research Group), funding for scientific instrumentation, consumables, travel, publication allowance, funding for colloquia and visiting researchers

Funding Duration

As a rule, up to 12 years, one funding period runs for three or four years

Proposals may also be submitted for additional funds to be used for creating project-like cooperative structures. Examples of the use of such funding also include long-term cooperation projects with centres of excellence abroad (centre-to-centre cooperation). Research partners from abroad may also introduce their own projects into the centres by applying for positions as heads or co-heads of appropriate project sections.

Facts and Figures

In the 2004 reporting period, a total of 286 centres (including programme variations) were funded and a total of 19 new centres were established.

Of the 269 Collaborative Research Centres currently being funded, 34 (12,6 %) are in the field of humanities and social sciences, 113 (42,0 %) in medicine and biology, 68 (25,3 %) in the natural sciences, and 54 (20,1%) in engineering. The 269 Collaborative Research Centres are distributed across 59 universities, 12 of which are located in eastern Germany. 23 Trans-regional Collaborative Research Centres and 17 Transfer Units are currently being funded.

DFG-RESEARCH CENTRES (DFG-FORSCHUNGSZENTREN)

DFG Research Centres are an important strategic funding instrument to concentrate scientific research competence in particularly innovative fields and create temporary, internationally visible research priorities at research universities. DFG Research Centres help to make German universities as attractive to potential young researchers as the best universities in the UK and USA, and also attract top international researchers. Another goal of this funding instrument is to improve the conditions for successful research and

put the best ideas to improve educational and organisational structures as well as career opportunities at the universities into practice. To this end, up to six additional professors and their staff as well as teams of independent junior research groups may be funded. DFG Research Centres may be funded for a maximum period of twelve years provided that intermediate evaluations are carried out regularly.

In 2004, DFG Research Centres will receive a total of 25 million Euros in funding, which corresponds to 1.9% of the DFG's available funds for this year. Five DFG Research Centres are currently being supported. The first three centres, located in Bremen, Karlsruhe and Würzburg, have been funded since 2001, following an open programme announcement. The centres in Berlin and Göttingen were established according to programme announcements on the following topics: "Modelling and Simulation in the Engineering, Natural and Social Sciences" and "Neurosciences: From the Molecular Basics to Cognition".

This list contains all Research Centres currently funded by the DFG:

- FZT 15, Ocean Margins - Research Topics in Marine Geosciences for the 21st Century, Bremen
- FZT 47, Centre for Functional Nanostructures, Karlsruhe
- FZT 82, DFG Research-Centre for Experimental Biomedicine, Würzburg
- FZT 86, Mathematics for key technologies: Modelling, simulation and optimization of real-world processes, Berlin

DFG RESEARCH CENTRES IN BRIEF

Name of Funding Instrument

Research Centre

Purpose

An important strategic funding instrument to concentrate scientific research competence in particularly innovative fields and create temporary, internationally visible research priorities at research universities

Eligibility Requirements

Research universities

Project Requirements

DFG Research Centres enable the universities to establish research priorities on the basis of existing structures. The thematic focus must incorporate a high degree of interdisciplinary cooperation. Networking with other research institutions at the university location is encouraged. DFG Research Centres are open for cooperation with partners from industry.

Type and Extent of Funding

Funding may be provided for up to six professorships as well as associated independent junior research groups working within a DFG Research Centre. Following the start-up funding provided by the DFG, the host university commits itself to financing the professorships from its core budget. Appropriate personnel and material resources will also be made available. Funding for each DFG Research Centre averages approximately €5m per annum. Research Centres may receive funding for up to a maximum of 12 years.

- FZT 103, Molecular Physiology of the Brain, Göttingen

THE "EXCELLENCE INITIATIVE"

On 23 June 2005 the federal and state governments concluded the agreement on the "excellence initiative", which was reached by the Federal-State Commission for Educational Planning and Research Promotion. The aim of the initiative is to promote top-level research and improve the quality of German universities and research institutions, thereby making a significant contribution to strengthening science and research in Germany.

The programme is based on a standard, project-related competitive procedure. The joint

funding covers the scientific activities of the candidate universities and their partners at universities, in non-university research and in the private sector, and consists of the following funding lines:

- *Graduate schools to promote young researchers*

Graduate schools are a quality instrument for promoting young researchers and are based on the principle of educating outstanding doctoral students in an excellent research setting. Graduate schools therefore offer optimal conditions for doctorate students within a wide scientific area.

– *Excellence clusters to promote world-class research*

Excellence clusters are aimed at setting up internationally visible and competitive research and educational facilities at German universities and promoting the development of scientific networks and collaborations. Excellence clusters should therefore be an important part of a university's strategic and topical planning, raise its profile and ensure that priorities are set. They should also provide excellent educational and career conditions for young researchers.

– *Plans for advancing top-level university research*

Plans for advancing top-level university research are aimed at developing top-level university research in Germany and increasing its competitiveness at an international level. The funding covers all measures that allow universities to develop and expand their areas of international excellence over the long term and to establish themselves as leading institutions in international competition. This will make a significant contribution to strengthening science and research in Germany in the long term and increasing the visibility of current research excellence.

