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foreword



The Austrian Government is committed to raising the level of research and development. To this end, investments in the future are to be encouraged and growth and employment generated. In its ambitious agenda for the next legislative period, the Government has earmarked an additional EUR 800 million for this area over the next four years, more than ever before. By 2010 the research quota will be increased to 3 percent. Austria is already well above the European Union average in this respect. The Government has also defined an important role for the Austrian Council for Research and Technology Development. In a joint dialogue with those ministries responsible for research, the members of the Austrian Council perform a vital task. They draw up strategy recommendations designed to ensure the sustainable development of Austrian research activities. The availability of highly qualified researchers is of crucial significance in this respect, as this is the only way to

ensure that the increase in research funding specified in the coalition agreement can be implemented efficiently. The Austrian Council for Research and Technology Development will, as in the past, issue (strategic) recommendations in accordance with the goals set out in the paper Strategy 2010 for the public funds invested in R&D. In the main, these comprise the funds from the National Foundation for Research, Technology and Development, Action Programme III and the ordinary budgets of the responsible ministries. In doing so, the Austrian Council for Research and Technology Development fulfils one of its key tasks, namely to ensure the efficient use of the budget funds entrusted to the responsible ministries.

We wish the Austrian Council for Research and Technology Development much success as it carries out its important advisory activities and undertakes to make an active contribution to the discussion. ■

Mag. Wilhelm Molterer

Vice Chancellor
and Minister
of Finance

Dr. Johannes Hahn

Minister of
Science and
Research

Dr. Martin Bartenstein

Minister of
Economic Affairs
and Labour

Werner Faymann

Minister of
Transport, Innovation
and Technology

Christa Kranzl

Under-Secretary of
State at the Ministry for
Transport, Innovation and Technology

Continuing a Successful Path

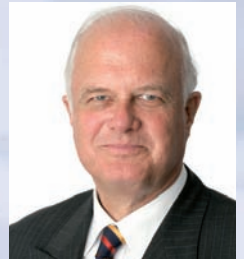
Austrian research and its promotion have in recent years certainly proven to be a "success story". Investments in research and development, and the number of people employed in research have both now reached historic levels. In 2005 Austria for the first time achieved a higher research quota (2.35 percent) than the OECD average. In 2006 this quota rose to 2.43 percent or EUR 6.24 billion, the equivalent of an 84 percent increase in spending on research and development since 1998. In the words of Dirk Pilat, head of the Science and Technology department at the OECD, Austria is thus in the process of transforming itself from being a pure user of technology to a development-focussed, technology-intensive economy. In its Science, Technology and Industry Outlook 2006, the OECD also stated that Austrian innovation policy had made a valuable contribution to this development – "among other things, by increasing tax incentives for research and development and through public-private partnership programmes for research competence centres". It is an indication of Austria's quality as a research location that approximately 30 percent of spending in the corporate sector originates abroad, i.e. is financed by companies headquartered outside Austria. Austria is therefore moving to the top of the OECD league tables. It is the Austrian Council's task to actively assist this process. From the very outset it has been our ambition to position Austria among the top 25 percent of OECD states. To this end, Austrian strengths and areas with potential for the future were analysed and the results of the study used to formulate strategies which, where necessary, were then adapted to changed conditions. Reviewing what we have accomplished over the last few years, there can be only one conclusion: we must continue down the path we have followed so successfully in the past.

2006: A Year of Change

2006 was an exciting year for science and research in Austria. On 21 March Parliament voted to set up a world class Austrian research institute to be named Institute of Science and Tech-

nology Austria – ISTA, an important step towards making Austria an intellectual and cultural centre in Central Europe in the wake of EU enlargement. The positioning of ISTA as a top international institute which leverages the potential of multi-disciplinary scientific collaboration, is in keeping with the Austrian Council's long-term vision for Austria as a centre of R&D formulated in its Strategy 2010 (for details see page 12 of this Annual Report). However, 2006 was above all an election year with all the related uncertainties – especially with regard to budgeting. Even before the general election in October, the Austrian Council had conducted detailed talks with all political parties, during the course of which it became clear that there was a broad consensus regarding the strategy adopted to reposition Austria as a centre of innovation. Immediately after the election, the Austrian Council presented the science spokespersons of the various parties with its recommendations for anchoring research and technology in a Government Programme for the coming legislative period. In this paper, the Austrian Council recommends that Strategy 2010 form the basis for the Government's research and technology policy work. Furthermore, the Austrian Council also noted that the EUR 550 million required in addition to the research billion to meet the target research quota of three percent of GDP "absolutely must be made available between 2007 and 2009". As in recent years research promotion activities have been increasingly financed using money awarded at short notice (known as Action funds) and less from ring-fenced budgets, the coalition negotiations which lasted three months resulted in budget delays for 2007. The Action funds could not be released until a new federal budget had been adopted.

The Austrian Council was therefore all the more pleased with the results of the coalition negotiations in relation to research, innovation and technology. Given the commitment made in the Government programme to raise the R&D quota to three percent of GDP and push ahead with structural change, the Austrian Council is confident that the strategy adopted in 2000 will be conti- ➤



Knut Consemüller
Chairman of the
Austrian Council

editorial



Günther Bonn
Deputy Chairman of the
Austrian Council

nued. However, it is disappointing that research agendas will remain divided between more than two ministries. The Austrian Council had called for streamlining in this area in keeping with its long-standing demand for greater efficiency and effectiveness in research funding.

More Money and Improved Structures

In a country like Austria which is small in size but nevertheless highly integrated into the global economy, research, development and innovation play a crucial role in safeguarding national competitiveness. The country's economic success and the job security of the population depend on it. The simple truth is that research needs money – even if financial resources alone do not suffice. The general climate and a ready supply of well-educated personnel also play an important role. This is confirmed by the fact that research and development safeguard value-creation at companies. One thing is clear: There is not a single example of non-investment in research and development creating additional jobs, as Erwin Kubista from Joanneum Research so accurately put it.

2007: Greater Efficiency, Excellence and Awareness

The Strategy 2010 published in 2005 served as an important and appropriate guide for our work last year. Major steps were taken, for example, in the area of grant reform, the Austrian Council's strategy of excellence was developed further and the second campaign of the Awareness programme "innovativesoesterreich" was successfully completed. The Austrian Council has once again set itself an extensive programme for the next few months, which includes a review of all funding measures and the development of suggestions to restructure this fragmented, and in some cases complex, system. In addition, the Austrian Council will focus on a strategy of excellence, a special research strategy for Information and Communications Technologies, the launch of "innovativesoesterreich III" and the question of human resources in Austria. Finally, we would like to thank all those who supported our work last year. We hope you find this Annual Report both informative and thought-provoking and invite you to continue with us on the road to success. ■

Photo
(from left to right):
Hans Schönegger
Knut Consemüller
Albert Hochleitner
Gabriele Zuna-Kratky
Reinhard
Petschacher
Jürgen Stockmar
Dervilla Donnelly
Günther Bonn





The Austrian Council believes it is a key political task to offer young researchers in Austria a perspective for the future. Highly qualified workers are the “raw material” for the innovations of the future.

perspectives



**DI Dr.
Knut Consemüller**
Chairman of the
Austrian Council

“Austria needs Young Talent”!

Never before has so much money been spent on research and development (R&D) or have there been as many researchers as there are today. In 2006 investments in R&D totalled EUR 6.24 billion, the equivalent of 2.43 percent of GDP. All political parties have committed themselves to raising the level of research in Austria, and research and development feature prominently in the Government's programme.

There is general optimism that Austria will be able to achieve the target formulated in Barcelona of spending 3 percent of GDP on R&D in 2010. However, according to the Chairman of the Austrian Council, Knut Consemüller, past success and international praise must not be allowed to lead to complacency. Instead the chosen strategy must be consistently applied, as the head of the Austrian Institute of Economic Research (WIFO), Karl Aiginger, notes. Both experts agreed that an innovative future is simply not possible without a sufficient number of highly qualified people.

What was the importance for Austria of the formulation of the Barcelona target by the EU?

Consemüller: The Lisbon-Barcelona target of a research quota of 3 percent of GDP is firmly supported by the Austrian Council (which repeatedly calls upon policymakers to live up to their commitment) and has triggered a momentum which actually makes it possible to achieve the goal.

We must now continue to consistently apply the chosen strategy. As the Chairman of the Austrian Council I am extremely pleased that we have the support of the WIFO, which only a few months ago published a White Paper con-

firmed the importance of research and innovation and especially its role in safeguarding and creating employment.

Aiginger: Our objective was to produce a White Paper containing a consistent strategy for the Austrian economy based on the experiences of the most successful European countries. Our analyses showed that higher economic growth is the most important instrument for generating employment. Unemployment can only be reduced by rapid economic growth and the pursuit of a long-term strategy. However, as the medium-term growth rate of 2.1 percent forecast for Austria over the next five years will certainly be insufficient to reduce unemployment, we have drawn up a total of eleven strategy lines designed to increase growth and employment.

More growth is a popular buzzword – but how should it be achieved?

Consemüller: We are seeking innovation and quality-based growth with the aim of achieving a high level of employment. WIFO identified areas which the Austrian Council had already addressed and recommended for implementation in its Strategy 2010. In particular, I am referring to research funding for small and medium-sized enterprises, fostering co-operation between science and industry at competence centres and building our strengths into excellence.

Aiginger: These are all key points, both in the Austrian Council's Strategy 2010 and in our White Paper. Technological advances are undoubtedly key drivers of economic growth and thus of material prosperity. If Austria wishes to continue the success of recent years, research, innovation and technology must play a major

¹Austrian Institute for Economic Research (publisher); WIFO White Paper: “Increased employment through growth on the basis of innovation and qualification,” comprising a summary volume and 22 part-studies. Vienna 2006.

perspectives

role in an economic policy geared to generating growth and employment.

This is why in our White Paper we called for a turn toward “high-tech and high-risk projects” and the expansion of Austrian strengths – such as environmental technology – into excellence.

Consemüller: I would like to interrupt at this point to say that the Austrian Council has focused intensively on excellence in recent years. With its strategy for excellence, the Council aims to open up new horizons for Austrian science and research. The challenge is to create ideal conditions for outstanding research and development in order to raise the level of quality throughout the entire Austrian innovation system and thus increase Austria’s international visibility. If we are able to offer researchers a perspective, we will be able to attract the very best scientists who will produce top results.

You address an important issue, that of the people who work in research. Are there enough researchers in Austria?

