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foreword



Never before has so much been invested in research and development in Austria as today. Spending on research and development has grown extremely dynamically since the middle of the 1990s. According to an estimate by Statistik Austria approximately EUR 5.8 billion were invested in R&D in 2005. In comparison to 1998 this represents an increase of 50 per cent, and a leap of 70 per cent since 1993.

A small economy which is highly integrated into the global economy is extremely dependent on innovation. In addition to research-intensive industry, Austria requires outstanding universities, innovative small and medium-sized enterprises, powerful start-up momentum and attractive conditions for research and development if it is to maintain the current dynamic pace of development. In the last 25 years, the number of scientific publications has tripled, and the productivity of scientific research in Austria is well above the OECD and EU averages. In recent years, the universities and Fachhochschulen have given great impetus to the entire educational system in Austria, making a significant contribution to enhancing Austria's attractiveness as a location for science and research. At the same time, the restructuring of the Austrian research landscape, especially the merger of the application-oriented research funding organisations to form the Austrian Research Promotion Agency (FFG), has ensured that research funding is awarded to companies with optimised procedures and shorter decision-making paths in a clear and transparent manner.

In the exchange between science and industry this provides impetus for structural improvement

and boosting economic competitiveness with the aim of creating new high-value jobs. Since 1999 the research quota has risen from 1.88 per cent to an estimated 2.35 per cent in 2005, putting Austria considerably ahead of the EU average and making it one of the few EU countries that are on target to achieve the goal of a three per cent research quota by 2010, as the European Commission confirmed in its Mid Term Report on the Lisbon Process.

In September 2005 the Austrian Council for Research and Technology Development started its second term of office. The Council's first term concluded with the presentation in August 2005 of the new position paper Strategy 2010 – Perspectives for Research, Technology and Innovation in Austria. With this Strategy, the Austrian Council has made an important contribution to intensifying debate about research, technology and innovation in Austria. Only by giving clear priority to this area can we ensure the international competitiveness of our science and industry, the creation of high-value jobs and the continued development of our culture in the long term.

We would like to thank the members of the Austrian Council for their commitment and the expertise which they make available to the government. The recommendations made by the Council and in Strategy 2010 form an important basis for the successful implementation of the Lisbon strategy in Austria. We will continue to need the Council's support for this. This proven collaboration will enable Austria to retain its place among the European front-runners in the field of research, technology and innovation. ■

A stylized blue ink signature of Hubert Gorbach.

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

A stylized blue ink signature of Elisabeth Gehrler.

Elisabeth Gehrler
Minister
of Education, Science
and Culture

A stylized blue ink signature of Dr. Martin Bartenstein.

Dr. Martin Bartenstein
Minister
of Economic Affairs
and Labour

A stylized blue ink signature of Mag. Karl-Heinz Grassner.

Mag. Karl-Heinz Grassner
Minister
of Finance

Success in research and technology development requires a culture which celebrates innovation, and the strategic use of financial resources. As the public sector invests large sums of money here, the use of these funds should be carefully co-ordinated and based on strategic considerations. In summer 2005 the Austrian Council for Research and Technology Development, which has advised the Austrian government on all issues of research, technology and innovation (RTI) since 2000, therefore presented a strategy for achieving a well-known goal – to position Austria among the EU front-runners in terms of research. Strategy 2010 – Perspectives for Research, Technology and Innovation in Austria builds upon the National Research and Innovation Plan (NRIP) published in December 2002 and contains guidelines for Austrian research, technology and innovation policy up to 2010 and beyond. On 1 December 2005 the Strategy was positively received by representatives of all political parties in the parliamentary Science Committee.

Never before has so much money been available for research in Austria. This is proven by a number of statistics: Within the framework of the Technology Offensive 2001 to 2006, the government provided an additional two billion euro for research, technology and innovation. This was made possible by two technology initiatives, the establishment of the National Foundation for Research and Technology Development and the expansion of indirect research funding. Since 2000 the public sector has increased its spending by no less than 7.6 per cent, industry by 8.6 per cent. In 2005 a total of almost EUR 6 billion was spent on research and development in Austria, and the government has promised a further billion as of 2007.

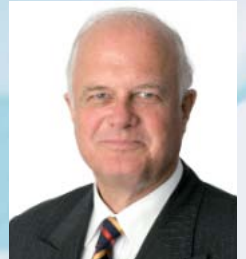
Countries which are willing to spend money can also point to a positive development in comparison with other European states: On the European Commission's European Innovation Scoreboard (EIS) 2005, which compares the innovation performance of 32 countries throughout the world, Austria has moved from 15th to 8th place in the overall rankings compared to the previous

year. In a comparison of the 25 EU member states, Austria has moved from 10th to 5th place, overtaking Norway, Ireland, the Netherlands, France and Belgium since last year. The front-runner is Sweden, followed by Finland and Denmark. Germany is slightly ahead of Austria in 4th place. Between 1995 and 2003 Austria therefore reported the strongest increase in per capita expenditure on research and development (+ 87 %) after Finland (+128 %). Countries such as South Korea (+52 %), Italy (+47 %), Germany (+43 %) or Great Britain (+27 %) lay way behind.

If this trend is to be maintained, action will have to be taken. Austria is among the wealthiest nations in the world. It must transform itself to an even greater degree from a technology adopter to a technology developer and thus attract more international corporate R&D departments than in the past. Of course, the existing headquarters of Austrian and foreign companies should be kept – which will only be possible with first-class training and research facilities which are geared to meeting their requirements.

At the same time, it is essential to exploit existing potential more effectively: through greater internationalisation, further improvements to university standards and co-operation between science and industry designed to increase corporate innovation capabilities.

The goal of establishing a firm position at the top of the European league tables for research by 2010 can of course only be achieved if the path starts with an analysis of the weaknesses of the Austrian innovation system. Pointers in this respect are provided by the European Innovation Scoreboard, an EU-wide comparative analysis based on 26 indicators. The most recent scoreboard from 2005 attests that Austria has clear strengths in terms of the innovation intensity of small and medium-sized enterprises, with scores well above the EU average. Weaknesses, however, are evident in the generation of knowledge, manifesting themselves in the lower than average numbers of science and engineering graduates. The lack of >



Knut Consemüller
Chairman
of the Austrian Council

editorial



Günther Bonn
Deputy Chairman
of the Austrian Council

venture capital for high-tech start-ups also represents a bottleneck in the innovation system. It is in these areas that the Austrian Council will concentrate its work. An important objective of the implementation of Strategy 2010 is to achieve secure long-term financing for all players in the national innovation system (NIS). Like university budgets, research also requires budget security. Basic research, but also programmes such as the Christian Doppler Research Association (CDG) or the competence centres (K_ind, K_net, Kplus) need long planning phases and therefore require long-term support. In addition to boosting R&D budgets and optimising the use of funds, it is also necessary to develop a strategy for excellence.

Excellency is becoming more and more important as a mark of quality for research groups, institutes and universities. It is the only way in which they can become potential partners for collaborative international research projects and increase their chances of receiving research funds. States and regions have a vital interest in high-quality research, because it shows their future potential. Europe and Austria therefore need to attract creative specialists and use them to become an

even more attractive location for research and industry. However, excellent players require excellent networks in order to research really successfully and trigger value creation processes in industry.

In the coming months, the Austrian Council will focus to a greater degree on portfolio issues. The concentration of funding agencies at the institutional level has created important prerequisites for the coordination of funding instruments. Portfolios need to be examined throughout the entire system in order to increase the efficiency of the instruments. Systematic portfolio management tailored to the strategic focus of Austrian research, technology and innovation policy (RTI) should be the goal.

We would like to thank all those who have supported our work over the last year and in particular those members of the Austrian Council who will no longer play an active role, Ingeborg Hochmair-Desoyer, Gottfried Brem and Hermann Kopetz.

We invite everybody to join forces with us to shape an innovative Austria which will achieve its ambitious goals in research and innovation. ■

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

**We would like
to thank
Gottfried Brem,
Ingeborg Hochmair-
Desoyer and
Hermann Kopetz,
who supported the
Austrian Council
with their expertise
until August 2005**



Facilitating excellence means offering perspectives for research. It is essential to create a financial and structural framework which provides intellectual and creative freedom for research and technology development. In Strategy 2010 the Austrian Council presented such perspectives for Austria which were discussed publicly in 2005.





When Strategy 2010 was presented

At the end of its first term of office the Austrian Council for Research and Technology Development published a new position paper for Austria which will form the basis for an RTI programme up to and beyond 2010. Under the title Strategy 2010 – Perspectives for Research, Technology and Innovation, the Austrian Council identified ten “strategic fields of action” and formulated specific recommendations for each. Strategy 2010 was presented by Minister Elisabeth Gehrler and Under-Secretary of State Eduard Mainoni at a press conference in Alpbach at the end of August 2005. This also signalled the start of a period of intense discussion on Austria’s future development path in the area of research, technology and innovation (RTI) policy. Above all, there was agreement regarding the background against which the debate was taking place. In recent years the country has made a huge leap forward in research and development (R&D): The considerable gap to the EU average has been closed and Austria has taken its place among the front runners, research funding has been expanded and at the same time reorganised.

On 1 December the Austrian Council was invited to present Strategy 2010 to the parliamentary Science Committee and to join a debate with other experts on the question “How can Austria join the top ranking R&D locations?” The topics of discussion were broad and showed just how comprehensively issues of research and technology policy can be dealt with in Austria. The concept of autonomy for universities and Fachhochschulen was discussed, which is proving successful in a new context. At the same time, however,

greater efforts to promote special and distinct profiles were also called for. A demand was made for more funds for university-based research, with excellence playing a central role as a criterion for the awarding of funds.