Universities, represented by their administrations, are eligible to apply. Around 40 graduate schools will be provided with an average annual funding amount of 1 million Euros each, and approximately 30 excellence clusters will receive an average of 6.5 million Euros per year. The number of universities funded for the third line will be subject to the following framework conditions: a) Universities must have been granted funding for at least one excellence cluster and at least

one graduate school to be eligible for third-line funding, b) The total average amount of funding for the third line, including funding for graduate schools and excellence clusters, will be 21 million Euros per year for each university. If applications are submitted for several graduate schools and excellence clusters, the total funding may be significantly higher than this average value. The actual approved sum is based on overall decisions for all three funding lines. In addition to this, a general allowance of 20 percent of the funding amount will be provided to cover indirect expenses related to the funding.

The following general funding criteria apply to all three funding lines: excellence in research and in promoting young researchers in at least one general area of science, overall concept for networking disciplines and creating international research networks, collaborations between universities and with non-university research institutions, where possible formalised by practical and binding cooperation agreements. Another consideration is the effectiveness of measures aimed at promoting equal opportunities for men and women in the field of science. The application process is divided into two stages. In the first stage, universities will be requested to submit draft proposals.

DEVELOPMENT OF THE COLLABORATIVE RESEARCH CENTRES

“Big is beautiful“?

From 1978 to 2004 there was an enormous growth of funded SFB's from 105 to 297. Since 2000 the goal is to reduce the number of SFB's and to increase the funding for every single centre.

Rainer Lange

Evaluation of Collaborative Research Centers by the German Science Council

The Collaborative Research Centers programme (CRC, "Programm zur Förderung von Sonderforschungsbereichen") is one of the longest running funding programmes of the Deutsche Forschungsgemeinschaft (DFG). Since being established in 1967, the CRC has been under close scrutiny from the German Science Council (Wissenschaftsrat). The most recent evaluation of the programme, conducted in 2002, again confirmed its overall success. It has, however, also highlighted a number of issues that are important not only for the future of the CRC programme, but for the funding of collaborative research in general.

THE CRC PROGRAMME: BASIC FACTS

Collaborative Research Centers are long term university research centers that receive temporary funding from the DFG. They are characterised by research excellence, a coherent research programme, interdisciplinary cooperation, and an impact on the university profile that is often described as their "critical mass". Historically, the programme has been established as an incentive to universities to concentrate their efforts on their most talented and active research groups. In line with this aim, university leaders have been required by the DFG to substantiate their strategic commitment to individual CRC proposals by contributing substantial matching funds to the CRC's budget. Another criteria that is meant to ensure the programs positive effect on the individual university's strategic profile is the so-called 'location principle'.

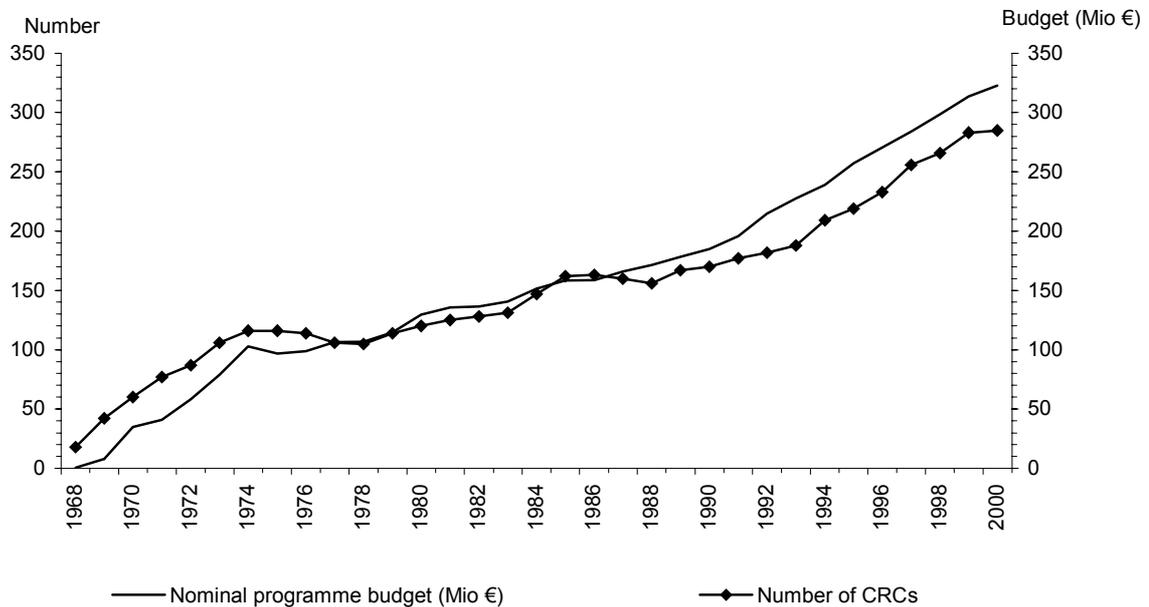
According to the location principle the majority of each CRC's sub-projects must be at one university, and collaborating institutions should preferably be concentrated locally or regionally around that university.

Originally interim evaluations were conducted at three year intervals. This evaluation regime has been relaxed, however, to a four-year-cycle in the past few years. CRC funding is usually terminated after 12 years.

The CRC programme has been in high demand for most of its history. With the exception of the mid-70's, the programme has seen a steady growth in both numbers of CRCs and funding (fig. 1). With 362 million Euros in 2004, the CRC programme accounts for 28 % of the overall DFG budget. In real terms, however, funding has not kept pace with the increasing numbers, resulting in a slow but steady decline of real term funding per CRC per year as of the year 2000 (fig. 2).