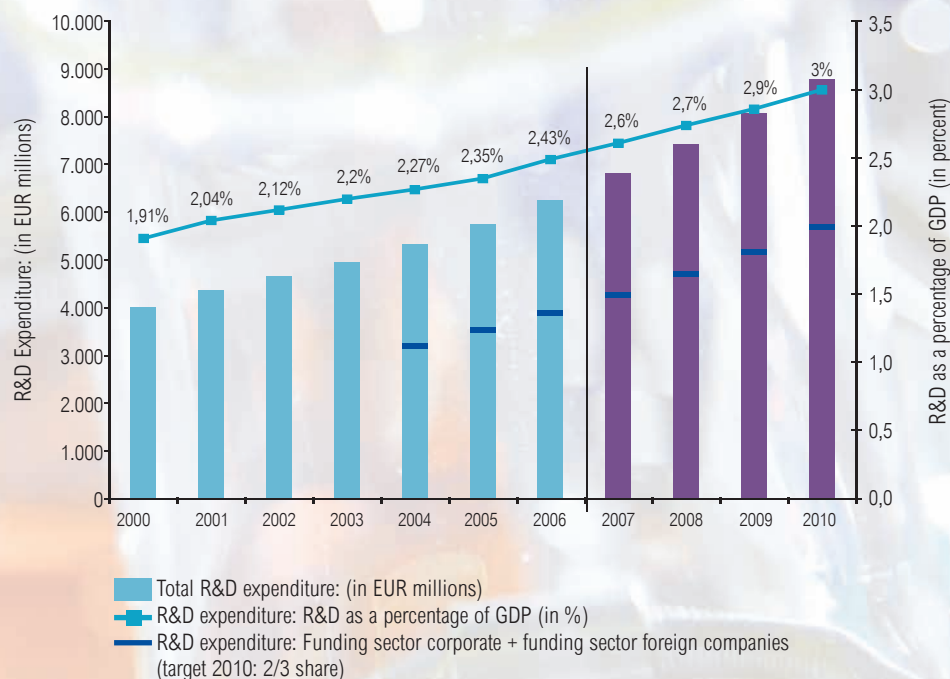
Aiginger: Greater attention will have to be focussed on human resources in Austria, not only in the area of excellence, but at all levels. Just one example: The number of graduates who have completed secondary or tertiary education in our country is well below the level needed to achieve a position among the international technological leaders. However, human resources are central to innovation processes.

Consemüller: The availability of an adequate supply of highly qualified human resources is of course the basis and prerequisite for the viability of an R&D strategy. The aim must be – and this was explicitly stated in Strategy 2010 – to raise the quality of education and further education >



Prof. Mag. Dr. Karl Aiginger
Head of the
Austrian Institute of
Economic Research (WIFO)

The Path to Achieving the 3 Percent Target
Trend scenario for R&D spending in Austria up to 2010 (forecast)



Source: Statistik Austria, Strategy 2010, Research and Technology Report 2005, Update: Austrian Council

The R&D quota in 2006 amounted to 2.43 percent of GDP (Statistik Austria Global Estimate). In 2010 the figure should be 3 percent. Additional public funding will make a major contribution to financing the increasing level of R&D expenditure.

perspectives



at all stages of the system. Although in an international comparison, Austria performs well in the secondary educational segment, there are clear weaknesses in tertiary education. The Austrian Council will therefore need to focus much more strongly on improving human resources than in the past.

How supportive is the educational system in this respect?

Aiginger: There has already been a strong move towards the higher end of the qualifications scale at the expense of the lower end. Now, where Austria's ability to compete at the top of the league tables is at stake, a thorough reform of educational policy is required. Our vocation-oriented educational system was very well suited for the catching up process, but it has distinct disadvantages when it comes to taking the lead. There will need to be real changes, especially in the university sector, however without laying too much emphasis on the communication of specialised knowledge. Technological change is proceeding at such a fast pace that even highly qualified specialists continuously

need to upgrade their skills and adapt themselves to new tasks.

Consemüller: In this context there is another important point which needs to be mentioned, namely awareness of research and innovation. Excellent research is one thing, but above and beyond this, research activities and results must be communicated to the public in a form that enables each individual to recognise the specific benefits it can be expected to produce for their own life, work and health etc. This is why the continuation of the dialogue programme "innovatives-oesterreich" is so important. Take for example, the Children's Universities: Public relations work in the form of communicating science to a very young audience serves to encourage young scientists at a very early age. Today's children and adolescents are tomorrow's researchers – not in 2010, but a few years later. And Austria needs these talented young people.

Aiginger: I completely agree with you. We will not succeed in putting Austria at the top of the league tables if we do not take an active interest in our young people and awaken their interest. ■

"The World is an Oyster for the Best Young Researchers"

Generating enthusiasm for science and research among young people is a key aim of several programmes both at the European and national level. Helga Nowotny from the European Research Council and Günther Bonn from the Austrian Council for Research and Technology Development agree that gifted young people today have more opportunities, but also face more challenges than ever before.

Ms. Nowotny, as the Vice President of the European Research Council you have an in-depth knowledge of the European and also the Austrian research landscapes. What differences do you see in terms of how talented young scientists are encouraged at the Austrian and the European levels.

Nowotny: When the Scientific Council of the ERC decided in its first year to focus squarely on promoting young talent, we were of course aware that there are similar programmes at a national level. However, a crucial difference is that in the case of an ERC grant the total pool of young researchers is much greater than at the national level. For the first time in the history of EU research funding, a genuine pan-European competition is taking place based solely on the criteria of scientific excellence. Individual applicants might have better chances at the national level, but in the final analysis, the winners will be aware that they have prevailed against the very best international contenders. A second difference, which will be important in the long term, is that the European research institutions, especially the universities, are beginning to compete at a European level. An ERC Starting Grant is awarded to an individual team, but the principal investigator must choose a host institution which will offer a suitable creative scientific environment and good working conditions.

Mr. Bonn, what is the situation in Austria?

Bonn: The fact that much of what has been established in our country now has an equivalent at the

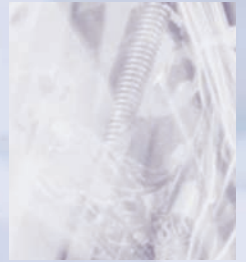
European level testifies to the many positive results Austria has already achieved in the promotion of young scientists. Take the Starting Grant mentioned by Prof. Nowotny, which is comparable to the Austrian START prize or the Advanced Investigator Grant which is similar to the Wittgenstein Prize. The problem that could arise for Austria in the future is that our young scientists may make inadequate use of EU research funding, as we already have the equivalent structures at the national level.

Have the career paths of young scientists changed significantly?

Bonn: There is an increasing trend toward specialisation. On the one hand, this means that PhD topics are becoming increasingly specific, forcing researchers to make the basic decision regarding the area of work which is of interest to them at an ever earlier date. On the other hand, this increases the pressure to show greater initiative and self-management because due to the increasing degree of differentiation and specialisation the individual research communities are shrinking in size while the overall system is becoming increasingly complex.

Nowotny: Overall, the pressure on young scientists has greatly increased. This shows itself in three respects: First of all, the pressure is growing to get ahead with independent scientific work as early as possible. In international competition, those who get in first generally do better. Secondly, the pressure toward internationalisation with the corresponding mobility requirements have also risen, which incidentally places additional burdens on women who wish to start a family in the early stages of their career. Thirdly, pressure is increasing to publish only in the "best" scientific journals. This sometimes leads to distortions if too much emphasis is placed on quantitative impact factors and similar benchmarks when evaluating scientific work.

In Austria greater efforts have been made to do more to promote young scientists, not least of all, as a result of recommendations made by the >



perspectives



Univ.-Prof. Dr. Helga Nowotny
Vice President
European Research Council

Austrian Council for Research and Technology Development. How do you see Austria's position within the European Union in this respect now?

Nowotny: On the whole, the Austrian position has greatly improved in comparison with other countries in the EU. The reforms at the universities are pointing in the right direction, although greater financial resources will be needed for their implementation. The Austrian Science Fund (FWF) has done excellent work, but could use more money. Nevertheless, I believe there is still much more room for improvement, especially where supervision of PhD students is concerned.

The establishment of graduate colleges or initiative colleges, for example at the University of Vienna, is still only a drop in the ocean.

Bonn: The Austrian Council set out its ideas for improving human resources in Strategy 2010 and in many of its recommendations. However, we still have a long way to go, especially with regard to the promotion of women and mobility. Human resources will therefore remain a central concern of the Austrian Council in future.

It should also be pointed out that the Fachhochschulen have broadened the range of offers in the tertiary education sector while at the same time university degree courses have also been restructured (key word bachelor). The next aspect is to improve doctoral training. The planned doctoral schools can only be the first step.

Experiences in Austria have shown that it is necessary to begin promoting young scientists and developing children's interest in science and technology while they are still at school. How do you view this trend?

Bonn: The Austrian Council warmly welcomed these initiatives, because in point of fact it is never too early to start awakening young people's interest in science. The huge success of the Children's Universities shows how children can be "led" in the positive sense of the word. In 2006 approximately 3,500 children, one third of whom were

from the provinces, visited the Children's University in Vienna, attending more than 330 events. Programmes such as IMST – Innovations in Mathematics, Science and Technology Teaching and others like it are extremely important and have therefore received strong support in Austrian Council recommendations.

Nowotny: I would go even further. Much of the groundwork is already laid at a pre-school age and then at primary school. The point is to awaken children's interest in the world of the future, in which the production of new knowledge and technologies will play a key role and to encourage their natural curiosity. At the same time, those initiatives which do fortunately exist, must be examined with regard to their sustainability and if necessary adjusted to meet new requirements. In this connection, informal learning of the kind which people require at work, but also in order to take control of other areas of their lives, will become increasingly important.

Is Austria fully tapping the potential of its scientists? Where do you see specific strengths?

Nowotny: The national scientific community must itself become more international. We must get used to the idea that the "brain drain" is no longer the only issue; the "brain gain" must be just as actively encouraged as should the "circulation of the brains". In science excellence attracts excellence, irrespective of whether it comes from Austria or elsewhere. In this respect, Austria still has some work ahead if it is to achieve a greater degree of international openness.

Bonn: Austria began promoting excellence approximately ten years ago in an effort to increase its attractiveness as a research location and make better use of our country's human resources. Remember the annual award for excellence, START, and Wittgenstein or the new competence centre COMET, the core of which is a high quality research programme defined jointly by partners from science and industry. Not to forget the Academy of Sciences, the Ludwig Boltzmann Research Associa-

tion and, in future, the high-tech research Institute for Science and Technology – ISTA.

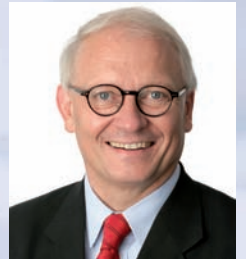
In an international comparison is Austria an attractive country in which to be a researcher?

Bonn: Besides the measures to promote excellence referred to earlier – the decision in March 2006 by the Austrian Parliament to establish the high-tech research institute ISTA will play a role here. The timing for setting up this university of excellence is ideal, as EU enlargement has put Austria in a position where it can become an intellectual and cultural centre in Central Europe.

Nowotny: It must also be borne in mind that the role of the scientist is currently undergoing a far-

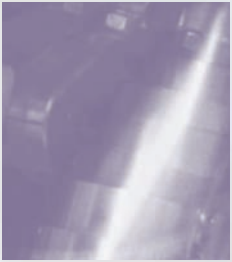
reaching change. The fields of activity for successful scientific careers have become much more diverse and now also require additional skills such as management capabilities. Conditions in Austria have definitely improved – but progress has also been made elsewhere, think about the excellence initiatives of our German neighbours, for example. It is therefore far too early to be satisfied with what has been achieved so far. Overall, I believe our scientists are working in exciting times. The world is an oyster for the best young researchers and they will go wherever they are offered the most attractive working conditions.

The ERC wants to initiate a new trend to increase the number and range of research institutes in Europe which carry out cutting-edge research under optimal conditions. ■



**Univ.-Prof. Dr.
Günther Bonn**
Vizevorsitzender

perspectives



The Austrian Council's Strategy of Excellence: Recommendation for Reaching the Top

The Austrian Council has on several occasions, most clearly in Strategy 2010, called for the development of a strategy to promote excellence. Why excellence? Austria is well on the way to achieving the target laid down by the European Union in the Barcelona process of spending three percent of GDP on research and development by 2010. However, the Austrian Council believes that this quantitative goal alone is insufficient. We also need content-related goals, one of which is excellence. There is no scientific progress without excellence – and this means being amongst the best in the world. However, excellence can only be achieved where there is a broad base

with a high standard of quality and a wide diversity of research approaches.