Those involved in the discussion process wanted universities to be understood as part of the further education system and called for greater emphasis to be given to the promotion of women. Several participants also underlined the importance of the humanities, social and cultural sciences, advocating greater funding for these disciplines. A debate also ensued about whether projects run by the arts universities should receive grants from the Austrian Science Fund (FWF).

Industrial research was obviously a topic of discussion with the Science Committee considering how small and medium-sized enterprises can be motivated to carry out more research, whether research automatically leads to more jobs and what should be the future of the Headquarter Strategy. Finally, there was a call for a stronger focus on ethics in science.

The Minister of Education Elisabeth Gehrler declared that implementing the Strategy was the responsibility of the political sector. She emphasised the three per cent target (Barcelona target) and the government’s intention to provide the necessary funding. Under-Secretary Eduard Mainoni expressed a commitment to promoting security research and utilising the advantages enjoyed by a neutral state in this area. He said the research billion had been a signal and that he expected further budget increases. ■

The Content of Strategy 2010

Investments in research and development (R&D) should be maintained at the steep rate of growth seen in previous years. At the same time, it is necessary to improve the quality and efficiency of the Austrian innovation system substantially, thus increasing the return on investment in R&D.

The new strategic orientation can be summarised in three basic principles:

- Promote quality on a broad level and excellence at the top.
- Strengthen networking and co-operation between science and industry
- Improve the efficiency and effectiveness of the promotion system.

Goals and Fields of Action

In keeping with this strategic orientation the Austrian Council has identified ten strategic fields of action and formulated specific recommendations for each:

1. At the universities it is essential to create and guarantee the future conditions that enable research and teaching to meet the highest standards of international excellence.

The Austrian Council therefore recommends:

- increasing funding for the university research infrastructure programme
- increasing the FWF budget by some nine per cent per year
- promoting special and distinct profiles at universities that will lead to a concentration of degree programmes

2. Strengthening the innovative ability of business enterprises is crucial for actively shaping the structural change that is taking place in the wake of globalisation and is consequently a central objective of RTI policy.

The Austrian Council therefore recommends:

- optimising the system of indirect research promotion
- increasing the FFG budget by some nine per cent per year
- optimising the instruments for strengthening start-up dynamics and expanding the Headquarter Strategy

3. Collaboration between players from science and industry in the co-operative sector is essential to ensure the efficiency of the innovation system and must be stepped up.

The Austrian Council therefore recommends:

- consistently continuing the growth strategy for the co-operative sector
- rapidly implementing and providing appropriate funding to the programme designed to further develop the competence centres
- merging the BRIDGE programmes at the interface of basic and applied research started by the FWF and FFG and increasing the funding for these programmes.

4. The development of a strategy of excellence accompanied by a campaign to improve quality at all levels of the innovation system should guarantee Austria's advance to a position as an international front-runner.

The Austrian Council therefore recommends:

- implementing the concept for a university of excellence under the title "Austrian Institute of Advanced Science and Technology" (AIST)
- developing a concept encompassing all sectors of performance
- developing a comprehensive strategy for excellence
- measures to facilitate the emergence of further centres of excellence in all sectors of performance

5. The development of the European Research Area requires that national RTI policy have an **international focus** and that clear participation strategies be developed.

The Austrian Council therefore recommends:

- the development of a national strategy for participation in the programme lines ERA-NET, ERA-NET plus and Art. 169 programmes within the scope of the 7th Research Framework Programme
- increased participation in existing research structures in Europe



perspectives



6. The **regional dimension** plays an important role in the innovation system, making the efficient co-ordination of regional and national R&D activities a priority.

The Austrian Council therefore recommends:

- establishing a co-operation platform to harmonise federal and provincial activities
- increasingly positioning the Fachhochschulen as regional crystallisation points for research networks
- bundling federal technology transfer programmes

7. Safeguarding **human resources** for R&D requires an increase in the percentage of women in research, first-class university education as well as measures to foster mobility.

The Austrian Council therefore recommends:

- the implementation of gender mainstreaming (GM) in all areas of RTI policy and the continuation of the fForte initiative to promote women in research and technology
- the development of an Austrian strategy to promote lifelong learning
- the reorganisation of grant programmes

8. The **state** must act strategically in its diverse roles as a promoter, customer, regulator and administrative manager in order to increase the dynamism of innovation processes.

The Austrian Council therefore recommends:

- the nationwide expansion of e-government services
- the reinforcement of research themes with double dividends such as the FORNE strategy for sustainability research or the programme on security research

9. Following institutional reforms the promotion system now requires efficient management of the **funding portfolio** at the programme level with monitoring and evaluation instruments.

The Austrian Council therefore recommends:

- concentrating the RTI competences of the federal government at two ministries
- outsourcing programmes to the funding agencies that in the past have been handled by the ministries
- drawing up an integrated overall concept for the portfolio of RTI funding programmes
- an obligatory evaluation for all programmes with a term of more than five years or a volume of at least one million euros

10. After the gratifying development in recent years, **spending** on R&D must still be increased steadily and focused on strategic objectives.

The Austrian Council therefore recommends:

- an increase in public funding for R&D by seven to nine per cent annually
- the largest increase in R&D expenditure in the co-operative sector (an increase of some 80 per cent by 2010), a 70 per cent increase for the business sector and an approximately 40 per cent increase for the university sector
- a clear structural logic commensurate with the use of the individual sources of financing (financing of basic programmes and open-ended expenditure from the ordinary budgets, National Foundation for RTD funding for new programmes and initiatives with a long term focus, Action Programme funding for impulse programmes of a temporary nature)

Who provided Feedback on Strategy 2010

Predominantly positive feedback came from the ministries responsible for research, technology and innovation (RTI), the research and innovation funding agencies, research bodies and associations. This feedback represents a valuable contribution to the further development of Strategy 2010 and thus to the creation of the prerequisites for greater quality in research.

Feedback to Strategy 2010 was provided by:

- Ministry for Education, Science and Culture
- Ministry of Finance
- Ministry for Transport, Innovation and Technology
- Ministry for Economic Affairs and Labour
- Austria Wirtschaftsservice GesmbH
- Austrian Science Fund
- Austrian Research Promotion Agency
- Christian Doppler Research Association
- Austrian Rectors' Conference
- Federation of Austrian Industry

What was covered by the Feedback on Strategy 2010

The general tenor of the feedback was that the Strategy represents a solid basis for the development of an implementation plan for the period up to 2010 and beyond. A greater obligation to promote research was also regarded as highly desirable. Particular attention should also be given to contributing to the further cultural development of Austrian society and freedom of research.

There was a consensus that research was developing admirably, both in terms of input and output. The corporate and public sectors have progressed dynamically and have become the main sources of rising expenditure on R&D. The feedback attested that in an international comparison Austria has a well developed funding system which supports a high percentage of SMEs.

The broad basis of innovative SMEs was viewed as a particular strength of the Austrian innovation system. The expansion of the R&D basis in Austria was also rated positively. The number of companies conducting and willing to start research and development has steadily increased in recent years, with the strongest growth in the service sector.

In the last 25 years the number of scientific publications in Austria has tripled. The productivity of scientific research in this country is also now considerably higher than the OECD and EU average. These findings mean that Austria now has the opportunity to catch up with the European top performers in RTI. In order to achieve this goal, strategic considerations of the kind set out by the Austrian Council in Strategy 2010 are needed.

The ministries and institutions called for greater weight to be given to the humanities, social and cultural sciences. There was also a consensus that Strategy 2010 should include statements regarding research and ethics. Both these demands had previously also been voiced in the Science Committee. Finally, the paper should include more detailed views on the need to achieve a more dynamic industrial structure through business start-ups in the technology sector.



perspectives



The Feedback in Detail

Field of Action Universities

The recommendations regarding universities were welcomed, as they play an important role in the R&D system. In addition to carrying out basic research, the Universities Act 2002 (UOG) has enabled them to build strong bridges to industry and non-university research. The recommended increase in funding on a competitive basis was welcomed. Research at Fachhochschulen should, of course, develop at a considerably more dynamic pace over the next five years than in the recent past, although optimal concepts still need to be found for this. The feedback called for a vigorous debate regarding the distribution of funds in the tertiary education sector, as the sources of financing have changed dramatically in recent years. The nine per cent rise in the budget of the Austrian Science Fund (FWF) called for by

the Austrian Council was welcomed. In addition, a recommendation was made to top up the FWF budget with an additional EUR 30 million.

Field of Action Business Enterprises

The biggest challenge will be to ensure that the annual budget of the FFG rises by the desired nine per cent in subsequent years. The feedback statements said that the increase in funding should be accompanied by an optimisation and restructuring of the financing instruments. The ministries and funding agencies called both for stronger support for start-up dynamics and the further development of the Headquarter Strategy. The programme behind it would have a positive impact on Austria as a research and business location; one would merely have to pursue the strategic considerations.

On the European Commission's European Innovation Scoreboard (EIS) 2005, which compares the innovation performance of 32 countries throughout the world, Austria has moved from 15th to 8th place in the overall rankings compared to the previous year. In a comparison of the 25 EU member states, Austria has moved from 10th to 5th place since last year.

Innovation Systems in Comparison (EIS 2005)



Source: European Innovation Scoreboard 2005

Field of Action Co-operative Sector

The definition of terms should be re-examined. The composition of this sector needs to be reconsidered, as the OECD Frascati Manual has laid down the following international definitions for performance sectors: Business Enterprise, Government, Private/Non-Profit and Higher Education. In addition, financing security for the new FFG competence centres programme (K-neu) was demanded.

Field of Action Strategy for Excellence

The development of the strategy for excellence was viewed extremely positively – it was important by virtue of the inclusion of excellent university-based research groups, the concept which will be drawn up for the FWF excellence clusters, and the FFG's concept for the competence centres of a new type (K-neu). However, existing excellence at the universities should under no circumstances be disregarded and emphasis should be given to existing strengths.