During the 90's, the CRC programme underwent some amount of diversification. First, Transfer Units were defined as small, temporary collaborative units that serve to improve knowledge transfer among successful CRCs. Next, Cultural Studies Research Centers represented a new variety of CRCs that was supposed to support the humanities and social sciences in developing a new, more collaborative and interdisciplinary paradigm. Trans-regional CRCs are another variety that is meant to address the problems resulting from the location principle.

Fig 1: Quantitative Development of DFG CRC programme, 1968 - 2000



THE 2002 EVALUATION BY THE SCIENCE COUNCIL

The German Science Council is an advisory body to the German Federal Government and the state (Länder) governments. Founded in 1957, it has a long history in common with the CRC programme. Its 1967 *Recommendations on the expansion of the higher education system* triggered the establishing of the CRC programme by the DFG. In 1977, 1985, and 1998, the Council evaluated the programme's success and issued recommendations on its future development. At the same time, the Council was also regularly involved in the process of proposal evaluation. Each new proposal was not only assessed on scientific grounds in a DFG-organised process, it was also assessed from a more policy-oriented perspective by the Science Council. In 2000, however, this practice was abandoned.

According to the new regulations, the Science Council is no longer involved in the ex ante

evaluation of individual CRC proposals, but evaluates the programme and gives recommendations on its structure and finance on a regular basis. Despite the fact that the federal and state governments are members of the Science Council's administrative commission, the mandate of the Council with respect to these evaluations is largely self-defined by the scientists in the Council. The governments' representatives do not act as a principal body in this case. Therefore, the Science Council addresses its recommendations not only to the governments, who finance the DFG, but also to the DFG and to the universities who participate in the programme. One might say that the Science Council fulfils an accountability function with respect the CRC programme on behalf of the scientific community.

In 2002, the first programme evaluation under the new regulations was performed by the

Science Council's standing Research Committee. In view of the membership of that committee, the evaluation must be regarded as an example of a peer review process. The committee was provided with data from a number of sources:

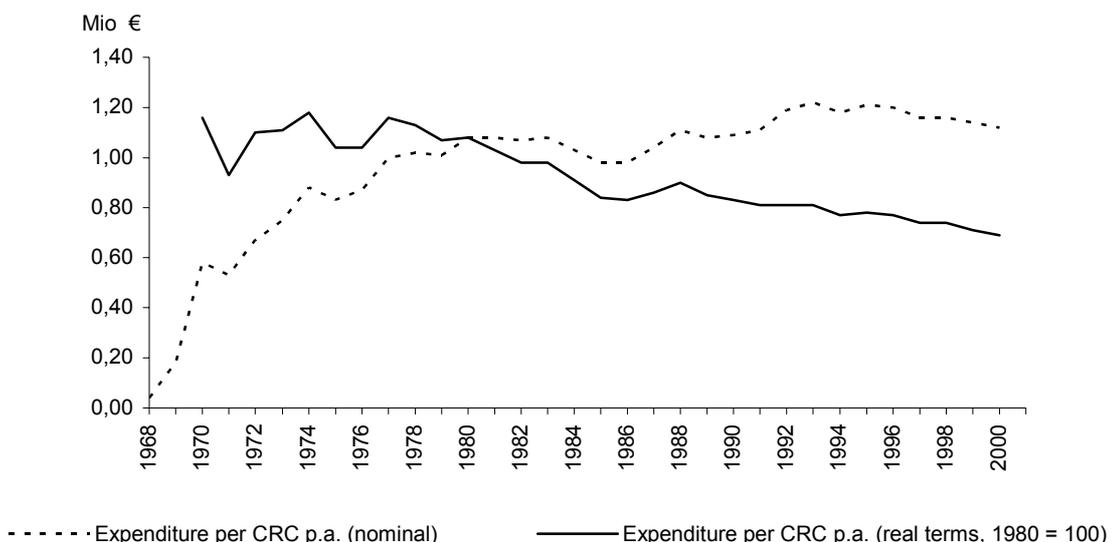
- DFG and Science Council statistics on CRC proposals, structure, funding, personnel, etc.
- Analyses of CRC proposals and reports, focusing on structural information
- Results from a survey of CRCs that has been conducted by the Wissenschaftszentrum für Sozialforschung Berlin (WZB)
- Analyses of the minutes of *ex ante*-evaluations of CRC proposals

In addition, the members of the Research Committee visited a number of universities and interviewed vice-chancellors, deans, heads of departments, CRC speakers, and participating scientists.

RESULTS AND RECOMMENDATIONS

The evaluation report focuses on the structural effects of CRCs and on aspects of the programme's finances and management that are relevant to those effects. Most prominently, the committee criticised the disproportionate rise in numbers of CRCs and the corresponding decline in the funding per CRC and year. It urged the DFG to aim for a consolidation of CRC numbers. Budget gains achieved should be used to improve the funding of individual CRCs.