The Austrian Council therefore aims to raise the standard of quality throughout the entire Austrian innovation system and at the same time to position Austrian research among the international front-runners in an increasing number of research themes, research projects and research teams. As we strive to achieve this objective, the following questions arise.

■ What type of framework is most suitable for achieving excellence?



■ What prevents excellence in institutions and the national funding system and what supports it?

■ How can general conditions in Austria be shaped so as to ensure they promote excellence in the long term, whilst remaining open for new participants?

■ What incentives can be offered to encourage research institutions to make excellence their goal and to work toward and foster excellence in their strategies? In the view of the Austrian Council a strategy of excellence must be open to all disciplines and must include all institutions which are engaged in research and development activities – universities, industry and the co-operative sector. The idea is not to develop a “closed shop of centres of excellence”, but an open system in which the overall level of quality is raised and the path to excellence is open to all researchers.

Several players in innovation policy have responded to the Austrian Council’s call for the development of a strategy of excellence. Specific concepts and proposed measures for various target groups have already been drawn up.

■ In 2006 Parliament approved the establishment of the Institute of Science and Technology Austria – ISTA, an institute which will carry out cutting-edge research and post-graduate training.

■ The “Exzellenzinitiative Wissenschaft” was developed by the Austrian Science Fund and the Ministry for Education, Science and Culture. The Austrian Council especially welcomes the initiative’s proposal for “clusters of excellence” targeting basic research in Austria.

■ The new competence centres programme COMET, which promotes long-term collaborative research partnerships between science and industry, was established and the first calls have already been launched.

The Austrian Council has thus firmly placed excellence on the research and innovation policy agenda.

The Council has also taken steps of its own to develop a strategy of excellence. In May 2006 it

organised an open space conference on excellence. The most important results of this conference were picked up by the Austrian Council and will form an element of the planned strategy for excellence (for further information see the chapter Events: Open Space, page 34).

The Council has also commissioned studies which examine the definition of excellence at universities, in industry and in the co-operative sector. The results of these studies were presented to the Council in December 2006 which analysed them in early 2007.

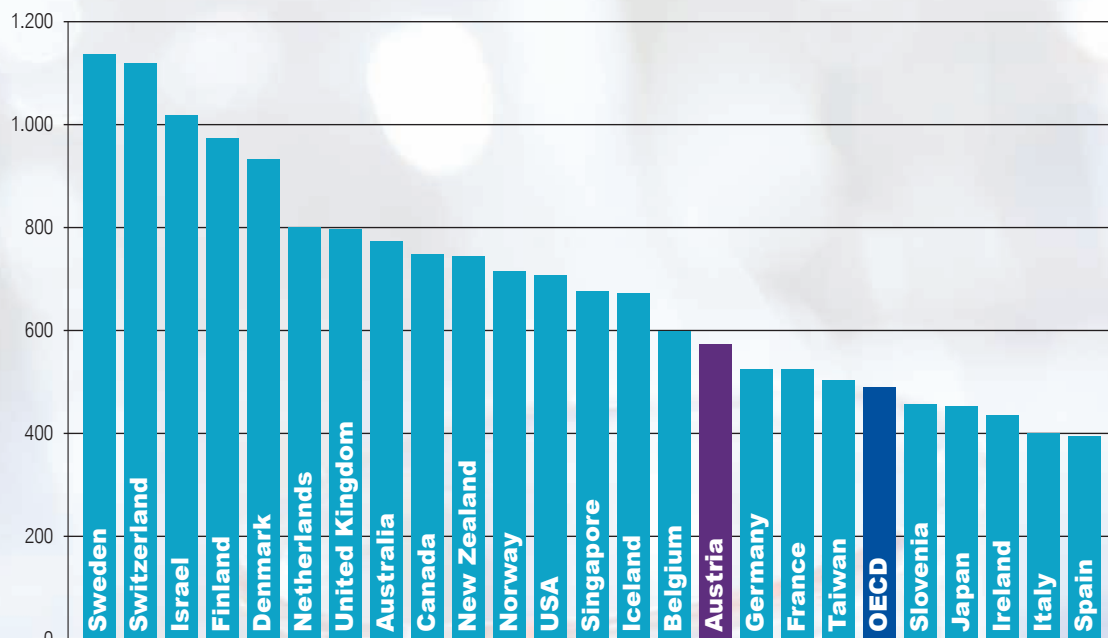
The recommendations made by the Austrian Council have generated increased impetus in this area and motivated other research and innovation policy players to formulate elements of a strategy of excellence for their own areas of responsibility. The Austrian Council welcomes these initiatives as it regards the strategy of excellence as an ongoing process to which all those involved should make a long-term commitment. The Austrian Council believes its task is to analyse the contributions in their entirety in order to combine them with other elements and proposals of its own to form a coherent strategy of excellence. ■



perspectives

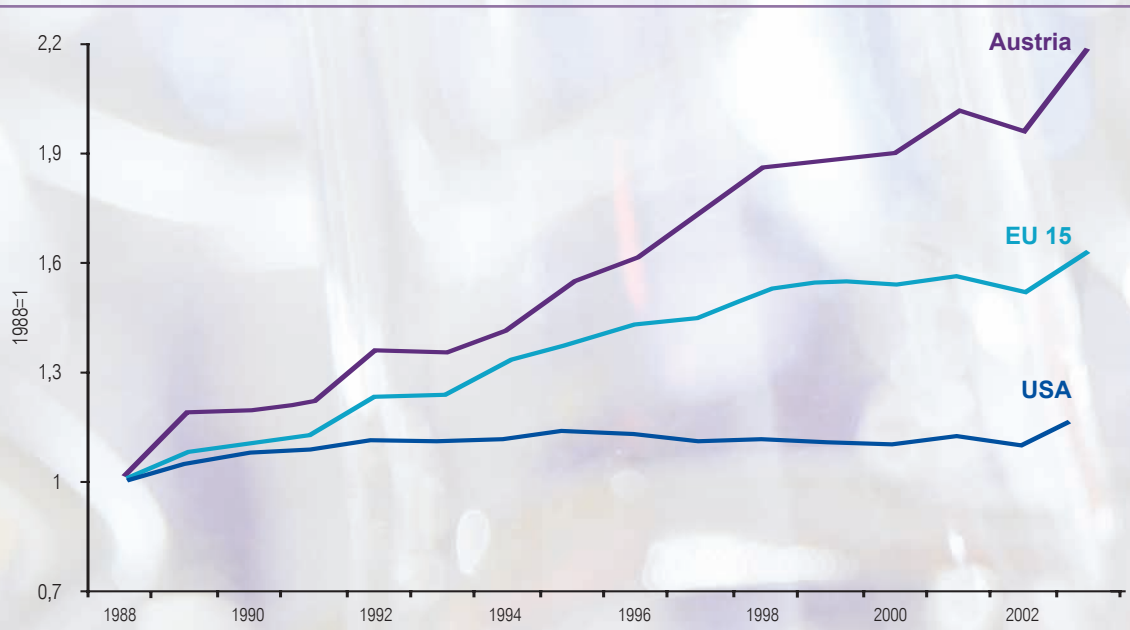


**Output of Scientific Articles per Million Inhabitants
Average 2000–2003**



Source: National Science Board (NSB), Science and Engineering Indicators 2006, Appendix Table 5–43, Arlington, VA., 2006. processed by: WIFO;
graphic representation: Austrian Council

**Growth in the
number of Austrian
publications in
an international
comparison
(1988–2003)**



Source: NSB (2006), Appendix Table 5–4, processed by: WIFO

recommendations

The Austrian Council for Research and Technology Development is the strategic advisory body to the Austrian Government on key questions of research and technology policy. Its recommendations are based on international benchmarks taking into account specific Austrian needs. On the basis of studies, evaluations and expert reports it issues recommendations concerning the use of funding and the adaptation of structures with a view to facilitating even higher quality.



recommendations



Recommendations 2006

The Austrian Council for Research and Technology Development is the strategic advisory body to the Austrian Government on all issues of research, technology and innovation policy (RTI). It draws

up recommendations for the medium and long-term strategic orientation of Austrian RTI policy and makes statements concerning investment decisions where public funds are used.

In 2006 the Austrian Council made recommendations regarding the following themes:

20 January 2006

- Recommendation regarding research, technology development and innovation within the scope of the Structural Funds programmes 2007–2013

- Recommendation regarding the national programme for security research

30 March 2006

- Recommendation regarding the Austrian Academy of Sciences

29 September 2006

- Recommendation of the Austrian Council for Research and Technology Development to anchor research and technology in a government programme for the legislative period commencing in autumn 2006

14 December 2006

- Recommendation concerning the prioritisation of the allocation of funds from the National Foundation for 2007; addendum concerning the Academy of Sciences

- Recommendation regarding the securing of the necessary funds for Q1 2007

- Recommendation regarding the platform RTI Austria

Recommendation regarding “research and technology” for the Government Programme for the legislative period starting in 2006 – 29 September 2006

In accordance with its statutory mandate the Austrian Council for Research and Technology Development submitted a recommendation to anchor research and technology in the coming legislative period. The recommendation is based on Strategy 2010 and other Council publications.

The Austrian Council draws up its recommendations in close consultation with the key players in

the Austrian innovation system. Experts from politics, the civil service, the relevant funding agencies and from science and industry participate in the process in working groups and similar dialogue forums. The original texts of the Austrian Council recommendations are published on the Council's website www.rat-fte.at.

The Austrian Council recommends

- Strategy 2010 is the Austrian Council's position paper concerning the development of the fields of action in Austrian research and technology policy. It should serve as the basis for the Government's research and technology policy in the new legislative period.

Strategy 2010

Strategy 2010 is directed toward one central objective: strengthening the competitiveness and dynamism of the Austrian economy in order to enable sustainable economic growth and an expansive employment trend. For that purpose, measures for ten fields of action have been recommended: Universities, business enterprises, the co-operative sector (collaboration between science and industry), the strategy of excellence, international orientation, the regional dimension, human resources, the state as a driving force, the funding portfolio and the allocation of resources.

The basic principles of Strategy 2010 are:

- to promote quality on a broad level and excellence at the top
- to strengthen networking and co-operation between science and industry
- to improve the efficiency and effectiveness of the funding system.

Strategy 2010 can be downloaded from the Austrian Council's website <http://www.rat-fte.at>

recommendations

■ The Barcelona target of a 3 percent R&D quota can and must be achieved and should be funded by industry and the public sector.

■ Particular attention in the forthcoming research policy period should be given to human resources, i.e. the people who work in science and research.

■ The effectiveness of research and technology policy measures must be verified.

■ The key areas initiated in addition to the general programmes will be consistently advanced. The entire portfolio must be analysed and optimised. The Austrian Council is considering defining additional key areas in the fields of energy and materials.

■ A system of incentives should be created to open up sources of private risk capital for investments in research by making them tax deductible or giving them other preferential treatment.

■ The ministerial structures in the area of research must be made more efficient.

At the political level, the Austrian Council recommends combining the portfolios at two ministries (balancing of interests between science and technology).

■ Competition within the university system must generally be strengthened, budget funding for basic research must be guaranteed.

■ The funds of the National Foundation for Research, Technology and Development must be used in accordance with the statutory mandate. This will involve transferring the funds used for general programmes (FFG/FWF) to the ordinary budgets of the ministries.¹

Recommendation regarding research, technology development and innovation in the Structural Programmes 2007–2013

– 20 January 2006

The European Union is committed to its goal of generating growth and employment through knowledge and innovation. In order to realise this plan, European Structural Funds will also be instrumentalised in the funding period 2007–2013. The tasks and guidelines of the Structural Funds, which in the past were used for regional development,

must be adapted for research, technology development and Innovation (RTI).