Field of Action International Orientation of R&D

The feedback received from the ministries, research organisations and associations of course referred to the international findings contained in Strategy 2010. The catalogue of demands included: measurement of results of international activities, evaluation of the instruments and programmes used, increasing international interest in Austria as a research location (Headquarter Strategy). Strong national funding should be the prerequisite for participation in international projects. A demand was also made for quality monitoring. Moreover, the importance of the European EUREKA programme, which in Austria is co-ordinated by the FFG, was emphasised.

Field of Action Regional Dimension

The suggestions made by the Austrian Council for this field of action were welcomed. However, it was felt that co-operation between federal government and the provinces should also be directed to key thematic areas. Positive reference was made to the platform for co-operation be-

tween the federal and provincial levels which has already been established.

Field of Action Human Resources

Safeguarding human resources is one of the key points of Strategy 2010. The feedback drew particular attention to the importance of gender mainstreaming and programmes such as WissenschaftlerInnen in die Wirtschaft. Measures to create awareness as part of the dialogue programme Innovatives Österreich should receive continued support.

Field of Action the State as a Driving Force

The research results produced by Austrian participants in EU projects should be included in the deliberations on this area. The proposals put forward concerned innovative traffic systems and information technologies. In terms of innovation in administration, greater emphasis than in the past should be placed on the public procurement system.

Field of Action Funding Portfolio

The ministries did not want to completely outsource the management of funding programmes to agencies, as had been envisaged, explaining that "Pilot programmes or programmes of a special social dimension remain an integral component of the strategic work of the ministries". However, the funding portfolio should be optimised and given an even clearer structure. At any rate, medium-term planning certainty was important for funding recipients in order to safeguard the output of their R&D work.

Field of Action Spending

The ministries unanimously called for more funding. They felt that a discussion on the rates of the increase for university research was imperative. If the three per cent goal was to be achieved it was essential to increase the public sector budget. Funds from the National Foundation for RTD should not only be used for new programmes, as this could trigger undesirable competition in the creation of new programmes. It was also important to improve co-ordination >



perspectives



between non-theme-specific bottom-up funding and indirect funding and thus increase the accuracy and leverage effect of the entire range of funding instruments. The funding agencies wanted to see improved logic in the interplay of instruments. Greater efficiency and comprehensive monitoring were also called for in order to verify what was achieved by the use of the funds within the framework of research promotion.

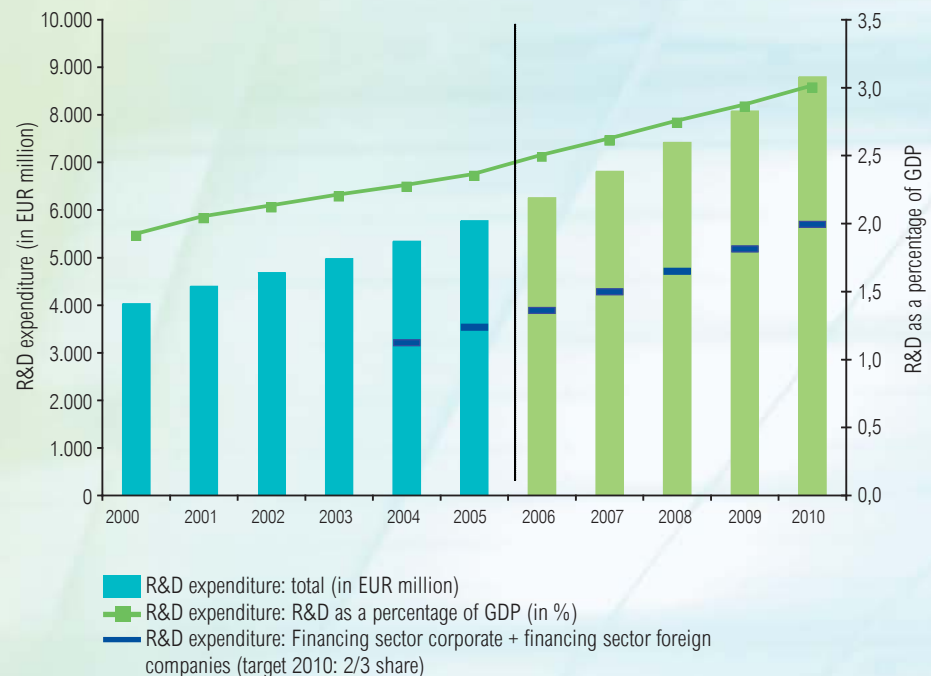
By initiating this process, the Austrian Council has made its contribution to intensifying debate about research, technology and innovation. In turn, the comprehensive feedback provides a

starting point for the implementation of the recommendations contained in Strategy 2010. The paper thus forms a basis supported by all institutions upon which the positive further development of research and technology in recent years can be continued and one which can be used to maintain the leading position Austria has achieved in Europe in terms of research promotion.

The Austrian Council would like to thank all its partners for their feedback and for the support they give to its work, and hopes that the objectives which emerged from the process will be achieved. ■

Trend scenario
for R&D
expenditure
in Austria
up to 2010

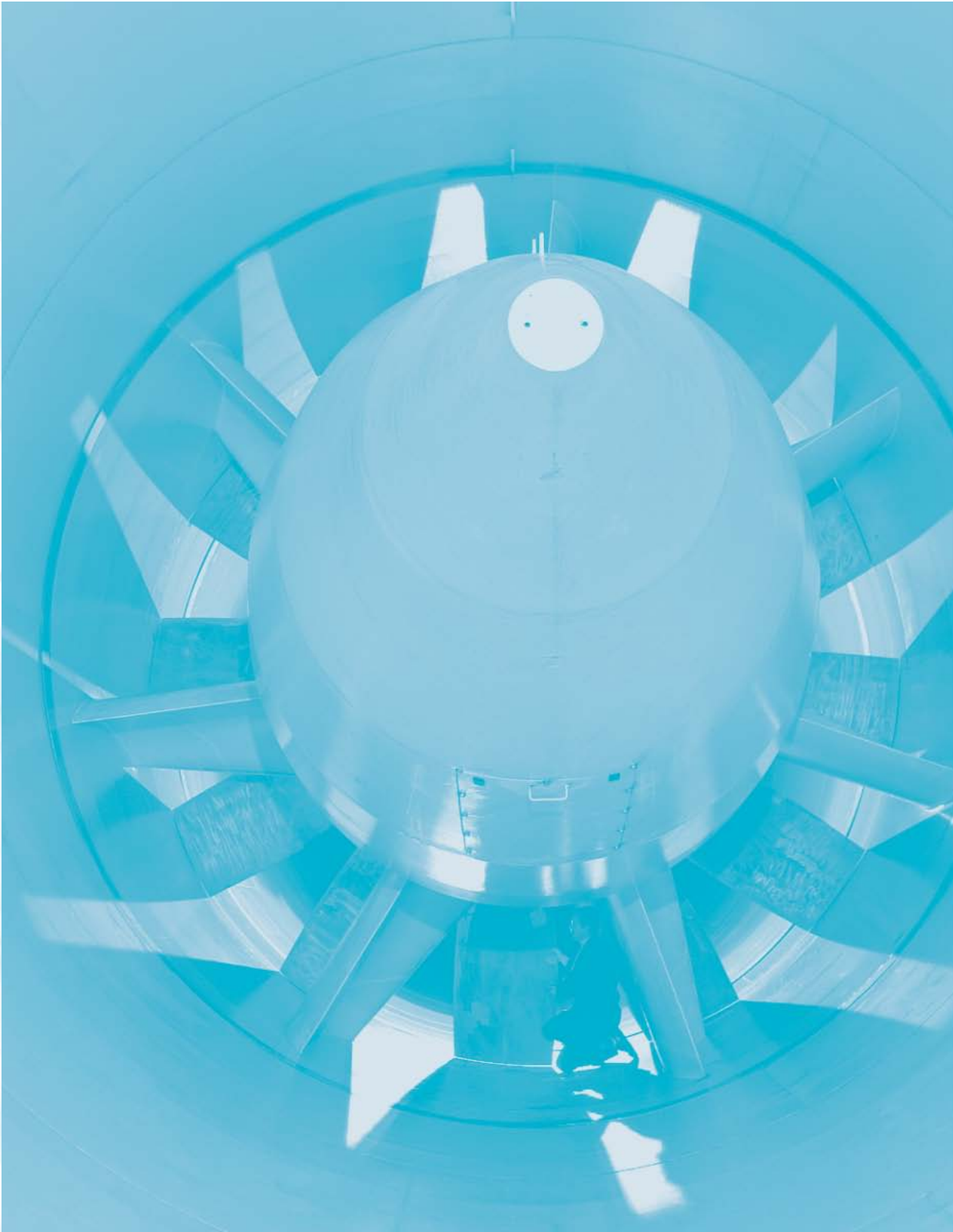
The Path to the Three Per Cent Target



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

recommendations

The Austrian Council for Research and Technology Development is the advisory body to the Austrian government on central questions of research and technology policy. On the basis of studies, evaluations and specific expertise, it makes recommendations concerning the use of funds and structural reform with the aim of enabling even greater quality.



recommendations



Recommendations 2005

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 (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.

The Austrian Council prepares these recommendations in close dialogue with the key players in the Austrian innovation system. Experts from politics, public administration, the funding agencies and from science and industry participate in this 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. Excerpts from the recommendations follow below:

In 2005 the Austrian Council made Recommendations regarding the following Themes:

18 January 2005

- Recommendation regarding the use of funds from Action Programme II and the National Foundation in 2006
- Recommendation concerning the reform of federal grants

22 February 2005

- Recommendation regarding gender mainstreaming in research, technology and innovation promotion
- Recommendation regarding Austria's accession to the European Southern Observatory and Austria's membership of research-related international institutions

12 April 2005

- Recommendation concerning the evaluation and monitoring of RTI programmes.