Fig 2: Expenditure per CRC p.a., in nominal and in real terms



The reasons for the relative decline of funding for individual CRCs were not entirely clear. An analogous tendency could be observed on the sub-project level. CRC proposals tended to encompass a large number of sub-projects, each of which had applied for a more or less standardised budget. The committee observed that one of the main reasons for this tendency was the perception, on the part of the applicants, that a large number of sub-projects were necessary to demonstrate an interdisciplinary approach and critical mass. Also, it could of course be the result of an inclusion policy that minimizes conflicts within the university. Since this tendency runs counter to the intention that the CRC programme provide an incentive to the universities to concentrate their efforts on truly excellent research, the Science Council recommended that the DFG take measures to address this issue. One step would be more rigorous selection on the sub-project level in the proposal evaluation phase. More importantly, it would be a clear signal that large numbers of sub-projects are not conducive to the success of a proposal. Also that the DFG is willing to fund truly excellent sub-projects adequately, without regard to any perceived standards in terms of sub-project personnel or budget. Last, but not least, the peers that evaluate the proposals should be encouraged to view effective internal quality control as being itself a criterion for excellence.

OPEN ISSUES

The 2002 evaluation of the CRC programme identified a number of issues that could not be resolved on the basis of the data then available to the Science Council's Research Committee.

One of these issues is the pro's and con's of the location principle. A number of reasons

speak to continuing the principle: local concentration improves the coherence and intensity of research collaboration; it increases university commitment; it acts as an incentive for interdisciplinary cooperation; it improves the visibility and attractiveness of local research clusters; and thereby makes institutional competition more transparent. On the other hand, regional, national and even international cooperation are common research practice; the new information and communication technologies make proximity less important for intense cooperation; institutional differentiation calls for more inter-institutional cooperation in order to complement specific disciplinary profiles; and restrictions concerning the choice of cooperation partners could prove detrimental to the overall quality of cooperative research. For reasons of this kind, a number of interview partners of the committee urged for a more liberal approach to the location principle. Already, the DFG has established a new variety of CRCs, the so-called trans-regional CRCs, that allows for two to five universities to join in a nationwide cooperation. In order to make this variety consistent with the overall intentions of the CRC programme, the DFG requires the contributions from individual universities to a trans-regional CRC to be roughly equal in weight, individually essential to the CRC, and thematically complementary. Many of the committee's interview partners acknowledged that this improves the situation. Some, however, viewed the remaining restrictions as unmotivated and called for unrestricted cooperation possibilities within the CRC programme.

A second open issue is the question of matching funds ("Grundausstattung"). Previously, the official policy was that the DFG

only provided additional funds to successful CRCs, while the infrastructure and core personnel would have to be provided by the applying university and financed from its block grant. In the evaluation process, it was and still is quite common for the peers to assign certain parts of the funding applied for to the matching funds. Since CRCs would add to the prestige of a university, the state governments were often willing to step in on behalf of the university and provide additional funds in order to meet the peers' requirements. Today, however, the state governments increasingly follow a policy that is inspired by the principle of new public management. In line with these principles, they provide their universities with global budgets and take a "hands off"-attitude in the process of CRC proposal evaluation and the subsequent negotiations. As a consequence, universities that are very successful in the CRC programme – some universities in Germany have ten and more CRCs – find it difficult to fulfil their financial commitments. Many scientists now worry that this might in the long run act as a disincentive against the submitting of CRC proposals. Therefore, a reversal of the DFG policy is called for. Rather than asking for matching funds from the university, the DFG should contribute to the university infrastructure by paying overheads in addition to the direct costs applied for. With such a policy, successful universities would be truly rewarded for their research excellence by giving them strategic leeway.

These two issues both culminate with the question whether or not and to what extent the funding organisation, the DFG, ought to aim at shaping the way scientists cooperate. The remaining two issues concern the way the DFG acts as a reflective, strategically managed organisation. Triggered by its discussion of the internal diversification of the CRC

programme, which tends to blur the boundaries between the existing research unit and priority programmes, but further inspired by the establishing of programmes for the support of collaborative research on a grander scale than the CRCs, such as the research centers programme and the new excellence clusters initiative, the Science Council has discussed the question whether the DFG portfolio of funding programmes needs to be revised and simplified. From interviews with scientists, the committee took the impression that the present, highly diversified portfolio is not transparent and that the perceived incentives are partly inconsistent. For example, scientists questioned the wisdom of having a pair of alternative programme varieties one of which requires applicants to observe the location principle while the other does not. In one case, the specific funding criteria of a particular programme appeared so arbitrary, even to successful applicants that their only purpose was to justify the existence of different programmes.

Thus, the third issue refers back to the first two issues in that it again raises the question 'To what extent does the overall DFG funding policy shape the way researchers collaborate?' It also opens up a fourth and final issue which could best be summarised in the question, 'Does the DFG have clear-cut, operational aims for its different programmes, and does it have the information necessary to act on these aims?' In its statement on the DFG's general funding policy (Wissenschaftsrat 2003), the Science Council stated that it expects the DFG to implement regular programme evaluations as a tool for strategic management. Implicitly, the council thereby also reflected on the limits of its own evaluation mandate. Historically, the Science Council's mandate to evaluate the DFG funding policy with respect to each CRC

programme was clearly an instance of the accountability function of evaluations. The Council lacks the resources to perform a more detailed programme evaluation that could systematically address the behavioural impacts of individual funding programmes. In line with this fact, the Council supports the DFG initiative to establish a DFG institute for research information and quality assurance that is intended to improve the data basis for programme evaluations, and to develop new indicators for programme success on the basis of existing DFG data. The Science Council also urges the DFG to involve external, preferably international peers in future programme evaluations. In this respect the Council remains loyal to the principles that govern its own evaluation processes.