The EU Structural Funds have always been an important basis for Austria's regions.

However, in the past they were mainly geared to traditional investment promotion activities. But the framework is set to change in the Structural Funds programming period 2007–2013.

By strengthening the focus on research, technology development and measures geared toward innovation, the Structural Funds can now become an important instrument for strengthening regional innovation systems in Austria.

Against this background, the Austrian Council emphasises the importance of a stronger RTI focus in the current Structural Funds programming period. In its Strategy 2010 the Austrian Council addressed the issue of integrating the EU Structural Funds programmes into national research and innovation policy and of effectively networking the regional development programmes co-financed by the EU with national funding activities. Building on this, the Austrian Council has issued the following recommendations for the planned key area "Innovation and Science-Based Economy" for the period 2007–2013.

The Austrian Council recommends

1. Programmes in the period 2007–2013 should be geared more towards measures focusing on RTI.
2. "Soft" measures should be vigorously incorporated into the programming. The purpose of "soft" promotion measures is to make up for missing competences, for example, by providing consulting services or assistance in the start-up phase or during the search for partners. This also involves providing companies which have so far failed to qualify for RTI project funding with those competences that would make them eligible for funding.
3. Improving the exchange of information, co-ordination and consultation between administrative bodies and funding agencies at the centre and in the provinces as well as between the provinces on the basis of previous activities and discussions concerning research, technology and innovation. >



¹This will free up the budget funds at the National Foundation for long-term high-risk projects.

recommendations



Recommendation regarding the Austrian Academy of Sciences (ÖAW) – 30 March 2006

In a letter dated 26 May 2004 Minister Gehrler requested the Austrian Council to comment on the reform process at the Academy of Sciences. The Austrian Council has issued recommendations on a number of occasions and has also declared its willingness to assist and support the reform process. On 30 March 2006 the Presiding Committee and the Chairman of the Reform Commission presented the 37th Meeting of the Austrian Council with a proposal for an organisational reform of the Academy. This proposal was accepted by the plenary session of the Academy on 24 March 2006 and forwarded to the Presiding Committee to be dealt with further.

The Austrian Council welcomes the proposal made by the Reform Commission and regards the proposed concept as an important first step within the scope of the Academy's reform process.

The Austrian Council expects this reform process to be accelerated.

The Austrian Council recommends

- the establishment of a working group which will support the reform process by drawing up concepts and steps toward reform. The Ministry for Education, Science and Culture (BMBWK) must be involved in this process.
- incorporating the recommendations contained in the Annual Report of the National Audit Office – Federal Government: Administrative Year 2003 in the future reform process.
- implementing a financial controlling system to ensure the transparent use of funds. This controlling should be carried out by external auditors and should support the Presidium of the Academy, the Research Board, the ministry and other relevant bodies with the implementation of reform and a medium-term planning process.
- The BMBWK should make funding available as needed and based on the progress of the reform process.

In a recommendation to the National Foundation for Research, Technology and Development dated 14 December 2006, the Austrian Council reaffirmed this recommendation, adding that in the

medium term the Academy institutes should be funded by the ministries and medium-term planning certainty must be guaranteed on the basis of agreed performance targets. Furthermore, the responsible ministry must continue to ensure that the steps agreed as part of the reform process are successfully implemented.

Recommendation regarding the Platform RTI Austria – 14 December 2006

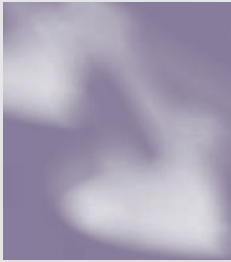
The co-ordination of research, technology and innovation policy between the provinces and the federal government is essential for the efficient and effective functioning of the Austrian innovation system. The recommendation aims to secure an institutionalised form of regular interaction between representatives of the federal government and the agencies in the provinces. The new initiative will supplement and upgrade existing bilateral and multi-lateral patterns of co-operation. The systematic and open exchange of information made possible in this manner and the related accumulation of knowledge and experience should improve the basis for decision-making by all those involved with a view to structuring the national funding system more efficiently. Co-ordinating the use of funds between the federal government and the provinces will make it easier to focus on key areas and help avoid overlapping and duplication. A greater leverage effect can be achieved by addressing critical masses when implementing funding measures. At the international level the development of clear joint RTI concepts will strengthen Austria's competitiveness, also in respect to its position in the European Research Area.

The Austrian Council recommends

- the establishment of the Platform RTI Austria as a permanent communication platform which meets regularly to support co-operation between the provinces and the federal government in the area of technology policy. This platform should comprise representatives of the RTI funding agencies from each of the provinces as well as one representative from each of the relevant federal agencies who are to be nominated for an indefinite period by the responsible political decision-makers. ■

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The Austrian Council's work is based on the principle of facilitating innovation and talking about it. In 2006 intensive work continued in the strategic fields; dialogue measures were promoted as part of the "innovatives-oesterreich.at" campaign.



Update: What has been accomplished

Co-operation between Federal Government and the Provinces: Work continues on Co-ordination

Regional efforts to stimulate research, technology development and the innovative strength of a country are as important as ever and will be further enhanced by integration in the European Research Area. The Austrian provinces play a key role here, as shown by rising budgets and the development of research institutes and research funding programmes on the part of the provinces.

Statistics show that in 2005 the provinces spent a total of EUR 330 million on R&D, contributing 0.13 percentage points to the 2.35 research quota. As recently as 1990 their contribution to research funding in Austria had amounted to a mere EUR 109 million. However, this increased level of research and innovation policy activity on the part of the provinces has created a greater need for consultation and co-ordination. Despite a plethora of initiatives in this direction, this need is still only being incompletely and inadequately met.

The Background

Efforts by the Austrian Council to give a co-ordinating and overall impetus to the co-operation process with recommendations and working groups, proved more protracted than anticipated. However, in 2006 a major step forward was taken. At a series of meetings of highly committed national and provincial representatives initiated by the Austrian Council, the conditions and key components for an effective platform for co-operation were drawn up. The result was the concept for the RTI Platform Austria, established out of a desire for an institutionalised form of regular interaction between representatives of the federal government and the provincial agencies and which should serve as a basis for active co-operation and strategy co-ordination. Above all, the key aim was to establish a core group for research and technology development from among the provinces and the federal agencies.

The Platform RTI Austria

The Platform RTI Austria is designed as a joint event which meets twice a year. Its core element is the continuous interaction between the permanent representatives of the funding system from each province and the representatives from each of the federal agencies (AWS, FFG, FWF).



The Benefits for all Concerned

The systematic and open exchange of information made possible by this form of interaction should improve the basis for decision-making with a view to structuring the national funding system more efficiently. Co-ordinating the use of funds between the federal government and the provinces will make it easier to maximise the impact of focussing on key areas at the national and regional level and help avoid overlapping and duplication.

By endeavouring trying to achieve critical masses when implementing funding measures, the funds used can generate a stronger leverage effect.

Humanities, Social and Cultural Sciences: Cultural Heritage and Increased Security

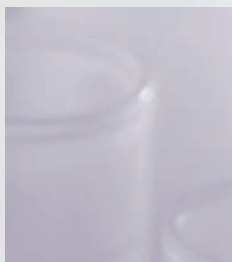
In September 2003 the Austrian Council recommended that medium-term, overlapping key programmes for the humanities, social and cultural sciences should be established, the choice of which should be geared to existing strengths and their relevance for Austria's social and economic development. Building on this, the Austrian Council recommended the establishment of the multi-year programme "Cultures of Knowledge in Change" in 2005. The Humanities, Social and Cultural Sciences Working Group ascertained an urgent need for action with regard to the collection, documentation and processing of Austria's scientific and cultural heritage. 2006 was therefore dominated by the preparation and execution of a feasibility study of Austria's scientific and cultural heritage, jointly commissioned by the Austrian Council and the Ministry for Education, Science and Culture (BMBWK). The study was published on the Austrian Council's website in December 2006 (see Studies, page 27). The results of the study should provide assistance

in deciding to what extent this heritage can and should be addressed as a basis for research. Overall the challenge is to identify elements of "scientific and cultural heritage" and to formulate and implement objectives and priorities for the further development of this theme.

In November 2005 the security research programme KIRAS recommended by the Austrian Council was launched with a first call for expressions of interest. KIRAS supports national research projects which aim to increase the security of Austria and its population.

The programme will give strong emphasis to the humanities, social and cultural sciences – on the one hand, because research in these areas is explicitly called for as an integral part of technologically-oriented research projects, and on the other, because aspects with a general relevance for the humanities, social and cultural sciences will be included in the project evaluation. This should ensure the presence of the social dimension in each (technologically-oriented) security research project. Humanities, social and cultural science research should also feature prominently in the parallel measures. >





Grants: Fewer but Bigger Programmes

In 2005 the Austrian Council recommended a thorough restructuring of the grant programmes. When initiating a start-up conference and establishing a working group to present reform proposals for 2006, the Ministry for Education, Science and Culture (BMBWK) made reference to the Council's recommendation and made a number of proposals. The most important points were:

- Tax exemption for grants, in particular incoming grants, should be specifically included in the forthcoming amendment of the directive on wage income tax. The amendment has already completed the review process and will probably come into force in 2007.
- A one-stop shop procedure for all applicants should be implemented.
- The number of programmes should be reduced, the smallest abolished and programmes bundled in order to create a critical mass.
- The majority of programme overlaps should be eliminated.
- Measures to promote women should be expanded and refocused.
- Administrative costs can be reduced.
- More flexible age limits for grant recipients should be introduced.
- The evaluation of grant programmes and of their goals should be continued.
- Researcher's institutional affiliation with research centres should be regulated in accordance with the European Charter for Researchers.
- Financial responsibility for grants should be concentrated at three institutions. Those institutions which develop and offer grant programmes have already started to implement some aspects of the Austrian Council's recommendation. Work on the reform will continue in 2007.

Establishing Research as an Emerging Thematic Area

As long ago as 2001 the Austrian Council identified "the environment and energy" as an Austrian strength and important emerging thematic area. Numerous Austrian companies and research institutes are engaged in environmental

and energy research and in an international comparison are also extremely successful. In co-operation with the ministries for education, transport and the environment the Austrian Council therefore developed the FORNE strategy which was then recommended for implementation.

The Ministry for Transport, Innovation and Technology (BMVIT) which is responsible for energy research has commenced work on developing a comprehensive and long-term energy research strategy under the heading Energy 2050. The Austrian Council explicitly welcomes this project, advocating the provision of the necessary budget for this important emerging thematic area of research and the incorporation of this project into the FORNE strategy.

Energy is a cross-sectional material, as is energy research and development. In the view of the Austrian Council inter-ministerial co-operation is especially important for shaping a coherent policy. Of course, this primarily concerns the ministries responsible for RTI agendas, but the interface to energy policy is itself also important. Last year the Austrian Council actively supported this exchange in its capacity as a moderator.

Nano: The Strategy for Researching the Smallest Particles under the Microscope

In February 2002 the Austrian Council presented the Austrian NANO Initiative and issued a recommendation for its implementation. Prior to this, the Council had developed the concept in co-operation with nano-researchers from science and industry, the ministries, funding agencies and representatives of the provinces. The Ministry for Transport, Innovation and Technology (BMVIT) acting as the lead ministry then developed the programme; the first calls were launched in autumn 2003. One of the distinctive features of the NANO Initiative is its structure: It is not only a BMVIT funding programme, it also constitutes a "strategic umbrella" covering all the NANO-specific measures of the federal government and the provinces – a

collaborative programme not only for the participating researchers, but also for the programme managers and the funding agencies.