20 May 2005

- Recommendation of a strategy for the develop-

ment of life sciences in Austria (Note: This strategy is based on the concept recommended on 22 February 2005 and was completed at the meeting of the Austrian Council on 8 July 2005)

8 July 2005

- Recommendation of a strategy for the development of life sciences in Austria
- Recommendation concerning start-up and growth financing

18 November 2005

- Recommendation regarding the use of funds from Action Programme II and the National Foundation in 2006, part 2

Recommendation regarding the Reform of Federal Grants – 18 January

The Austrian Council has established a working group for grant reform with a mandate to examine the federal grant programmes and draw up proposals for structural and content-related reforms.

The grant landscape in Austria is characterised by great potential, but also by a high degree of complexity and therefore requires optimisation. Together, the BMBWK, BMVIT and BMWA spend just under EUR 30 million on the 50 federal grant programmes. This dynamic development has its flaws. On the one hand, there are structural weaknesses (at least 18 institutions are involved in management and implementation, moreover, there is no central contact office for applicants), on the other, there is also duplication and overlapping in terms of content.

The Austrian Council therefore recommends:

- Setting up a one-stop-shop for applicants
- Abolishing the smallest programmes and creating critical masses by bundling programmes
- Co-ordinating and eliminating overlaps between programmes
- Concentrating programme management at three institutions and consequently reducing administrative costs

recommendations

- Transparent and standardised criteria for awarding funds
- In order to increase transparency the survey of 50 grant programmes will be published.

Recommendation regarding Gender Mainstreaming – 22 February

The promotion of women in research and technology development and gender mainstreaming (GM) are complementary strategies which the Austrian Council believes can help achieve equal opportunities for women and men. As part of the efforts to promote women, the Austrian Council created the inter-ministerial initiative fFORTE and has recommended that it receive funds from the Action Programmes (for details see: www.ratfte.at). Although there is a legal obligation to implement gender mainstreaming, application in practical terms is sometimes sluggish.

On 15 December 2003, the Council for Research and Technology Development therefore recommended the establishment of an inter-ministerial working group on gender mainstreaming within the framework of RTD promotion. This working group should draw up proposals for measures to ensure the gender equality of RTD promotion measures. This should ensure the optimal use of existing knowledge and the creation and development of joint quality standards. Representatives from the BMBWK, BMWA und BMVIT and the secretariat of the Austrian Council participated in the group.

The inter-ministerial working group noted that the ministries had already established a good basis with their previous gender mainstreaming activities. Building upon this experience, the working group compiled an expandable collection of suitable documents. This contained guidelines and instructions on the basis of which programme managers at the ministries and funding agencies can design their promotion measures so that they conform to the requirements of the gender mainstreaming recommendation. There are currently instructions regarding the gender equal use of

language and gender equal organisation of events, but above all, detailed explanations of how gender can be included in the content and structure of the programmes even at the planning stage.

This collection can be expanded and also easily adapted to meet future requirements; it is still overseen by the inter-ministerial working group. At its meeting on 22 February the Austrian Council approved the catalogue and recommended the implementation of the proposed approach.

Recommendation regarding the European Southern Observatory (ESO)

– 22 February

International research-related organisations form important nodes in the European research network. They are drivers of the national and European science scene, can trigger catching-up processes in national and European industries and economies, and make an important contribution to the further development of the European Research Area. Membership of these organisations is therefore all the more important for small countries such as Austria, as they are not able to achieve the necessary critical masses alone or provide the necessary infrastructures.

In order to be able to carry out world-class research in the field of observation-supported astronomy and astrophysics in Austria in the future and, given the other positive effects of accession to ESO referred to above, it is necessary to take a number of steps.

The Austrian Council therefore recommends:

- starting negotiations with ESO about Austrian membership at the earliest possible date
- however, in the view of the Austrian Council a substantial reduction in the joining fee, (currently EUR 16.4 million), is an important precondition for membership. A substantial share of the joining fee should definitely be made in the form of non-cash and/or personnel contributions.
- The question of the joining fee should also be clarified in advance at the civil servant level, >



recommendations



whereby the arrangements for the planned accession of the Irish Republic should be used as a guide.

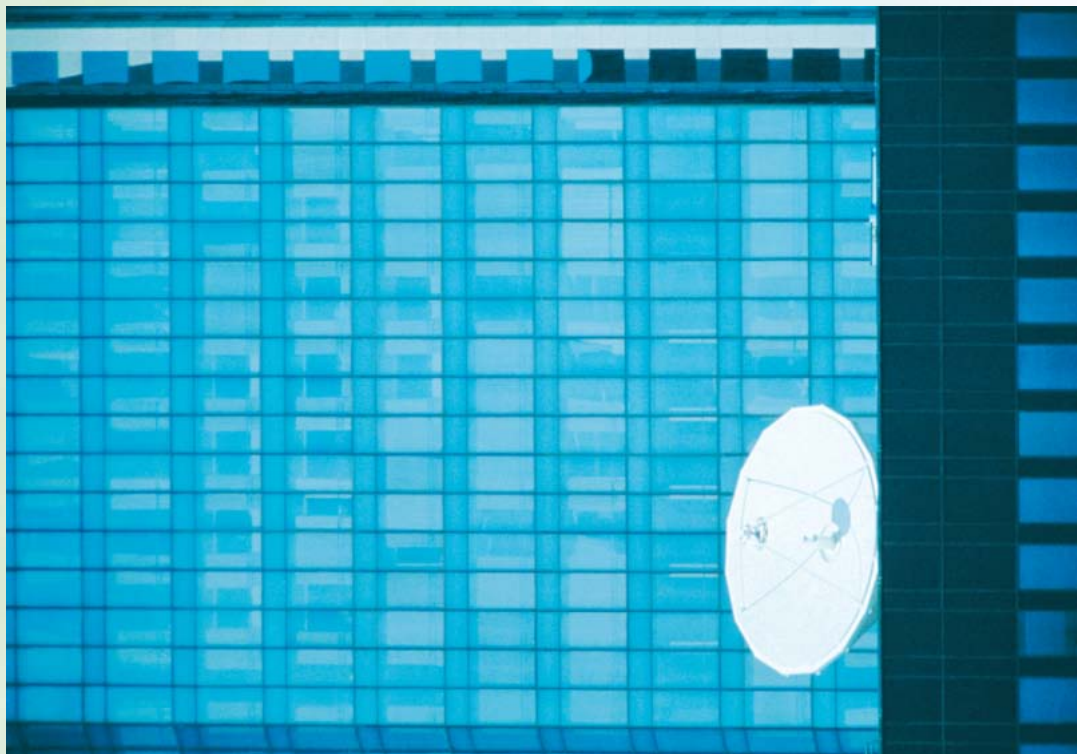
■ A decision in favour of Austrian ESO membership should be contingent upon the development of a structural concept for astronomy and astrophysics in Austria, in order to ensure that the best possible use is made of the international infrastructure. In accordance with its recommendation of April 2003 (establishment of key research areas at Austrian universities) the Austrian Council proposes that the Science Council examine the current distribution of astronomy and astrophysics at three locations with regard to whether the status quo is suitable for optimally exploiting the opportunities presented by ESO membership.

■ A monitoring process should be set up at the outset with the goal of evaluating membership after five years; the regular collection of data

increases the opportunities for taking timely research policy steering measures. Other participation models, such as a co-operative membership with countries such as Hungary and the Czech Republic (as in the Institut Max von Laue-Paul Langevin ILL) or participation as a scientific partner (as in the European Synchrotron Radiation Facility ESRF) should be included in the negotiating scenarios.

Recommendation regarding the Establishment of a more professional Culture of Evaluation in Austria – 12 April

In 2005 the Austrian Council became a member of the Platform Research and Technology Policy Evaluation (Fteval). Since it was founded in 1996 as an informal co-operation, the objective of the Platform Research and Technology Policy Evalu-



recommendations

ation has been to present methods of and approaches to evaluation, discuss the current evaluation practice on an international level and thus contribute to the development of a culture of evaluation in Austria. The mission of the Platform Research and Technology Policy Evaluation is to encourage more, better and more transparent evaluations for optimal strategic planning of RTD-policy in Austria and to develop a culture of evaluation together with decision-makers in the field of Austrian technology and research policy. This recommendation should support the Platform in its work and in the achievement of its goals.

The Austrian Council therefore recommends:

■ In order to foster quality and assure quality control throughout the entire RTI sector, programmes, projects and organisations must be systematically evaluated. The evaluation must be designed so that the RTI policy learning processes can be systematically planned and adequately funded. Increasing use should be made not only of ex post, but also of ex ante and accompanying evaluations so that future developments can be anticipated, and better risk and opportunity analyses developed. The legal requirements relating to the obligation to publish administrative documents must be observed in connection with the evaluations.

■ In order to lend weight to the implementation of the evaluation results, the commissioning organisations must set up regular implementation workshops. These workshops will regularly verify the extent to which the recommendations of the evaluation have been complied with and whether corresponding improvements have been made.

■ Parallel to the evaluations, international benchmark standards will also be obtained.

■ All programmes lasting more than five years (or with a volume of at least EUR 1,000,000 p.a.) should be subject to appropriate evaluation by experts. Smaller and shorter programmes should be subject to an ex-post evaluation and a short ex-ante expert assessment by an external expert. In addition to this – depending on the size, structure and life of a programme – practical accompanying structures must be established which permit

a continuous learning process: These could include workshops and platforms with the project leaders, accompanying expert groups, exchanges with similar programmes abroad or various forms of parallel research.