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Summary of the OECD Workshop on Behavioural Additionality

From January 30, 2005 to February 1, 2005 the OECD and platform fteval hosted a conference on the topic of behavioural additionality in Vienna as a follow-up to a similar workshop in Manchester in May, 2004. Amid disappointingly cold and rainy outside weather conditions (which, on a positive note, made sure that the conference attendees were not too much distracted by potential places of interest for sightseeing), the participants of this conference thoroughly discussed the latest research results related to a rather new additionality concept – a concept which should reflect, among others, the change of a firms behaviour resulting from government intervention (i.e. by support programmes).

The workshop was opened by the welcome remarks by **Sabine Pohoryles-Drexel** from the Federal Ministry for Economy and Labour of Austria. She described the role of Austrian Platform Fteval which was established in 1996 to evaluate public financing. In her remarks, cooperation of all players and development of high standard for evaluation were stressed as the key points for good evaluation.

Jerry Sheehan from the OECD briefly described the current status of the research on behavioural additionality (BA). In his opinion, BA has just progressed – on its way to becoming a standardised tool ready for application – from the stage of infancy to

the stage where it can barely stand on its own feet. He stressed the importance of this concept for the OECD as an additional instrument for analysing innovation programmes but also pointed to the need for discussion and cooperation between researchers. Key problem areas that are in need to be addressed include the question of how to link programme design with behavioural additionality, methods of avoiding negative behaviour (with a corresponding definition of negative behaviour vs. favourable behaviour) and policy mix questions (for example how tax incentives and direct subsidies have, as complementary tools, different behavioural effects).

Jan Larosse from IWT (Flanders) stated that BA can be thought of as an “enhanced” or “extended” concept of additionality. It is a dynamic approach that looks at the whole picture as opposed to traditional additionality concepts that focus statically on a single firm’s performance. Bearing this in mind it becomes clear that BA research activities should scrutinize the interaction that takes place within an innovation system, for example between different involved institutions. Bridging concepts that link traditional evaluation studies together are also necessary. In addition, the To-Do list includes further conceptual clarification, more empirical support and inclusion of the strategic dimension in order to provide a means for boosting the value added by government interventions.

Kjell Hakan Närfeldt from Vinnova, Sweden, argued along the same line. In his view, special attention must be given to the role of the agencies. Agencies are “white boxes” and their combined activities have an enormous influence on additionality. Närfeldt (who is also a member of the TAFTIE task force on

additionality and whose work is briefly presented here) also stressed the importance of implementing and utilizing a mixture of instruments for scrutinizing BA.

Following the introduction and the general illustration of the challenges associated with BA, a number of presentations dealt with respective empirical work done so far on this subject. It became evident that a broad range of qualitative and quantitative methods were used in the course of the investigations and that some studies included elements of a BA analysis without explicitly using and/or mentioning the concept throughout the research work that was carried out.

Luke Gheorgiou and **Khaleel Malik** from the University of Manchester showed the results of the “DTI Exploratory Study on Behavioural Additionality”. The aim of this analysis was twofold: First, to estimate the degree to which BA in public support for R&D in business can be assessed and secondly, to assess how important strategic effects of this kind are for companies. Because of limited resources only ten companies who participated in two government R&D funding schemes (the SMART and the LINK programmes) were interviewed. The findings suggest that public support affects companies’ strategies and behaviour in a positive way. Moreover, it is not one particular programme that leads to a behavioural change but the aggregated effects of taking advantage of different support schemes. However, due to the low sample size the results are not statistically significant.

Birgit Aschhoff & Andreas Fier from ZEW (Germany) conducted a telephone-based standardised survey with 203 companies that had received state funding for R&D activities in Germany. Among others, the results indicated

that the R&D management specifically changed in 21 % of the cases as a result of public funding procedures. 45 % stated that R&D management had changed, but could not contribute the alterations directly to public funding while 35 % of the enterprises left their R&D management in the state they were in prior to taking advantage of public support measures. They also focus on the BA in the context of R&D collaborations of funding recipients ex-ante and ex-post with respect to the R&D project funding period. Ex-ante to public R&D funding projects companies performing early-stage research seem to look for partners, thus they have a higher probability to engage in new co-operations with science, while it is not so obvious with regard to business-business partnerships. On the other hand, ex-post to public R&D funding scientific research collaborations as well as industry partnerships has a higher probability of continuing the collaboration thereafter.

Japanese experiences were the focus of **Jun Suzukis’** and **Shuji Yumitoris’** presentations. The researchers from IFTECH and NEDO contemplated that Japan may be well behind in evaluation research, and up to this date no specific study on BA has been carried out in Japan. The NEDO study presented used monitoring data from government sponsored R&D activities (which play, however, a rather minor role in Japan) and analysed it using a more traditional input/output approach. It was shown that 29 % of the enterprises believed that the project had a “significant impact on the academic field” and that in 8 % of the cases there was a significant contribution to job creation. One of the major problems of the behavioural additionality “framework/ concept” is, according to Suzuki, the “lack of a logic

model". Results of detailed monitoring to project participants highlighted the different expectations of participants on the course of the projects. Before project, improving concerned technology and/or product performance and challenging high-risk R&D were highly expected. However, during the project, the project was recognised useful for formulating a network of personal contacts. Eventually after the project, the most expected function of the project by participants was challenging high-risk R&D.