In 2006 the NANO Initiative was subjected to an interim assessment carried out on behalf of the BMVIT, the main purpose of which was to evaluate the programme concept and its implementation.

The evaluators offered clear proposals for possible improvements and further programme development. The main points included improving the efficiency of the management and operational structures of joint projects, positioning them in the innovation system, and mobilising industry to a greater extent. At the same time, the evaluation confirmed the findings underlying the NANO initiative and the need for specially tailored support measures. In the main, the evaluators found that the programme is well suited to achieve the desired results. They also emphasised the importance of a long-term political commitment for genuinely tapping the application potential of nano-technology.

Information and Communications Technologies: Study surveys Potential

As early as 2001 when it published its Strategy "2.5 % + plus" the Austrian Council called for an inter-ministerial strategy for information and communications (ICT) technologies in Austria. This strategy was to cover the areas of education and further education, research and technology development and technology transfer. In co-operation with the secretariat of the Austrian Council, the ministries BMVIT, BMWA and BMBWK established a working group (IMAG-IKT) which was also responsible for the mutual exchange of information and for coordinating activities. Two studies were commissioned, one on governance in ICT, the other analysing the situation of ICT in Austria on the basis of existing data. Following completion of these studies, the members of the Austrian

Council and its secretariat met with the IMAG-IKT and outside experts for a joint closed strategy conference.¹

One of the key conclusions of the conference was that a large-scale over-arching strategy covering the entire system of RTD, education and technology transfer in ICT is not suitable for systematically promoting this area. On the contrary, a far more constructive approach – especially given the shortage of human resources at the ministries – is to develop strategies in those areas where a specific need for action has been identified and existing measures are inadequate.

Following its reconstitution in autumn 2005 the Austrian Council once again turned its attention to ICT, focusing in particular on the situation of research and development in information and communications technologies (ICT-R&D) in Austria. The situation of ICT-R&D in Austria has changed considerably in recent years. The universities have been reorganised, new ICT-specific funding programmes have been established in response to an Austrian Council recommendation and ICT now also plays an important role in the thematically-open funding programmes such as the competence centres or the FFG General Programmes. The key questions from the Austrian Council's perspective are: What are the strategic challenges and opportunities for ICT-R&D in Austria and what additional ICT-specific RTI policy measures are required in order to strengthen ICT-R&D in Austria. Together with the BMVIT the Austrian Council commissioned the company Eutema Technology Management to carry out a special study (see page 29 for further details). The study is supervised by an advisory board comprising representatives of the Austrian Council, the BMVIT, the BMBWK and the BMWA. The results of the study will form the basis for the development of a strategy to strengthen and advance ICT-R&D in Austria. >

¹ Both studies can be downloaded from the Austrian Council's website <http://www.rat-fte.at/view.mc?docid=93>.

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Research and Society: Promoting Dialogue with innovativesoesterreich.at

In 2006 the second campaign organised as part of the public awareness initiative innovativesoesterreich.at was successfully completed. innovativesoesterreich.at is an awareness raising project, which on the one hand addresses a wider audience, while at the same time aiming to raise the quality of public relations work carried out by research and development institutions.

The initiative is sponsored by the Ministry for Education, Science and Culture (BMBWK), the Ministry for Transport, Innovation and Technology (BMVIT), the Ministry for Economic Affairs and Labour (BMWA) together with the Austrian Council for Research and Technology Development and is supported by the social partners and experts from the scientific community. While the first campaign (2001–2003) with its slogan “Auf die Birne kommt es an” focused on adver-

tising and communication, the emphasis in the second campaign (2004–2006) moved toward active involvement through participatory, target-group-oriented projects. The stated goal is to present research and technology in a more accessible form and thus increase public acceptance and awareness of the benefits of science and research.

EUR 12 million were made available for the continuation of innovativesoesterreich, with the contracts being awarded on the basis of a public tendering procedure. More than 50 individual programmes in all provinces, an extensive web portal, advertisements and articles in daily newspapers and magazines as well as a mobile question team invited the population to ask questions on all aspects of innovation and research. Ambitious projects to communicate research were implemented in order to raise the visibility of scientific achievements, stimulate

As part of the Sci Art Junior project organised by PR&D, groups of nursery school pupils are given an opportunity to look behind the scenes at research institutes and experience research and artistic activities for themselves.



dialogue between the research community and the public and motivate companies and individuals to increase their research and development activities.

Highlights included the first Long Night of Research in Vienna, Linz and Innsbruck with approximately 50,000 visitors, the Children's Universities in Vienna and Steyr, which thrilled more than 3,000 children, and the conference and exhibition Age of Simulation. Other events were Learning and Researching in the 21st century held at the Ars Electronica Centre in Linz or "wahr/ falsch.inc", an exhibition about communicating science, which was held in Vienna. The programmes for companies which targeted the Federation of Austrian Industry, the Chambers of Commerce or the Chamber of Labour – for example "innovatives-unternehmen" or "Arbeitsplätze durch Innovation" – also had a strong impact. One of the most important target groups, young people, was reached with programmes such as "Lehre und Forschung" for pupils at vocational schools or programmes such as "Jugend innovativ". A photography competition titled "Innovative Motive" awarded prizes to photographers who communicated research in unusual images.

It was a varied and very exciting programme that ended with a big closing event on 4 December 2006 timed to coincide with publication of the at.venture special innovatives-oesterreich.at. The event offered project partners, initiators, the research community and science journalists an excellent opportunity to review the programme and share their experiences.

Evaluation: Strong Brand Recognition

The success of the programme is also evident in the parallel evaluation which the Austrian Council and the Austrian Research Promotion Agency (FFG) commissioned from KMU Forschung Austria, Technopolis Austria und TNS Infratest (Hamburg) in October 2005 when the campaign was launched.

The evaluation showed that innovatives-oesterreich enjoyed a remarkably high level of recognition in spring 2006 given the relatively

low budget and the introduction of a new logo. Asked about the campaign, one in four young people and one in five SMEs said they were familiar with the campaign. However, it was the Long Night of Research which achieved the highest name recognition. In spring 2006 one in three young people had heard of it. Visitors and organisers are equally enthusiastic. 60 percent of visitors said they would come again and more than 80 percent of organisers could envisage taking part again.

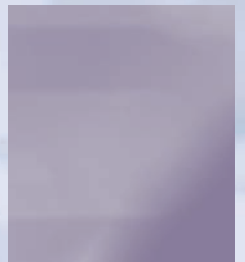
Of course, there is still room for improvement, especially in organisational terms: for example, there needs to be a clearer allocation of competences and a clearer separation of content-related and managerial work. The challenge now is to implement these improvements in a third campaign.

Outlook: Continuation is planned

Against this background the Austrian Council in its Strategy 2010 recommended continuing the initiative innovatives-oesterreich.at until 2010. Between 2007 and 2010 two percent of Action Programme Funds should be ring fenced for awareness measures. Preparations are already underway. However, the Long Night of Research will certainly be one of the main events. As one of the most successful elements of the second campaign it is also to be an important fixture in the subsequent campaign. The invitation to tender should therefore be started speedily.

International Meeting of the National Councils in Prague: More Support for SMEs

On 25 and 26 May the Plenary Meeting of the National Councils for Science and Technology policy of the EU member states was held in Prague in the Czech Republic. The theme of the conference was co-operation between government, industry and science in fostering innovation and technology absorption. In his opening address Nobuo Tanaka, the Director of the OECD Directorate for Science, Technology and Industry, mentioned the most important innova->



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tion policy trends in recent years: Reforms at universities and public research institutes, higher investments in corporate research, development and innovation and increased emphasis on networking and co-operation. He also emphasised the increasing importance of evaluating the objectives and mechanisms used to steer the entire research and development system. A special mechanism for co-ordinating co-operation between the individual ministries is vital for the efficient management of innovation policy. Several member states presented their strategies for fostering innovation. The representative of the Austrian Council presented the extremely successful Competence Centres programme, which has been functioning for close to ten years.

The conference closed with the following resolutions:

■ General recommendation: Support for new environmental developments is essential to foster new idea competitions which could attract the best participants and their processes.

■ Human resources and education are the key factors. Many countries consider an excellent education geared to the needs and expectations of industry to be the most important aspect of future development. Governments have a duty to create conditions which are conducive to promoting cutting-edge research at the national level. Outstanding research work can produce the excellent results expected by the best and most innovative companies.

■ There is only one way to foster innovation at SMEs and closer co-operation with the R&D sector. This is to implement measures designed to eliminate SMEs with a low level of innovation and increase their capacity to absorb the results of research and development. Easy access to innovation consultancy services and a solid infrastructure for the dissemination of knowledge are key factors for supporting SMEs. The European Commission has prepared a new Framework Programme for Competitiveness and Innovation, which could enable SMEs to gain easier access to financial resources. ■

The “Stand des Wissens” by PlanSinn is a market stand which brings knowledge and innovation to the general public.



Basic Expertise: Reports and Studies 2006

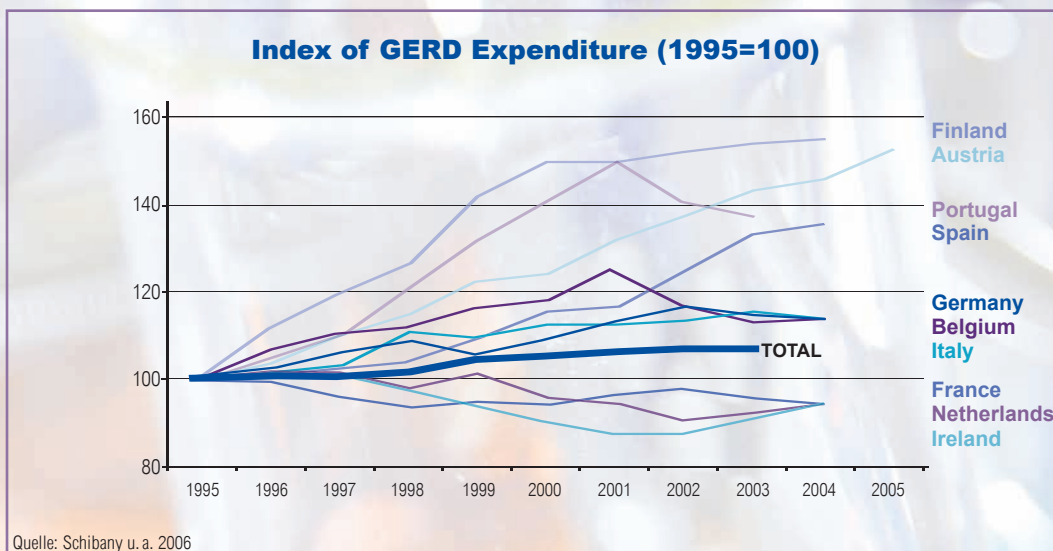
Cultural Heritage as an Object of Scientific Interest

The working group for the humanities, social and cultural sciences identified an urgent need for action with regard to the collection, documentation and processing of Austria's scientific and cultural heritage. 2006 was therefore dominated by work to prepare and carry out a feasibility study¹ on "Austria's Scientific and Cultural Heritage" jointly commissioned by the Austrian Council and the Ministry for Education, Science and Culture (BMBWK). The comprehensive feasibility study was published on the Austrian Council's website in December 2006. The results of the study should provide assistance in deciding to what extent this heritage can and should be addressed as a basis for research.