■ In addition to the evaluation of individual programmes, the Austrian Council recommends regular system evaluations, in particular with regard to the financing and recommendation level; e.g. the Action Programmes or the National Foundation for Research, Technology and Development, and the related Austrian Council recommendations.

■ Institutions should develop binding structures for self-evaluation; the structures will be evaluated by external assessors. At regular intervals (every 4 to 6 years) an evaluation by external experts should take place (at least some of whom should be brought in from abroad). The institutions may formulate a statement regarding the evaluation criteria (“Terms of Reference”). Projects should be subject to ex-ante evaluations and, in the case of larger-scale projects, to interim and ex-post evaluations by the funding agency which handles them. Depending on the content of the project, external experts or specialist assessors should also be consulted. The evaluation criteria used here must be closely related to the objectives of the programme, must be defined in advance and be publicly accessible. The evaluation times should be chosen so that the results of the evaluation can be used meaningfully by those carrying out the project (the evaluated party) and by the programme management.

In addition, the Austrian Council also recommends the establishment of an Austrian monitoring system:

■ The collection of the data should require minimum effort and expense

■ The data should always present gender-specific features

■ The obtaining of information should be integrated in the reporting system.

■ The data should be collected, documented and processed at the lowest possible aggregation level.



recommendations



- Multiple collections of situation-related data should be avoided
- Monitoring systems must not become an expensive end in themselves (“utility function”)
- A complete overview should be given of the information needs of the stakeholders.

Recommendation of a Strategy for the Development of Life Sciences in Austria – 8 July 2005

Austria has focused attention on the development of the life sciences for many years. For a long time these sciences have been regarded as one of the most promising frontier technologies – and today a number of companies have even gained an international reputation in this field. However, the market still appears to be far from saturated. Scientists also continue to harbour strong hopes of achieving further successes with the life sciences.

The Austrian Council therefore recommends:

- Political leadership, raising awareness and communication: A clear political commitment and the creation of a general framework conducive to the long-term positive development of the life sciences in Austria are required. The “life sciences also need to be embedded in popular consciousness as an opportunity for Austria”.
- The development of Austria as a **single** life sciences region. Attracting companies and academic institutions to one location generates powerful synergy effects in terms of the exchange of knowledge and technologies. Efforts should therefore be stepped up to attract university institutes, non-university research facilities, competence centres and companies to a shared location.
- Internationalisation – Research Co-operation: This refers to the systematic utilisation by Austrian organisations at all levels of the opportunities offered by European research and technology programmes. Furthermore, the mobility of scientists should be used as an instrument to foster the international networking of expertise and transfer of technology.

■ Promotion of scientific research and excellence. Scientific excellence forms the basis for innovation and its successful commercial implementation. It is therefore essential to improve long-term support for basic research in all areas of the life sciences at universities and at non-university research institutes.

■ Education and the promotion of young scientists: The aim is to increase the number of highly qualified science graduates and in doing so to increase the attractiveness of degree courses in the natural sciences. This is aimed at ensuring a high number of appropriately qualified workers for the biotechnology industry.

■ The establishment of decentralised technology transfer centres at universities and the development of licensing and marketing structures: There is a lack of knowledge about intellectual property rights at universities. This knowledge should be built up. Furthermore, incentives should be created for inventors, and marketing and licensing structures improved, as this will impact positively on the climate of innovation at universities and Fachhochschulen.

■ Strengthening of non-university research: Non-university research can be strengthened by setting up research centres based on the model of the Max Planck institutes and the Helmholtz Association etc. (new types of centres of excellence). The restructuring of the Ludwig Boltzmann Research Association can generate considerable impetus for the life sciences landscape in Austria through clearer structures and more efficient dimensions.

■ Co-ordination of the funding agencies and instruments: The establishment of the funding bank Austria Wirtschaftsservice (AWS) and the Austrian Research Promotion Agency (FFG) have created good prerequisites for optimising funding structures at the programme level by eliminating overlapping. This discussion will also have to be conducted in the life sciences.

■ Start-up and founder funding, seed financing and growth financing: The aim here is to establish spin-offs with long-term viability, generate high-calibre jobs and, in the process, establish Austria as an internationally recognised centre of life sciences.

recommendations

■ Fiscal aspects: Inter alia, the research tax allowance should be extended to cover contract research, while the fiscal treatment of stock option programmes should be modified.

■ Improvement and expansion of infrastructure: A lack of affordable bio-technology-specific infrastructure (in the immediate vicinity of research facilities) – restricts the further development of local life sciences clusters. In order to avoid a situation in which potential entrepreneurs are forced to move to other locations and established start-ups develop relocation plans in the expansion phase, it is essential to develop and provide appropriate infrastructure (if necessary by using public-private-partnership models).

Recommendation Regarding Start-up and Growth Financing – 8 July 2005

The shortage of risk capital for high-tech start-ups represents a bottleneck in the innovation system. Despite increased investments Austria nevertheless still has some catching up to do in this regard. By European comparison, the level of activity of the Austrian risk capital market measured in terms of investment volume as a percentage of GDP (2003: 0.051 %) is way below average, languishing in the bottom third of the tables. Similarly, there are weaknesses in the start-up momentum, above all in the high-tech segments.

Against the background of these findings, there are four strategic paths of development.

The Austrian Council therefore recommends:

■ Securing fundamental basic schemes for the pre-start-up, start-up and early stage phases (incubators and business angel networks, monetary promotion schemes, coaching measures) and improving these services on location. There is an immediate need for action with regard to the financing of the AplusB Centres. The funding gap anticipated here for the years 2007 to 2012 should be closed using public funds so that the development work which has already been carried out and the momentum which has been generated are not threatened.

■ Adapting programme management within the framework of the current requirements of budgetary law. The Austrian Council suggests consistently outsourcing programme management to the funding agencies. After a detailed ex-ante audit, weighing up the risks and in co-operation with other creditors they will manage the programmes autonomously and also deal with instances of damage in accordance with the programme goals. Furthermore, the Council also recommends expanding the guarantee instruments for growing companies, taking into account the new scope for action that will soon emerge during the reorganisation of the European Union Structural Funds.

■ Steadily improving the interaction of support measures (portfolio approach) on the basis of an evaluation of the system. The aims are to improve the programme interfaces and eliminate administrative barriers. Interaction between the players at the federal and provincial levels should also be improved to this effect.

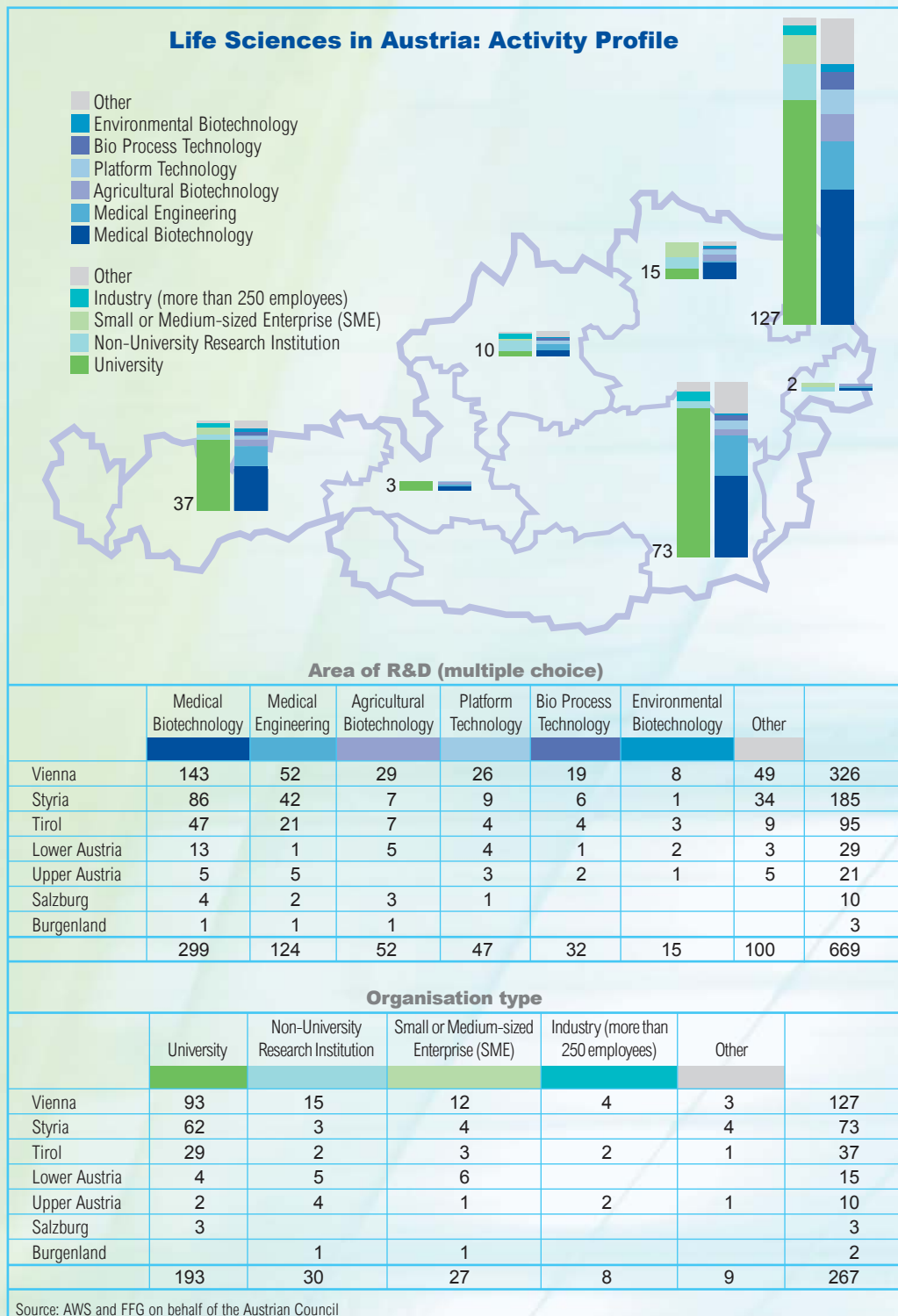
■ The rapid introduction of internationally attractive private equity/venture capital fund structures (PE/VC), the legal and fiscal provisions of which are geared to the needs of participations. In particular, institutional investors, such as insurance companies and pension funds must be guaranteed access to these new PE/VC funds. For this purpose it is necessary to amend the relevant investment regulations (Insurance Supervision Act – VAG, Pension Funds Act – PKG, Company Pension Funds Act BMVG etc.). ■



recommendations



Participation in the survey of the Austrian Council by city, R+D area and type of organisation





It is not just universities and Fachhochschulen that create knowledge, companies do too. On the basis of detailed studies and analyses, efforts have recently been boosted to promote co-operation between science and industry. The aim is to stimulate further positive economic development.