Jacqueline Allan from FORFAS (Ireland) talked about behavioural additionality in connection with Irish state support programmes for R&D in industry. The evaluation on which the presentation was based scrutinized the Irish R&D Capability Grants and Competitive RTDI Schemes. Representatives from 65 companies out of six distinct industries were interviewed. To assess BA effects, the interviewees were given a set of statements and were then asked to indicate to what extent they would agree. The responses were then ranked. The most important behavioural change caused by the support schemes was that the measure "takes on research in areas beyond just short-term business needs" (52 out of 63 interviewees agreed strongly with the respective statement). The aspect "improvement of overall competitiveness due to the scheme" ranked second. Limitations of the study arise from the small sample size, from the fact that more than one scheme was under investigation and from the fact that a multitude of variables were used. Nonetheless, it was possible to retrieve useful information for policy development.

In Korea, soaring government R&D expenditures called for some empirical investigation of the corresponding effects

on the economy. **Shin Taeyong** from STEPI used econometric analysis to study behavioural changes at the aggregate level resulting from government activities. The model employed was based on a supply – demand type schedule, where marginal rate of return (MRR, viewed as a function of interest rate r , GDP and GRP and depicting the demand side) was plotted against the corresponding marginal cost curve (MCC). The results indicate that long-run effects are greater than short-term effects, and that subsidies have more of a behavioural impact than direct government R&D expenditures. Different rates of interest as well as changing elasticities have to be taken into account though when interpreting the findings.

Bart Claryse's (University of Ghent) presentation "BA – Beyond the Hype" put some new issues forward that underlined his hypothesis that "while BA is easy to talk about, it is difficult to analyse". Mr. Claryse challenged some of the very assumptions lying behind BA. For example, it is widely believed that innovation is a key determinant for business success. The case of non-innovative Ryanair (but highly successful) vs. traditional airline carriers who constantly look for opportunities for innovation (and are less successful) proves that it is rather the business model that counts. Some other aspects put forward for discussion were the different innovation behaviours of LSEs (who try to source innovation out by founding spin-offs; it is not clear if government support programmes do not hinder such developments), the high complexity of growth (firm growth can be achieved by a number of factors, only one of which being innovation), long product development cycles (few evaluations take this into account) as well as the fact that innovation differs along the life cycle of a product.

Jari Hyvärinen from TEKES, the National Technology Agency of Finland, reported on recent studies, in which behavioural additionality aspects are of some interest. Results of an investigation of “selective public R&D funding and strategic firm behaviour” were shown in more detail. The main research objective was to find common characteristics of firms applying for publicly funded R&D subsidies and compare them to non-applicant firms in order to explain the differences in firms’ R&D-related strategies. Knowledge about firms’ behaviour is then used to optimize TEKES funding decisions. Estimations of the study lead to the following rules: Firms running more technologically challenging projects receive relatively higher subsidies, as well as firms in rural areas. In addition, SMEs get larger subsidies (some 8.5 percentage points). Contrary to this, project risk, age of company, sales per employee, being a parent company, number of previous applications, corporate governance, or being an export-oriented firm have no effect on the amount of subsidy paid out.

Stephanie Ship presented a summary of the experiences of the Advanced Technology Program (ATP) in the United States. This funding scheme is of particular interest for the concept of BA since it aims amongst other things for an acceleration of innovation through collaborative activities. Hence, one third of ATP’s budget is spent to support joint projects. In order to monitor the resulting impacts on the performance of the partnering institutions and the economy, the so called Joint Venture Survey was carried out. Several empirical investigations were conducted and the overall loss to economy (if the Joint Ventures had not been formed) was estimated. Furthermore, the dependencies between the trust index, the

perceived overall value, intangible benefits on the one hand and the administrative characteristics, the risk and time, the ambitiousness and innovation profile of the funded projects, as well as factors specific to collaborative work were scrutinized. The study revealed the behavioural effects of ATP: The program is seen to ensure commitment, foster trust and cooperation. Thus, not surprisingly, 92 % of the Joint Ventures would not have formed without ATP.

The Austrian Competence Centre Program *Kplus* managed by the Austrian Research Promotion Agency (represented by **Harald Hochreiter**) aims amongst others at an increased R&D-collaboration between the public and the private sector. Support for the agency originated from a commissioned study, conducted by Joanneum Research. Some results of this questionnaire-based survey, comprising responses of 118 partnering firms of the first 12 funded competence centres, were presented by **Franziska Steyer**. Analyses revealed the program’s positive effects at the private firm level, especially with respect to the nature of activity and cooperation: Funded projects are characterised by higher technological complexity, greater R&D risk and a longer time horizon compared to the firms’ core R&D activities. The importance of collaboration with university and public research institutes increased significantly over the period under investigation.

The presentation of **Elisabet Ljunggren** and **Einar Lier Madsen** gave insight into the Norwegian usage of the additionality concept. The Norwegian Research Council focuses mainly on input and output additionality, neglecting the behavioural dimension. The

speakers also argued that policy makers commonly rely on quantitative figures and are very sceptical towards qualitative research methods. Nevertheless, the presented pilot study on SkatteFUNN, a Norwegian tax incentive scheme supporting business R&D, applied qualitative interviews in order to build a basis for the forthcoming analytical evaluation of the program. In the context of this evaluation, behavioural additionality was closely related to the firms' behaviour resulting from the reduced tax, the underlying resources of the company (basic resources, management resources, dynamic resources) and their interaction. With respect to that, the pilot study found the sample to be extremely heterogeneous, thus impeding a sound survey method to reveal behavioural effects or broader impacts of SkatteFUNN.