The study succeeds in making a joint analysis of a wide spectrum of activities, which in the past have usually been viewed separately, in order to put forward an integrated concept.

Barcelona Study: Austria in the Fast Lane

In almost no other country does the progress made toward achieving a 3% R&D quota in 2010 receive as much political attention as in Austria. According to the authors of the study "Austria in the Context of the Lisbon and Barcelona Processes" the momentum triggered by the process has enabled Austria to position itself very favourably in the international technology landscape. It is especially pleasing that the pace of R&D growth in Austria is faster than average, making it safe to assume that the country's position will improve even further over the next few years. However, the authors also believe there is a strong danger that in 2010 the success or failure of Austria's RTI policy will be measured by whether or not 3 % of GDP is being spent on research. However, it would be extremely unwise to tout one indicator as the single criterion for the quality and success of RTI policy. In fact, what is much more >



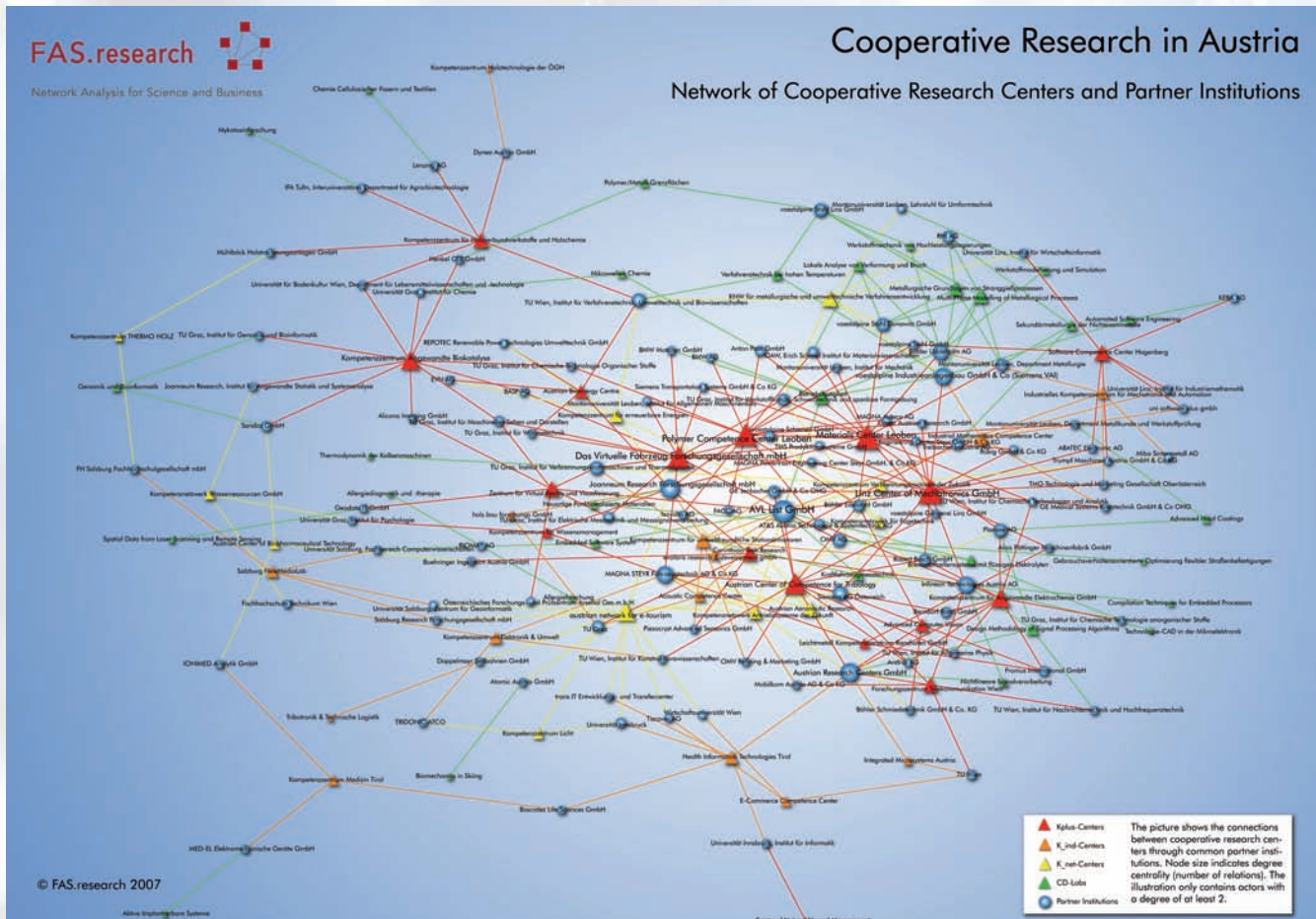
Development of
Total R&D Expendi-
ture as a Percentage
of GDP, 1995–2005

¹Robert Temel / Christian Dögl / Ela Kagel; Scientific and Cultural Heritage in Austria. Study commissioned by the Austrian Council and BMBWK, published by uma information technology gmbh, Vienna, May 2006. ²Jörg Schibany / Gerhard Streicher / Helmut Gassler; Austria in the Context of the Lisbon and Barcelona Process. Study commissioned by the Austrian Council for Research and Technology Development, published by Joanneum Research – Institute for Technology and Regional Policy. Vienna, October 2006.

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important is the fact that the 3 % target has been used as a suitable instrument for significantly improving the system. With regard to Austria's position in the international technology landscape, the authors of the study noted an extremely positive trend, with Austria performing especially well against several of the key indicators. Thus investments in research and development have not only reached a higher than average level (currently 2.43 % of GDP), they are also growing at a faster rate than in Europe as a whole. Furthermore, results for a number of "hard" output

indicators (e.g. patents or European trademarks) show that Austria has already left behind its role as a "catching-up country" and now belongs to the group of leading countries within Europe. Several "soft" indicators such as the innovation activities of SMEs also highlight positive aspects of the Austrian innovation system. The "Austrian paradox", a much discussed phenomenon even in the 1980s involving above average growth with below average research and technology input, is probably now a thing of the past, at least in this extreme form.



FAS Study:

Networks of Knowledge Production

Within the framework of the study "Networks of Knowledge Production in Co-operative Research" commissioned by the Austrian Council from FAS.research in October 2006 a model is being developed with which the quality of collaborative relationships in the various areas of research and development can be evaluated. The study takes as its starting point the concept of the prototypical cycle of excellence developed by FAS.research. Using selected social networks as examples, the study shows which structures need to be in place in both basic and co-operative research (i.e. applied basic research) in order to provide optimal conditions for bringing forth innovation.

The networks of the scientific disciplines in basic research and co-operative research are therefore being compared with one another in terms of parameters such as key disciplines and links or clusters of scientific disciplines. As the diversity of scientific disciplines is a key factor for the emergence of innovation, the study sets out to identify fields of study in basic or co-operative research which frequently combine disciplines from a variety of research areas and which can therefore be referred to as broker sciences. These broker sciences combine diverse scientific elements (also in a variety of new forms) especially frequently and it is precisely these (new) combinations which account for innovation. The goal is to identify those scientific disciplines which due to their position "on the periphery" of the networks can be described as broker sciences and as highly innovative.

The results of the study will be summarised in a brochure together with those of a study on male and female knowledge networks in co-operative research which has been commissioned by the FFG within the scope of w-FORTE. This brochure should provide practical guidance for research and technology policy decision-makers and will include proposals for fostering research networks which increase innovation in collabora-

tive research. The brochure is scheduled for publication in early summer 2007.

Study "Basic Principles of an ICT Research Strategy for Austria"

Contractor:

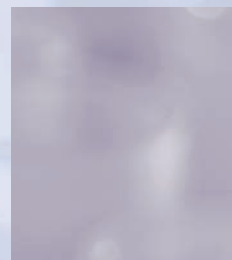
Eutema Technology Management GmbH

Duration: December 2006 – March 2007

This project aims to create, collect and present the basic principles for a national strategy for research and development in the field of information and communications technologies (for the background to this study see page 23).

The situation of Austrian ICT research and development has changed significantly since the establishment of the Austrian Council in 2000 – for example, as a result of the university reform, new ICT funding programmes financed by Action funds for R&D and the development of the European Research Area. The time has now come to reassess the situation. In December 2006 the Austrian Council and BMVIT therefore jointly commissioned Eutema Technology Management GmbH to carry out an exploratory study. In addition, the ministries BMBWK and BMWA are also represented on the joint advisory board.

This study will create a basis for the development of an Austrian ICT research strategy. It is therefore important to analyse and describe the specific situation of the research field Information and Communications Technologies in industry and science in comparison with other themes. Other areas of special interest are challenges relating to the framework conditions such as funding schemes, regulations, co-operation etc. both nationally and internationally. Similarly, these aspects will also be examined in connection with industrial, university and non-university ICT-R&D. Moreover, the study should also provide a sound overview of the strengths of Austrian ICT research. In addition to quantifiable variables such as success in national and international research programmes, interviews with ICT experts and industry representatives will also assist in the identification of specialist key research areas. A SWOT analysis of ICT-RD >



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in Austria will identify strategic objectives and options for research and technology policy. The results of the study will be available in spring 2007.

Study to measure the Impact of Investments in Research

In recent years the question of the efficiency and effectiveness of government funding schemes for research and development has gained considerable importance. The public, policy-makers

and industry are all increasingly demanding plausible evidence of the impact of political measures and programmes. Furthermore, an appraisal of possible effects is also increasingly required before measures are implemented. In research, technology and innovation policy, questions pertaining to the impact of RTI policy measures on R&D investments, scientific and technological progress, innovative capacity and competitiveness, economic growth and employment are of particular interest.



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Furthermore, social challenges such as sustainability, security or cohesion now also play an increasingly important role as RTI policy target dimensions. Prompted by the intensity of the debate on the impacts and effects of RTI policy, efforts have been made in evaluation research to improve the methods and techniques of impact analysis used to evaluate research and technology programmes. A study was therefore commissioned to explore these issues in detail and the final report is now available.

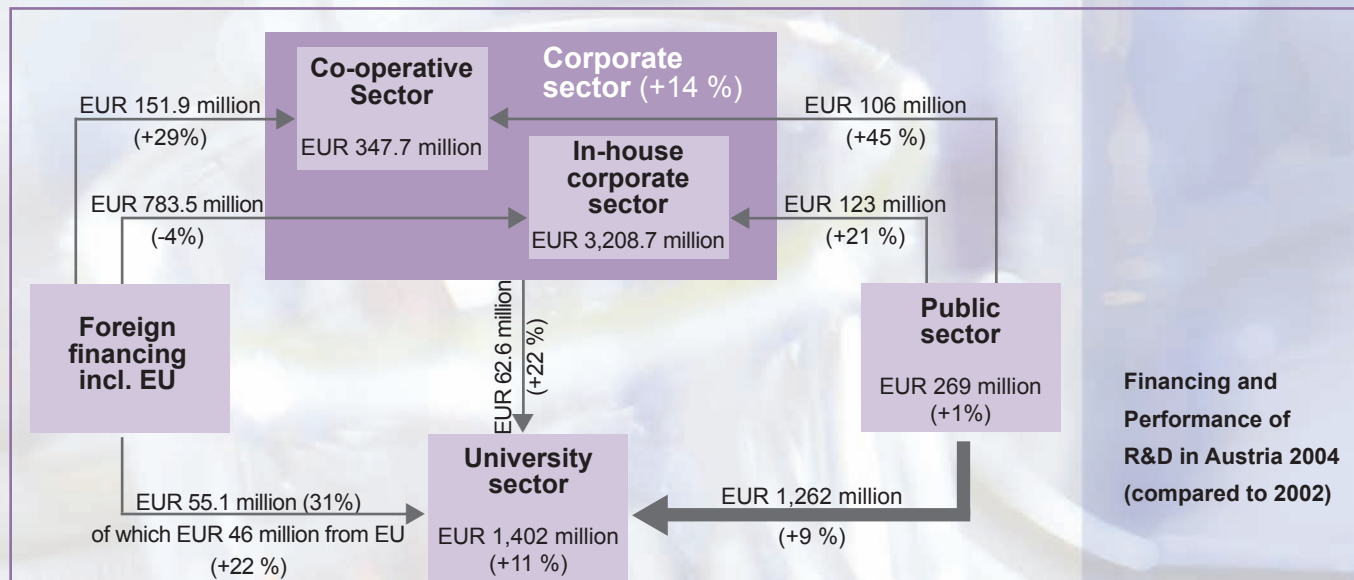
The report describes a wide range of impact-analysis methods and techniques of the kind cur-

rently used to evaluate Austrian research and technology programmes.