Update: What has been accomplished

1) Excellence, a Question of Gender Report on a Working Group at the Technology Forum Alpbach 2005

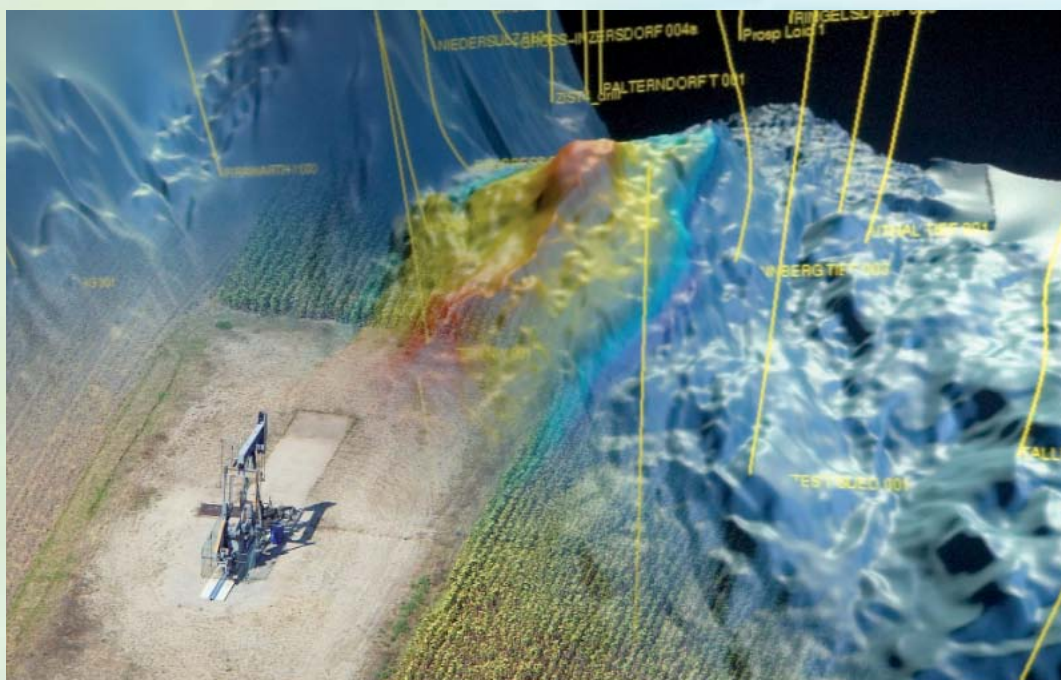
Women are still underrepresented in research. The reasons for this situation are complex and diverse: women still tend to choose “typically female” professions. Furthermore, they receive inadequate support during education and their professional careers. Finally, in many institutions women still find themselves confronted with discriminatory structures. Scientific studies have shown that certain selection processes and evaluation procedures evaluate the performance of women and men differently. Of course, the situation is not the same everywhere and differs significantly according to subjects, institutions and hierarchy level.

This was the starting point for the inter-ministerial working group fFORTE (www.fforte.at) to

organise a workshop at the Technology Forum Alpbach 2005 which was co-ordinated by the secretariat of the Austrian Council for Research and Technology Development. This discussion forum entitled Excellency - a Question of Gender, examined the concepts of scientific quality and excellence against the background of social attributions and demands. The forum analysed evaluation methods, career patterns and stereotypes. First of all, the conventional methods and criteria for measuring and evaluating success were analysed. Numerous empirical findings indicate that these are not gender neutral and indeed discriminate against certain forms of research, especially inter- and trans-disciplinary research. In the next stage, potential approaches for solving this problem were presented. The key question was which circumstances offer equal opportunities for women and men to achieve scientific excellence and to reach top positions?

Photography
Competition
Innovative Motive

The best photograph in the open
category:
Martin Artner with
his montage of the
work of OMV's
Exploration &
Production division



Finally, on this basis, specific possible courses of action for the Austrian innovation system were discussed.

At the end of 2005 the fFORTE working group together with the speakers and panel members from the workshop published an edition of the fteval Platform's newsletter on Gender and Excellence.

2) Security Research

Austrian activities for a current European research theme

One does not immediately have to think about terrorist attacks, air disasters or tunnel fires: even without such horror scenarios, the issue of security has long since become an issue which concerns society as a whole and one which poses new challenges to research and technology development. Over the next few years, the EU will respond in the Seventh Framework Programme for RTD with investments in civilian-oriented security research. In the process it will create new cross-sectional material that spans many areas of technology.

This development will also create new tasks for Austrian research and technology policy.

In June 2005 the Austrian Council was presented with a concept for a national security research programme drawn up by the Ministry for Transport, Innovation and Technology (BMVIT). To date, the Council has recommended a total of EUR 13 million for the KIRAS programme.

Austria has thus become one of the first countries in Europe to establish a national funding programme for security research. This programme will take adequate account of the planned EU programme for security research, while at the same time giving due consideration to the specific characteristics and strengths of the Austrian research landscape. To do so, the programme must adopt a broad approach: "Security" will be dealt with on an interdisciplinary basis, with the

humanities, social and cultural sciences playing an important role. These sciences must form an integral element of the programme if optimal solutions for new social problems are to be found.

The Austrian Council supports the civilian orientation of the programme. The first calls for proposals are scheduled for the first six months of 2006, with the "protection of critical infrastructures" as a first focus of research.

3) Innovation as a Priority for the EU Structural Funds 2007 to 2013

European Union regional policy will do more to promote innovation and a knowledge-based economy

More than one third of the EU's budget is spent on regional development and economic and social cohesion. Four European Structural Funds manage these resources which enable financial assistance to be provided for resolving structural, economic and social problems – not instead of support by the member states – but in addition to it. Most of the funding is used to finance multi-year development programmes.

These EU Structural Funds also form an important financial basis for the Austrian regions. In the past, there has been a strong focus on traditional investment assistance with less emphasis being given to research, development and innovation. This should change in the next budget period 2007 to 2013. The Structural Funds programmes are to be directed more toward RTI-oriented measures.

To ensure the successful achievement of this goal, the Austrian Council set up a working group comprising the relevant federal institutions to spearhead a study. Based on the results produced by the working group and the study, the Austrian Council advocates the Austria-wide co-ordination of the strategic considerations of the federal government and provinces, and the integration of the two strategy levels. >



creating knowledge



In January 2006 the Austrian Council issued a recommendation for the programmes in the period 2007–2013 to focus more on RTI-oriented measures and to accord more importance to “soft” measures in the programming, i.e. consulting, educational and mediation services, competence development, support during innovation processes or for start-ups.

4) Co-operation between Federal Government and the Provinces

The Regions gain Importance

In almost all European countries the regions have taken on a more important role with regard to research, development and innovation. These areas have also gained importance in the Austrian provinces, a fact which is reflected in increased regional RTI budgets and – in relation to this – the growth of corresponding infrastructures and the number of those employed in this sector. At the same time, there has been a qualitative improvement in regional policy characterised by systematic strategic planning and the professional management of the entire regional innovation system. It is a natural consequence of these developments that the co-ordination and co-operation processes between federal government and the provinces needs to be given a new quality.

Increasingly independent policymaking on the part of the provinces calls for a clear division of responsibilities between federal government and the provinces. In the case of programmes with regional objectives, federal activities should concentrate on measures that complement the respective provincial activities. In particular, this applies to the portfolio of technology transfer measures. In the study commissioned by the Austrian Council, *Neue Wege in der Forschungs-, Technologie- und Innovationspolitik zwischen Bund und Bundesländer* [New Paths in Research, Technology and Innovation Policy between Federal Government and the Provinces] (2004), Technopolis drew the following main conclusions:

- Co-financing structures in Austria should be reorganised.

- The provinces should be involved in the policy shaping process.

On the basis of this study, a strategic position paper was drawn up in 2005 which contained specific proposals designed to improve co-operation between federal government and the provinces. A number of different models were developed in two workshops. After a detailed discussion, the workshop participants agreed to set up a joint forum between the federal government and the provinces. It was agreed that a regular exchange of information geared to practical needs was desirable and should be consistently cultivated. The forum should fulfil this purpose.

The core functions of the forum are to:

- Create permanent dialogue between the federal government and the provinces
- Discuss basic issues of RTI policy
- Provide reciprocal information about strategic new developments and measures
- Present good practice models of co-operation between the federal government and the provinces which can serve as models for others
- Optimise existing co-financing models or others to be created in the future
- Improve co-operation between funding and intermediary institutions, both for national and international programmes
- Improve consulting services

The forum, which will be open for all relevant concerns, will take place once or twice a year. Information about the RTI systems of the provinces and the funding portfolio will be made available on the Austrian Council's website and will be regularly updated.