Results of the study on behavioural additionality in the EU's 5th Framework Programme were presented by **Wolfgang Polt** (Joanneum Research) and **Foteini Psarra** (Atlantis Research). The survey was based on data, collected via questionnaire, of around 1.700 participants of the 5th FP. In addition, telephone interviews were conducted using a smaller sample of rejected applicants. Empirically, the following four dimensions of BA were analysed: goals and goal attainment, total/ pure additionality and partial/behavioural additionality (scope, timing, etc.), nature of activities, and collaborative behaviour. The study found a significant level of pure additionality, i.e. 57 % of participants would not have undertaken the project in the absence of EU funding, but limited behavioural additionality in terms of the nature of activity, i.e. the EU funded projects are quite similar to the day to day R&D projects of the participant. Hence, the EU funding rather supports a continuation of existing project trajectories and project

portfolios, but has a significant impact on collaborative behaviour, both in terms of goal attainment, impacts and 'collaboration clubs'.

Conference discussions and debates focussed mainly on three problem areas that are regarded as relevant for future research work:

- **Improvement of methodology:** Behavioural additionality is difficult to measure, since it is a concept exhibiting many facets. Hence, methodology is still in its early stages and more basic research is needed.
 - In particular, a need for more thorough **case study projects** has been articulated, as a lot of speakers complained about the lack thereof.
 - **Panel group studies** have been considered to be an important instrument and highly beneficial for analysing behavioural effects, yet budgetary and time constraints (it was stated that a solid evaluation in this context may last several years) have so far limited the application of this method. For smaller countries, the establishment of proper control groups might not be possible.
- **Development of an underlying theory:** Some researchers missed a theoretically sound model on which they could base their work on. Without such a model the interpretation of results would become very difficult, and it would not be clear to what extent a measured result would even be desirable. A participant was quoted as saying that "BA is a concept where the methods surpass the theory".

- **Taking account of the time aspect:** Policy makers are often not aware of long-term effects of public measures and funding schemes. The concept of behavioural additionality aims to measure those impacts in the long run, that is impacts that originate from more qualitative and innovation-crucial factors (such as behaviour, attitudes, action taken by different actors in the innovation process, etc.). Since these factors change slowly with time, effects cannot be measured immediately, i. e. during the program's running time or shortly afterwards, when evaluation studies are usually commissioned. Therefore it is necessary to focus more on longer term research, also supported and encouraged by policy makers with appropriate resources and patience.

At the end of the workshop, **Jerry Sheehan** summarized the results and outlined the next steps that will be taken by the OECD. One of the issues he put forward was that of methodological convergence: Questionnaires should use the same (or at least highly similar) BA questions in order to allow for easier comparison of results. For the case studies he suggested the design of a common layout. As a first step Sheehan proposed a synthesis report that would review all the research done so far on behavioural additionality. The draft of this report, compiled by Luke Gheorgiu and Bart Claryse, should be made available by June 2005. Suggestions for further research pointed to competence centers as interesting objects for investigation and to TIP cases studies that were already conducted and might include information viable to the BA discussion.

In his closing remarks, **Rupert Pichler** from the Austrian Federal Ministry for Transport, Innovation and Technology (BMVIT) once again stressed the great appeal of the BA concept but also warned of potential misuse. Having said that, the workshop ended in the early afternoon of February 1, leaving the participants with a lot of new impressions and an even longer list of research questions that await analysis.

UPDATE

The Viennese workshop results were discussed at the TIP working party in June. A report was distributed at this meeting party which drew on the above summary, adding some generalized conclusions and remarks at the front end. Currently, the synthesis report is being prepared. It will include short (up to 15 page) summaries of the studies involved and/or relevant to the BA project, plus a synthesis of the main lessons learned. Completion is foreseen for autumn 2005. After that, OECD will decide on the next steps to be taken: how to follow-up on the existing work, how to integrate the results into other evaluation exercises. The OECD will continue to work on innovation policy evaluation, whereby specific activities will be developed in consultation with the delegates of the OECD committees and working parties.

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INTERNATIONAL CONFERENCE

PRE-ANNOUNCEMENT

New Frontiers in Evaluation

24th-25th April 2006

Vienna, Austria

NEW CHALLENGES FOR EVALUATION

The evaluation of long-term scientific research is about to experience new challenges:

- Policy makers are increasingly aware that the success of their efforts to finance and promote long-term research is dependent not only on individual programs, institutions and infrastructure, but also on ‘portfolios’ of programs which interact.
- In Europe, the division of labour among European, national, regional and private science financiers has led to a debate about interdependencies among the resulting portfolios of research projects provided by the respective decision makers.
- With the European Research Council (ERC), a new major player in long term research funding is about to enter the European stage. It is important to get a clearer picture of which evaluation instruments – peer review and beyond – will be most appropriate for this new fund.
- In the United States, federal policy makers are often uncertain about how federal financing of research programs interfaces with efforts by other federal programs,

private financiers, and state and regionally sponsored programs.

- As policy makers consider new instruments for research promotion, a methodological question arises of how best to identify and measure the effects of individual instruments as well as portfolios of instruments.
- As research promoters see themselves more as institutions in support of science, and less as administrators of a specific funding strategy, the more they will question the strategic orientation of their institutional portfolios.
- Traditionally, Peer Review has been pushed beyond its limits in making some of these decisions.

Evaluation can help policy makers deal with these challenges. However, to get the most from evaluation, institutions such as the evolving ERC may need to contribute to the further development, implementation, and application of modified and extended methods of evaluation and selection processes suitable for today’s complexities.