The key points of the study were:

- Systemisation and appraisal of the achievement potential (strengths/weaknesses) of methods of impact assessment and analysis against the background of the Action programmes
- Survey of the status quo and experiences in Austria in connection with impact analysis
- Pointing out the possibilities and limits of methodologies and
- The identification of initial starting points for the refinement of impact analysis for Austrian RTI policy.

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The statistics differentiate between four performance sectors (the university sector, the state sector, the private non-profit sector and the corporate sector - figures in the boxes) and four financing sectors (public sector, corporate sector, private non-profit sector and foreign financing - the figures by the arrows). It should be noted that the university sector is not a financing sector, while in accordance with the domestic concept "foreign financing" cannot be an implementation sector. For the purposes of this analysis, the "corporate sector" was broken down still further: into

the in-house corporate segment (which essentially comprises research activities carried out by companies in the manufacturing and service sectors with the intention of generating income or other economic advantages) and in the co-operative sector (institutions in the services sector, which carry out research and experimental development for companies; in most cases with no intention of generating income). For the sake of clarity and due to its small share of the total, the private non-profit sector was not included in the chart.

Source: RTD Report 2006, page 16, data: Statistik Austria; Graphics: tip Darstellung, Data update: Austrian Council

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Models for Successful Development of R&D Expenditure

Is the funding and financing structure for research, technology and innovation in Austria suitable for triggering greater incentives for private sector investment in R&D? Will it be possible to achieve the political objective of a research quota of 3 % of GDP in 2010 with the Austrian funding portfolio?

These questions prompted the Austrian Council to establish an internal working group in 2006. The underlying themes include the leverage effect of direct R&D funding and the effectiveness

of basic research. With the help of scenario-based calculations and models the working group will set out to provide answers to the above questions. The latest data and forecasts (Statistik Austria, WIFO) will also be incorporated into the models. Projections for the respective financing sectors compiled on the basis of the political target figures are now available. The Austrian Council's aim is now to develop assumptions concerning the impacts of specific budget allocations and examine them with the help of the models.

The working group will continue its work in 2007. ■



Communication and the exchange of information are the prerequisites for a knowledge-based society. All the more so, when the goal is to achieve excellence in science and research.



events

Lecture: Why Organisations produce Excellence

On 30 March 2006, at the invitation of the Austrian Council for Research and Technology Development, the science historian and sociologist J. Rogers Hollingsworth from the University of Wisconsin gave a lecture analysing where and under what conditions outstanding research takes place. The lecture at Club Research was followed by a discussion on the prerequisites for cutting-edge research. The professor from Wisconsin was joined in the debate by the geneticist and Wittgenstein Prize winner René Schroeder from the University of Vienna and Knut Consemüller, the chairman of the Austrian Council for Research and Technology Development.

Top researchers, policymakers and research funding bodies are all asking where and under what conditions excellence is produced.

Rogers Hollingsworth and his research team have been studying research for more than 20 years and have conducted dozens of interviews with top researchers and science managers.

In multi-year comparative studies Rogers Hollingsworth explored whether spectacular breakthroughs and scientific revolutions in the field of bio-medicine in the 20th century were evenly distributed across institutes in the United States, the United Kingdom, France and Germany or whether such radical innovations were repeatedly attributable to only a small number of institutes.

Surprisingly, the data they collected clearly showed a concentration at only a small number of institutes. This then raised the question of whether these highly innovative institutes possessed particular organisational attributes which were typically absent or not particularly pronounced at many other research institutes. Using a comparative organisational analysis J.

Rogers Hollingsworth and his team succeeded in identifying the crucial organisational factors and documenting their findings with a series of empirical examples.

Surprisingly the organisations with the largest number of breakthroughs in bio-medicine were not Harvard, Stanford or the British University of Cambridge, but the small Rockefeller University in New York, founded in 1901. That was unexpected. No fewer than 27 of the 290 breakthroughs in bio-medical basic research originated there. According to Hollingsworth, the most important factor behind this enormous productivity over an entire century is the organisation's tremendous flexibility. Science is about constantly discovering the new and unfamiliar, and the pace of change today is incredibly fast. However, most organisations have a tendency toward a type of fundamental inertia.

Rockefeller, however, is different. In the mid 1990s the university had approximately 70 laboratories. 20 to 25 of them worked in areas which 15 years earlier nobody assumed would ever be of any importance in biomedical basic research. Rockefeller as an institution changes direction relatively quickly, continuously invests in new areas and always recruits personnel internationally.

Open Space Conference on Excellence¹

The Austrian Council has decided to begin the development of a strategy of excellence with a participative process. The method chosen for this purpose was an open space conference. Open space is a form of conference for large groups where participants meet to discuss a topic in which they have a shared interest with no set agenda. Those attending the meeting structure the conference agenda themselves through their proposals for discussion topics. These working groups are autonomous and present their findings to the plenum.

¹For details of the background see the chapter perspectives „Strategy of Excellence“.

Besides ensuring the participation of all those present, this type of meeting can also help achieve a broad commitment and mutual understanding.

The Austrian Council's Open Space Conference on Excellence took place on 24 February 2006 at Techgate in Vienna. Some 250 people were invited – top researchers from the scientific sector, non-university research and industry as well as representatives from the ministries, funding agencies and other organisations (e.g. the Austrian Chamber of Commerce, the Federation of Austrian Industry, the Science Council etc.). Approximately 100 people attended the conference with all invited groups sending representatives.

Content and Results

At several conference sessions a wide variety of topics was discussed which covered the breadth of the topic “excellence”. Measures which had

already been approved such as the establishment of the Institute of Science and Technology Austria – ISTA or the competence centres programmes of the BMVIT and BMWA were not at the centre of debate. The strategic approach adopted by the Austrian Council in 2010 to promote both “quality on a broad level” and “excellence at the top” was affirmed. Participants put forward proposals to raise the overall standard of quality in research and also to provide targeted support for excellence.

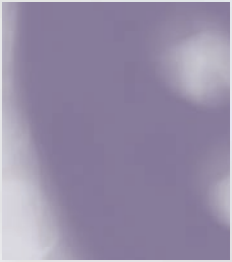
The working groups discussed the following key issues:

- Promotion of young scientists
- Universities
- Industry
- FWF clusters of excellence
- Inter- and transdisciplinarity
- Planning certainty
- Quality assurance in research funding
- Gender and excellence
- Intellectual property

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events



Work on the open space sessions and the topics of debate there has been continued on the basis of the documentation sent to all participants. The Austrian Council and its secretariat have analysed the proposals and exchanged views on them at ongoing meetings with participants in the open space process, including representatives of the ministries, funding agencies and other experts. The Austrian Council is currently developing elements of its strategy for excellence on this basis.

Discussion: Selecting Excellence

On 15 December 2006 the Austrian Council and the Platform Research and Technology Policy Evaluation (FTEval) held a day dedicated to excellence. The proposal for this joint event had already been suggested in the Austrian Council's recommendation on evaluation and monitoring dated 12 April 2005.

The conference was opened by Dervilla Donnelly, the member of the Austrian Council from Ireland. Beate Konze-Thomas from the German Research Foundation (DFG) presented the "Excellence Initiative of the German Federal Government and the German States". Christoph Kratky from the Austrian Science Fund presented the first concepts for an FWF excellence initiative for Austria. Michael Binder (FFG) explained the proposals for excellence to be implemented within the framework of the new competence centres programme COMET.

The delegates listened with interest to a guest from Switzerland, Marcel Herbst (4mation), who presented his sometimes provocative ideas and positions on the issue of "Selecting Excellence or Creating It". Alfred Radaer from the Austrian Institute for SME Research discussed the pros, but especially the cons, of instruments such as PART (Programme Assessment Rating Tool) which is used in the USA.

The transparencies used during the lectures are available as pdf files from the Austrian Council's website <http://www.rat-fte.at/view.mc?docid=158>.

Michaela Topolnik from the secretariat of the Austrian Council presided over the morning session, while Klaus Zinöcker from the Vienna Science and Technology Fund (WWTF) and director of the Platform Research & Technology Policy Evaluation chaired the afternoon session. The many delegates at the event engaged in keen debate. In Q1 2007 the Platform Research and Technology Evaluation published a special newsletter with a detailed account of the event. The Austrian Council and the Platform FTEval are now considering organising a regular event on evaluation. ■



It is the task of the Austrian Council to define paths for Austrian RTI policy. The Austrian Council's expertise is derived from its members' many years of experience in science, business and industry.

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Ludovit Garzik
Geschäftsführer
der Geschäftsstelle

Review and Outlook

Review

As the advisory body to the Austrian Government, the Austrian Council was particularly affected by the transition between the legislative periods in 2006 as its political interlocutors set external priorities firstly during the election campaign and then during the negotiations to form the coalition government. During this period, the Austrian Council, as always, represented continuity in Austria's research strategy. In this context, the Council's recommendation "the day after the election" is of pivotal importance as input for the formulation of the new Government Programme. The almost complete incorporation of the Austrian Council's recommendations in the Government Programme for the current legislative period creates an excellent basis for the future.

Outlook

... Strategy development in 2007. The swearing in of the new Government in early January 2007 marked the beginning of the new advisory period. The ministers, under-secretaries of state, and also the staff at the cabinet offices are generating fresh ideas, thus providing greater opportunities to forge ahead with the development of the Austrian innovation system and position it among the European and international front-runners in terms of both content and structure. ■

Mission and Goals

The mission and the basis for the Austrian Council's work remains Strategy 2010, the vision and areas of action which encompass the entire spectrum of the Austrian innovation system.

The further development of the strategic guidelines for a medium and long-term perspective will form a key element of the Council's work in 2007.

The other objectives for 2007 can be inferred from the input for the Government Programme (recommendation September 2006) which dealt in detail with human resources, structures and content. Together with the budgetary framework, these activities form a set of working objectives which will be operationalised in the form of sub-objectives at the forthcoming Austrian Council closed conference. The Government Programme for the legislative period 2007 to 2010 published in January 2007 expresses a clear commitment to the efficient implementation of the research strategy in Austria. In dialogue with the responsible members of the government, the Austrian Council will pass recommendations for the realisation of these plans. ■

Secretariat: New Faces in a New Setting

2006 was not only characterised by changed political conditions, staff at the secretariat also experienced changes in their working environment.