5) Innovatives oesterreich.at

“Research has the potential to address and answer society's pressing needs and concerns. Research harbours answers to many of the questions posed everyday by our citizens. Therefore, communi-



A platform designed to generate a greater appreciation of Austrian research achievements

creating knowledge

cating research and engaging with the public is more than a priority.” In his opening speech at the annual conference Communicating Research in November 2005, Janez Potocnik, European Commissioner for Science and Research, said what all those who deal with research and technology in the broadest sense, have been thinking for years. The achievements of science and research must be communicated to the public in order to increase people’s understanding of the benefits and added value generated for society as a whole.

Against this background, the initiative innovatives oesterreich was launched in Austria. The campaign, which has its own web portal, 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 (BML) and the Austrian Council for Research and Technology Development and supported by the social partners and experts from the scientific community.

IBM was persuaded to support the portal with non-cash contributions. More than 50 events and activities in all provinces, newspaper advertisements and a mobile question team invite the population to ask questions on all aspects of innovation and research under the umbrella brand innovatives oesterreich. Particular effort is made to support activities which serve to intensify dialogue between the research community and the public. These include, for example, the Children’s University, the Jobs Through Innovation award or the first Long Night of Research on 1 October 2005 in Vienna, Linz and Innsbruck.

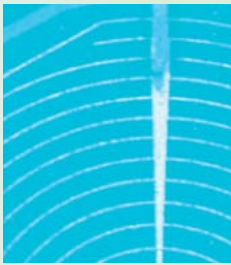
Regular reports by the radio station Ö1 and the science portal <http://science.orf.at>, as well as 23 media reports and a 4-page supplement in the Oberösterreichische Nachrichten newspaper generated greater public awareness between October and December 2005. At the same time, 50 advertisements were placed. The content was presented to staff at the PR departments of the >



Photography Competition Innovative Motive

Best photograph in the Companies category (ex aequo) by Klaus Leesemann. GREENoneTECH, Sankt Veit an der Glan, specialises in the development and production of high-quality solar panels and R&D Consulting, Klagenfurt

creating knowledge



Austrian universities at a special workshop, as they act as multipliers in the dissemination of information. In addition to this, the dialogue programme also supported the media work carried out by the partner projects.

Since late 2005 a newsletter has been sent to some 2,150 subscribers at least once a week. Partners can enter details of their events in the www.innovatives-oesterreich.at event calendar; additional entries are made by the editors.

The Long Night of Research

On 1 October 2005 researchers in Vienna, Linz and Innsbruck opened the doors of their laboratories and think tanks under the motto “into science”. Science was made visible where it takes place as visitors were given an opportunity to peep behind the scenes of science and research.

To ensure a high level of quality, a selection procedure was organised in which a jury comprising journalists, scientific researchers and science communicators selected 60 university, non-university and industrial research institutes (from among 150 entries) to participate in the Long Night.

The theme of the year, “security”, constituted the overarching theme of the Long Night of Research. The programme was as multi-faceted as research itself and covered areas ranging from security policy to risk technologies, stem cell research and medicine, disasters and natural hazards to computer viruses and astronomy.

The aim of the Long Night of Research was to establish a dialogue between visitors and researchers and to present the diverse “images of science” in an interdisciplinary format which is

Photography Competition Innovative Motive

**Best photograph in
the Companies
category (ex aequo):
Lukas Dostal, Rail
Tech Arsenal**



attractive and comprehensible to all interested segments of the population. Research results were visualised in a variety of forms: as experiments which visitors could carry out themselves, as laboratory tours, cabaret, interactive lectures, multimedia presentations, film shows or simply as part of an exciting discussion. More than 500 members of staff throughout Austria contributed to the success of the first Long Night of Research.

In the centre of each city the “Research Meeting Point” functioned as the central departure point for the bus routes. This was where visitors were able to buy their tickets and set off on their X-peditions to science. The buses covered more than 4,500 km on 13 routes in seven hours.

The Long Night of Research thus proved itself to be a successful format for communicating information which was well received by the public, and as a platform for experimental thought and work it also created awareness for Austrian science. Both sides were able to profit from the Long Night of Research: Researchers appreciated the recognition given to their research work as manifested in the lively interest shown by the night owls, while the visitors gained an insight into the world of science and its relevance to society. More than 48,000 visits in three cities document the high level of public interest in science and research.

6) The Humanities, Social and Cultural Sciences (HS&CS)

Research Programme on the “Cultures of Science in Change”

Work in 2005 focused on the continued implementation of the Austrian Council's recommendation. In its recommendation of 16 September 2003, the Council had noted that national priority programmes are an important prerequisite for the further development of scientific competences and quality assurance. In the medium term, multi-year overlapping programmes should be established. Two priority programmes (Democracy Development and Trans-disciplinary Research)

have already been started and a new one is being prepared. In November 2005, a programme committee set up by the Austrian Council's working group for the humanities, social and cultural sciences, which includes members from both Austria and abroad, proposed a new research programme on Cultures of Science in Change. On 18 November the Austrian Council recommended funding the start-up phase of this programme with EUR 2.1 million.

The theme Cultures of Science in Change was given priority for several reasons. It takes account of the research capacities and interests of the Austrian humanities, social and cultural sciences and bundles them (strengthening strengths, building excellence in defined thematic areas). The aim is to develop innovative lines of enquiry. This requires co-operation between the sectors and an interdisciplinary approach (improved co-operation between universities and non-university research institutes). A second aim is to improve the opportunities to bring excellence into international programme research and to gain theme leadership in key areas. The EU Commission is extremely impressed by the proposed programmes and Austria could take on a leading role in the EU Seventh Framework Programme in this respect. The Ministry for Education, Science and Culture (BMBWK) and representatives of the European Commission have considered the possibility of launching co-operation on this issue. The idea is that Austria would take the initiative in the troika of the Council presidency and seek to establish such co-operation in the long term.

A total of just under EUR 20 million (approx. 3.3 %) of the Action Programme II funds were recommended for programmes devoted exclusively to the humanities, social and cultural sciences (HS&CS). In addition to this, Action Programme funding is available for horizontal or non-thematic programmes and initiatives which are estimated to have the same percentage of HS&CS programmes. The HS&CS working group concluded that a fundamental requirement of research in HS&CS comprises the collection, >





documentation and study of the scientific and cultural heritage. Accordingly, the BMBWK and Austrian Council sponsored a feasibility study, which took place during 2005. The results are expected during the first half of 2006 and should provide assistance in deciding upon whether and if so to what extent that heritage can be addressed as a basis for research.

7) Implementation of the Recommendation Regarding Grants

Working Groups established

With regard to the recommendation made by the Austrian Council concerning the fundamental restructuring of federal grant programmes, the Ministry for Education (BMBWK) initiated a kick-off conference in June 2005 at which experts and representatives of universities, funding organisations and grant processing offices discussed the development of a concept for reform. In autumn, the BMBWK appointed working groups which were given until June 2006 to present their proposals for reform. The continuous further development of the funding programmes by the funding institutions has already enabled parts of the Austrian Council recommendation to be implemented, e.g. the merger of smaller programmes.

8) Meeting of International Councils

Exchanging Information

On 16 and 17 June 2005 the British Council for Science and Technology hosted a meeting of the chairpersons and secretary generals of the European science councils in Cambridge. A general exchange of information regarding innovations in research and technology policy and how they are funded in the individual countries was followed by a discussion on The Science Base – Industry Interface. Professor Andy Hopper from the University of Cambridge and Dr. Steven Koonin, chief scientist at oil giant BP were invited as guest speakers. On 17 November 2005 the secretary generals of the European councils gathered for a

meeting at the invitation of the Danish Science Council which focused on an informal exchange of ideas on The Use of Indicators in Studies of Science, Technology and Innovation Systems. The guest speaker was Dr. Ulrich Schmoch from the Fraunhofer Institut in Karlsruhe.

9) The Austrian Council in Dialogue

The Communication Work of the Advisory Body

The steady communication of concepts and ideas is an important aspect of the Austrian Council's everyday work and one in which the Council seeks broad dialogue with the public. In 2005 communication activities were of course focused upon Strategy 2010, which was presented at a press conference in Alpbach with Minister Elisabeth Gehrer and Under-Secretary of State Eduard Mainoni. The most important contents were subsequently presented by the members of the Austrian Council in various communication contexts and in more than 20 articles and 25 presentations. ■

Basic Expertise: Reports and Studies 2005

The following paragraphs summarise the results of the studies which were published on the Austrian Council's website in 2005, where they are available as free downloads.