The conference “New Frontiers in Evaluation” will bring together policy makers, programme managers, evaluation experts from a variety of disciplines, and managers of science funds from around the world for two days of intensive exploration into current best practices--and beyond--in selection processes and evaluation methods geared towards the complexities of multiple levels of decision making and interdependent science program portfolios.

RESEARCH QUESTIONS

The following research questions are seen as important starting points for contributions to the conference:

- What new selection processes and evaluation methods are being used for long-term scientific research? With what result? Is there a need for further development of methods and sharpening of instruments by new institutions such as the European Research Council? Which role does Peer Review best serve? Can Peer Review be further developed or combined with other methods to increase its effectiveness?
- What is the state-of-the-art of evaluating an institution's research portfolios? Why is it important in long-term research to have a complete overview of an institution's portfolio beyond the individual project? How can such a portfolio be evaluated? What advances are underway?
- How can "additionality" be conceptualized for programs funding scientific research?
- What is the "additional" effect of public funding? Do we have any cost-benefit analysis with respect to cost of the funding mechanisms? Actually, the European framework programmes as much as national policies change their funding strategies in favour of new and complex funding procedures, e.g. competitive research partnerships, creating networks, clusters or carrying out R&D auctions. These new kinds of public funding procedures are much more lavish compared to simple traditional funding schemes. Are they worth it – or are they

too complex and costly compared to their outcomes? Is evaluation able to take into account variations in funding procedures and shed light on their relative merits?

- What is the state-of-the-art of evaluating collections of research portfolios extending across multiple instruments and institutions? How can different instruments and institutions be evaluated in context? How can such tasks be tackled and how is this to be done in relation to the level of the individual project or individual institution? Is it possible to ask such questions in a large European context?

These five sets of questions will be sharpened and made more precise in advance by an international advisory committee. Parallel to this effort, a call for papers will be issued and a background paper will be drawn up by the end of 2005 that will include the first approach to the questions of the conference. Registration will open from 1st September 2005.

Point of Contact

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CALL FOR PAPERS**Pre-Announcement****New Frontiers in Evaluation****24th – 25th April 2006
Vienna, Austria****Vienna, September 5th 2005**

The evaluation of long-term scientific research is about to experience new challenges. Policy makers are increasingly aware that the success of their efforts to finance and promote long-term research is not only dependent on individual programs, institutions and infrastructure, but also on 'portfolios' of programs which interact. Therefore it becomes more important to co-ordinate the existing programs and to consider new methods for measuring the efforts of individual instruments as well as portfolios of instruments. Evaluation can help policy makers to deal with these challenges. However, to get the most from evaluation, institutions such as the evolving European Research Council (ERC) may need to contribute to the further development, implementation, and application of modified and extended methods of evaluation and selection processes suitable for today's complexities.

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REGISTRATION

Registration will start from September 1st 2005. Deadline for submission of abstracts is February 1st 2006. Decision on acceptance will be made by March 1st 2006. Electronic submission of full papers in Post Script, PDF or MSWord format is encouraged by April 1st 2006. Please use the addresses given below. The number of participants is limited. Participants will be accepted on a first come-first served basis. The conference fee is EUR 300,00 (+ VAT) covering participation, luncheons and a conference reception. For participants who present a paper the conference fee will be covered by the organisers..

For further information concerning the conference and accommodation, please refer to the addresses given below. Papers and further information on the conference will be made available on the conference web page.

CONFERENCE ORGANISER

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Der Newsletter der Plattform Forschungs- und Technologieevaluierung GesbR ist ein unregelmäßig erscheinendes offenes Forum zur Diskussion methodischer und inhaltlicher Evaluierungsfragen in der Forschungs- und Technologiepolitik.
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PLATTFORM fteval
Forschungs- und Technologieevaluierung

PLATTFORM FORSCHUNGS- UND TECHNOLOGIEEVALUIERUNG

Die Plattform Forschungs- und Technologieevaluierung GesbR ist eine Initiative der folgenden Organisationen: Österreichisches Bundesministerium für Bildung, Wissenschaft und Kultur (bmbwk), Bundesministerium für Verkehr, Innovation und Technologie (bm:vit), Bundesministerium für Wirtschaft und Arbeit (bmwa), Österreichische Forschungsförderungsgesellschaft mbH (FFG), Fonds zur Förderung der wissenschaftlichen Forschung (FWF), Joanneum Research, KMU Forschung Austria, ARC Systems Research, Technopolis Austria GmbH, Österreichisches Institut für Wirtschaftsforschung (WIFO), Wiener Wissenschafts-, Forschungs- und Technologiefonds (WWTF) und dem Zentrum für Innovation und Technologie GmbH (ZIT), Rat für Forschung und Technologieentwicklung, Christian Doppler Gesellschaft (CDG), Austria Wirtschaftsservice (awsg).

Im Rahmen der Plattform werden Themenstellungen zur Forschungs- und Technologieevaluierung erarbeitet und – z.T. unter Einbeziehung namhafter ExpertInnen – in einem Fachkreis diskutiert. Der Newsletter beinhaltet Fachbeiträge zu Fragen der forschungs- und technologiepolitischen Evaluierung. Die Herausgabe erfolgt in zeitlicher als auch inhaltlicher Abstimmung mit Plattform-Veranstaltungen, um die Synergiewirkungen eines breiten Austauschforums zu nutzen.