The restructuring of the secretariat team which had begun in spring 2005 following the resignation of Michael Binder, for many years the head of the secretariat, was continued in 2006. Simone Mesner followed Mr. Binder to the Austrian Research Promotion Agency (FFG). Following the end of his secondment to the Austrian Council Wolfgang Neurath returned to the Ministry for Economic Affairs and Labour (BMWA) and was then trans-

ferred to the Ministry for Science, Education and Culture (BMBWK) to take up a position as head of a department.

Mag. Bettina Ruttensteiner-Poller April 2006

Since the Austrian Council became a legal entity in September 2004 the volume of administrative work has increased significantly. The work load of Margarete Rohrhofer, who capably manages the accounts, has now been eased following the appointment of Bettina Ruttensteiner. Ms. Ruttensteiner's experience in the area of media and

the austrian council

public relations work, which in the past was carried out by one of the experts, will also provide additional positive benefits.

As a result, the flow of information from the Austrian Council to the general public has been considerably upgraded, a fact that is impressively reflected in the constructive media reporting of the Council's activities.

Mag. Constanze Stockhammer Nov. 2006
Constanze Stockhammer is the Austrian Council's new expert for economic activities. Her areas of responsibility include the key topics of co-operation between the federal government and the provinces and innovatives-oesterreich. Due to many years of experience as an economic researcher Ms. Stockhammer possesses a sound knowledge of the national and international technology programmes and of the relationships and modes of operation of the Austrian innovation system.

Dr. Silvo Korez Nov. 2006
Silvo Korez is responsible for the science sector. He possesses a detailed knowledge of the management of the basic research programmes run by the FWF. Prior to joining the Austrian Council secre-

tariat Mr. Korez had been responsible for international strategy at the FWF. His experience will flow into the recommendations concerning the science sector and in the form of sound proposals for researchers in Austria will have an extremely positive impact over the next few years.

The Office

As the five-year rental agreement for the offices in Vienna's Techgate centre was due to expire in May 2006, the Austrian Council sought suitable premises both in proximity to TechGate and in the first district of Vienna, directly comparing the costs and traffic connections. The option of moving into the new House of Research was rejected in summer 2005 in favour of the Austrian Science Fund (FWF).

Ultimately, the optimal adaptability of the building and its location tipped the balance in favour of Pestalozzigasse.

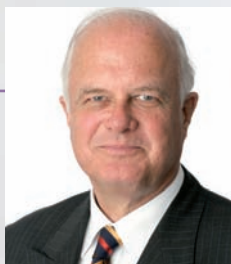
Special care was taken to ensure that the modification of the offices and the relocation were carried out in an economically efficient manner. The new Austrian Council offices in Pestalozzigasse 4, 1010 Vienna, were occupied on 1 August 2006 and inaugurated on 7 September. ■



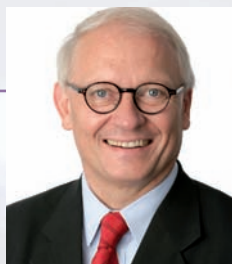
High-ranking guests from the political, scientific and business communities attended the opening party at the Austrian Council's new offices.



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DI Dr. Knut Consemüller
Chairman of the Austrian Council
Knut Consemüller was born in Dortmund, Germany, and studied ferrous metallurgy and economics. In 1991 he was appointed to the management board of the Böhler-Uddeholm group, with responsibility for R&D. From 1976 to 1984 he was a member of the German technology advisory board.



Univ.-Prof. Dr. Günther Bonn
Deputy Chairman of the Austrian Council – Günther Bonn studied chemistry at the University of Innsbruck. Following several research fellowships in the USA, including one at Yale University, he was appointed to a full professorship at the University of Linz. Since 1995 he has held the chair for Analytical Chemistry and Radiochemistry at the University of Innsbruck. Until 2003 Bonn was a member of the FWF where he worked as a department head. He is currently a member of the University Council at the Medical University of Innsbruck.



Univ.-Prof. Dr. Dervilla Donnelly
Dervilla Donnelly was born in Dublin, and studied chemistry at the University of Ireland. In the mid-1980s she was appointed professor of photochemistry. Donnelly was a member and vice president of the executive council of the European Science Foundation and the European Science and Technology Association (ESTA). She is also the chairperson of the Dublin Institute for Advanced Studies.



DI Dr. h.c. Albert Hochleitner
The former CEO of Siemens AG Austria studied physics at the Vienna University of Technology. In 1965 he joined Wiener Schwachstromwerke where he soon took over the software development department. In 1992 he was appointed to the management board of the group and became its chairman in 1994. Albert Hochleitner has served as an expert on the industry-related aspects of research and technology policy for several years now.

Constitution

The Austrian Council for Research and Technology Development became a legal entity under public law on 1 September 2004 following an amendment of the Research and Technology Funding Act. It consists of eight members with voting rights of whom four are appointed by the Minister of Education, Science and Culture and four by the Minister of Transport, Innovation and Technology. Four members of the Government serve on the Council in an advisory capacity. The members of the Council with voting rights are appointed for a five year term of office and may be reappointed for one further period.

Advisory Members in 2006:

Hubert Gorbach,
Vice Chancellor and Minister of Transport, Innovation and Technology

Elisabeth Gehr,
Minister of Education, Science and Culture

Dr. Martin Bartenstein,
Minister of Economic Affairs and Labour

Mag. Karl-Heinz Grasser,
Minister of Finance



DI Reinhard Petschacher
After studying communications engineering at the Vienna University of Technology Reinhard Petschacher worked on optical systems for Daimler-Benz in Ulm. In 1980 he moved to the Siemens centre for micro-electronic development in Villach and subsequently took over the management of telecommunications components development at the plants in Villach and Munich. Reinhard Petschacher is head of development at the Automotive, Industrial and Multimarket division of Infineon Technologies AG.



Mag. Hans Schönegger
Hans Schönegger studied business administration and business education at the University of Innsbruck. In 1995 he joined the Carinthian Economic Promotion Fund (KWF) as head of the funding department, and was appointed to the management board in 1998. Hans Schönegger has been managing director of Kärntner Betriebsansiedlungs- und BeteiligungsgmbH since 1998 and since 2002 has been responsible for the Lakeside Park project.



Prof. DI Jürgen Stockmar
After obtaining his degree in mechanical engineering Jürgen Stockmar (who was born in Germany) worked for Audi and then Steyr-Daimler-Puch, where he was appointed to the management board with responsibility for research and development in 1985. After serving on the management board of Audi AG, he returned to Steyr-Daimler-Puch as a member of the board in 1990. In 1998 he assumed responsibility for global development and technology activities at Magna. He also teaches at the Vienna University of Technology.



Dr. Gabriele Zuna-Kratky
In the late 1980s Gabriele Zuna-Kratky worked at the media department of the Ministry for Education and Art. In October 1997 she was appointed director of the Österreichische Phonotheek. On 1 January 2000 she became the first female director of a technical museum, the Technisches Museum in Vienna. She is also a member of the Council of the University of Applied Arts, a trustee of the Deutsches Museum Munich and of the Berlin Museum of Technology.

Advisory Members as of 2007:

Mag. Wilhelm Molterer,
Vice Chancellor and Minister of Finance

Werner Faymann,
Minister of Transport, Innovation and Technology

Dr. Johannes Hahn,
Minister of Science and Research

Dr. Martin Bartenstein,
Minister of Economic Affairs and Labour

Secretariat

The secretariat supports the Austrian Council both in terms of organisation and content, in particular with regard to preparing and organising the meetings of the Austrian Council and working groups, and in respect of communication both within the Council and at an external level. Day-to-day operations of the Austrian Council are financed by the Ministry for Transport, Innovation and Technology.

Members of staff in alphabetical order:



DI Dr. Ludovit Garzik, MBA
Head of the secretariat, responsible for the management and co-ordination of the secretariat's activities and external representation

l.garzik@rat-fte.at



Mag. Alexander Holik
Back-office and databases

a.holik@rat-fte.at



Mag. Dr. Silvo Korez
Basic and pre-competitive research, humanities, social and cultural sciences, biotechnology, international research co-operation

s.korez@rat-fte.at



Margarete Rohrhofer
Organisation and office management

m.rohrhofer@rat-fte.at



Mag. Bettina Ruttensteiner-Poller
Public relations work and back-office

b.ruttensteiner@rat-fte.at



Mag. Constanze Stockhammer
The Innovatives Österreich programme, start-up and growth financing, promotion of SMEs and innovation, co-operation between federal government and the provinces

c.stockhammer@rat-fte.at



DI Brigitte Tiefenthaler
Pre-competitive and industry-specific research, co-operation between science and industry, nano-technologies, information and communications technologies, research for sustainable development, promotion of women and gender mainstreaming



Mag. Michaela Topolnik, M.A.
Security research, indirect research funding, evaluation and new instruments of technology counselling, RTI in the European Structural Funds programmes, EU research and innovation policy, especially EU Framework Programmes for RTD, ERA-NET, monitoring

m.topolnik@rat-fte.at

In 2006 two extremely capable members of staff, **Mag. Simone Mesner** and **Mag. Wolfgang Neurath**, left the secretariat. We wish them both much success in their new positions.

In February 2007 **DI Brigitte Tiefenthaler** left the secretariat to move to Technopolis Austria. We wish her much success as she takes up new responsibilities. As of April 2007 **Dr. Johannes Gadner** will take over her duties.

plans

Portfolio Analysis:

The Austrian Council will focus upon the entire system of funding measures for research, technology and innovation and will put forward proposals to increase the effectiveness and efficiency of this portfolio.

Excellence:

The Austrian Council will presents its strategy for excellence and supervise its implementation.

Information and Communications Technologies:

The Austrian Council will focus on the question of a special research strategy for ICT.

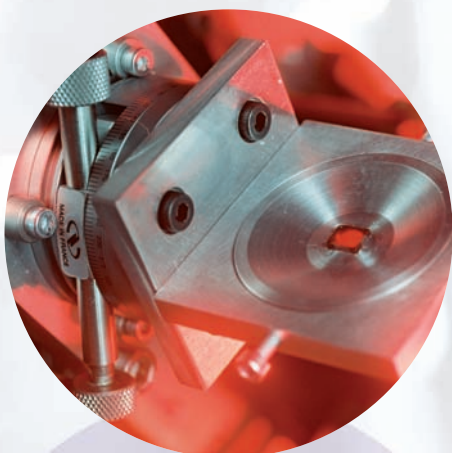
Risk Capital:

The Austrian Council will examine in detail the issue of venture capital in the context of the Austrian innovation system.

Reform of the Austrian Academy of Sciences (ÖAW):

The Austrian Council has been invited to support the reform process at the Academy of Sciences. Together with the ÖAW the Austrian Council will draw up and discuss proposals for change and progress.





“Innovatives Österreich III”

Long Night of Research:

The dialogue programme to inform a wider audience about the importance of science and research is to be extended until 2010. The Long Night of Research, in which large numbers of research institutes open their doors to young and old will remain a key fixture in this latest campaign.

Monitoring and

Evaluation play a key role in the further development of national innovation systems. The Platform Research and Technology Evaluation bundles experience and standards relating to evaluation and monitoring. A co-ordinated and comprehensive system should be established in co-operation with the ministries.



Human Resources:

The Austrian Council will devote greater attention to the important area of human resources.

Impact Analysis:

The Austrian Council will focus on methods to measure the impact of research and innovation policy instruments. The Council attaches great importance to the further development of such methods and their integration into the evaluation cycle of programmes, measures and institutions.

**Platform Research /
Technology / Innovation**

(RTI) Austria: Following the conception of the Platform RTI Austria, the Austrian Council will step up activities to promote co-operation between the federal government and provinces in research, technology and innovation policy.



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