Networks of Excellence

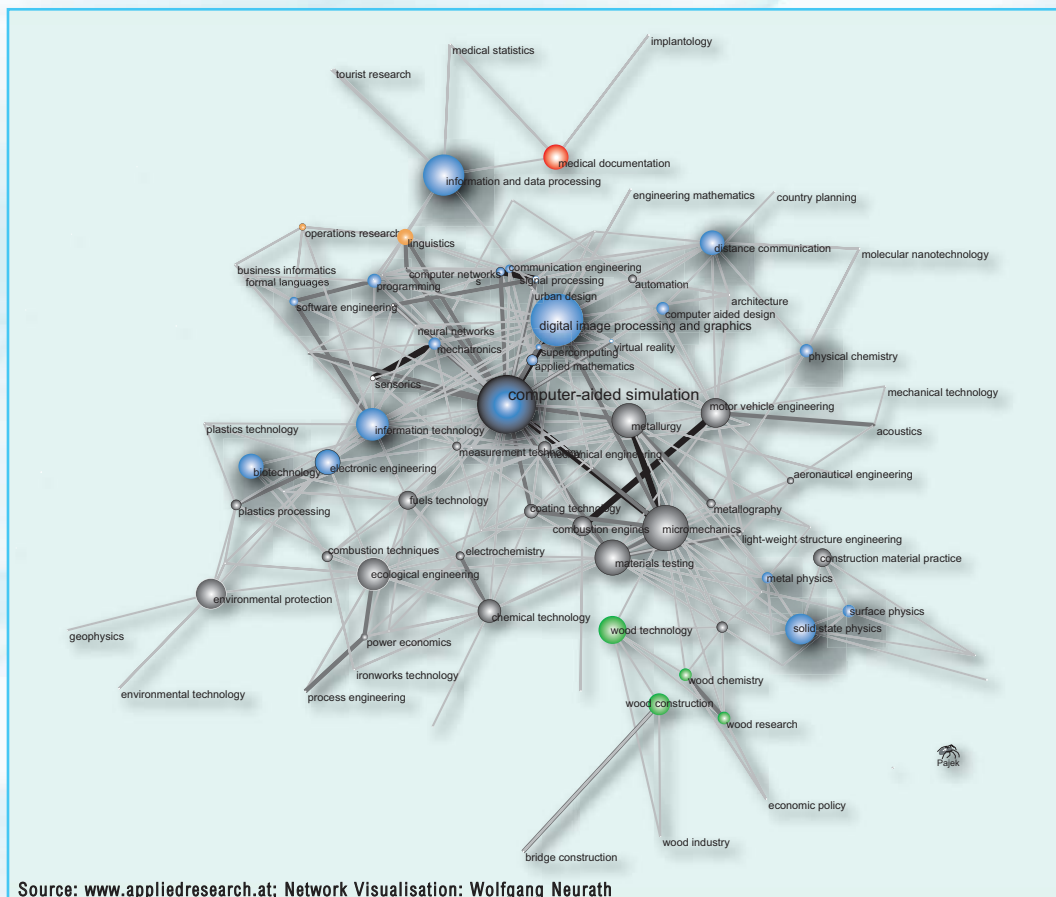
Contractor:

FAS.research & COSY Group of the Medical University of Vienna

It has long been known that social networks can make a decisive contribution to creating value in innovation networks. This study went one step

further and showed the relevance of network analysis and complexity research for monitoring and evaluation. The authors also examined how excellence develops in networks and which network positions have greater potential for success than others.

Result: In networks of excellence changes to the composition of the network participants and goals can be dealt with successfully. Despite technological change, a new market situation, disruptions and accidents, the network remains capable of learning, can carry out search processes, and bring forth and integrate innovations. It is pos- >



The thematic network of research areas at the competence centres and the Christian Doppler Laboratories, December 2005

creating knowledge



sible to shape a meaningful cultural identity for the players and to co-ordinate it with the individual objective functions of the entire network.

The parameters governing the efficiency, stability and diversity of a network are scaled in such a manner that they are optimally geared to the respective production conditions and objective functions. As a result, the network is adaptive yet robust enough to accept different conditions and patterns of networking

Analysis and Revision of the Strategic Target Values

Contractor:

AMC Management Consulting

The purpose of this study was to analyse and revise the strategic target figures (indicators) laid down in the National Research and Innovation Plan (NRIP) presented by the Austrian Council in 2002. The traditional indicators and statistics were analysed with regard to their validity and their usefulness for the development of the strategy.

Result: "New institutional R&D trends in a knowledge-based society with new patterns of interaction between the state, the corporate and non-profit sectors accordingly demand new depiction systems as the basis for defining strategic target figures."

The traditional classifications and indicators should therefore be revised and new national target figures developed with the aim of providing suitable forms of depiction for more advanced analyses.

Instruments of Technology Funding and their Mix

Contractor:

Joanneum Research & Technopolis

The study Instruments of Technology Funding and their Mix (final report June 2005) drew a cri-

tical conclusion. While Austria possesses an extremely comprehensive funding system, a large number of small and poorly funded programmes lead to an excess of programmes. The co-ordination of direct and indirect funding was deemed to be less than optimal. However, the study also provided advice about how Austria could improve its funding management.

■ With regard to the distribution of scarce resources a functioning balance should be maintained between free basic research and co-operation-oriented applied research.

■ Systematic portfolio management co-ordinated to the strategic orientation of Austrian RTI policy is required. The prerequisites for this are a complete information base and an institution which systematically picks up portfolio issues irrespective of jurisdictional boundaries between ministries and agencies.

■ The concentration of funding agencies at an institutional level has fulfilled an important prerequisite for improving the co-ordination of the funding instruments.

Detailed Specification of R&D Potential at Fachhochschulen

Contractor:

Fachhochschule Wiener Neustadt

The study analysed which factors are critical for the successful pursuit of research at Fachhochschulen and developed alternative scenarios for building up research capacities. Drawing on the latest data, desirable paths for development in comparison with other countries were described. Given the role in terms of structural policy played by Fachhochschulen as effective sources of innovation in the regions, it is necessary to combine internationally competitive R&D capability with regional effectiveness. This goal will only be achieved by concentrating on application-oriented R&D and by boosting co-operation with industry. The requirements for the successful stimulation of corporate research are always the same: a mix of education, research performance and technology transfer at the regional level, com-

bined with the appropriate funding of the new business relocations thereby generated.

International Dimensions of R&D Policy – The Challenges and Opportunities of EU Enlargement with specific Emphasis on Neighbouring Regions

Contractor:

AMC Management Consulting

The most recent round of EU enlargement in 2004 plays a pivotal role with regard to national research and technology policy planning. In a united Central European region, information about R&D activities, goals and trends in the neighbouring new member states (Czech Republic, Slovakia, Hungary and Slovenia) must prompt more targeted Austrian efforts to stimulate the development of research and technology. The study had three aims: To analyse information on existing structures, to highlight the trends and perspectives of the main strategic players in the national innovation system (NIS) – whereby regional foci should be emphasised – and finally, the authors of the study wanted to analyse the integration of NIS structures in the EU research area (above all in terms of the EU Research Framework Programmes) and the co-operation profiles with Austria.

Innovation Strategies for Austria after the Re-launch of the Lisbon Process. General Framework and Horizontal Measures

Contractor:

Foresee

This study deliberately did not deal with direct research funding, focusing instead on general conditions and horizontal measures: competition policy, property rights, industry policy, public procurement, fiscal policy, the capital market and the development of human resources to name but a few.

The study focused on “economic and research policy styles”, examining fundamental consider-

ations and paradigms which had been neglected, at least during the first half of the Lisbon process. The question remains whether the re-launch will bring about a reorientation. At its summit meeting on 22 and 23 March 2005 the European Council reaffirmed the Lisbon growth targets. However, given that the growth differential to the USA has increased over the last five years, the European Council avoided setting specific targets and refrained from statements on these very paradigms.

Incorporating EU Structural Programmes into National RTI Policy. The Possible Role of the Council for Research and Technology Development

Contractor:

Systemsresearch

Research, development and innovation policy is increasingly becoming an integral aspect of modern structural policy. In the light of the Structural Funds period 2007–2013 and the key theme “Innovation and knowledge-based economy”, the EU Structural programmes need to be incorporated into national research, technology and innovation policy to a greater degree. This requires the Austria-wide co-ordination of strategic considerations by the federal government and the provinces at the earliest possible date, and incorporation in appropriate national RTI strategies. In this context the project focused on the role of the Austrian Council.

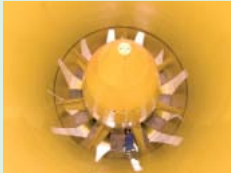
Result: the programmes run by the provinces which are financed by the Structural Funds should be geared more towards measures with RTI relevance. The Austrian Council can initiate horizontal co-ordination at the federal level for RTI programmes which are relevant to the Structural Funds. ■



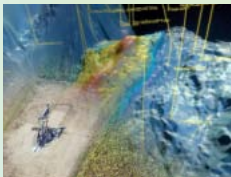
creating knowledge



Astrid Bartl



Walter Kühnelt



Martin Artner



David Oszko



Thomas Lamm
Günther Kubiza



Lukas Dostal



Klaus Leesemann

Innovative Motive – Austrian Research in a new Image Update



The winning photo by Andreas Scheiblecker

Innovative Motive: This was the title of a photography competition organised by the Ministry for Transport, Innovation and Technology in autumn 2005 as a contribution to the dialogue programme innovatives-oesterreich.at. Some 50 research institutions, companies and universities throughout Austria opened their doors to 60 professional photographers. The aim of the competition was to create new and creative images of Austrian research, of people who live for research, of the architecture in which they work and of their methods, technologies and products. Some 200 photographs which were judged by a

high calibre jury chaired by Gabriele Zuna-Kratky, a member of the Austrian Council for Research and Technology Development, shed new light on research and development in Austria. “Human Space Flight” was what the jury associated with the photograph taken at Austrian Aerospace in Berndorf by Viennese photographer Andreas Scheiblecker, awarding it the prize for the best photograph (see above). His image typifies the momentum of research and technology development in Austria, his subject Space Technology bears witness to Austria’s activities in key fields of technology development. ■

It is the task of the Austrian Council to define paths for Austrian RTI policy. Its recommendations are oriented towards international benchmarks based on specific Austrian needs. The Austrian Council's expertise is fed by its members' many years of experience in knowledge-oriented and industrial research.



the austrian council



Ludovit Garzik
Head of the secretariat

General Secretariat's Review and Outlook

2005 was a year in which key decisions for the future were made. The Austrian Council for Research and Technology was appointed for its next period of office until 2010. In the summer, Strategy 2010 was presented to the public in Alpbach. A discussion process involving all players in the Austrian innovation system commenced.

2005 also saw a number of changes at the Austrian Council's General Secretariat. Michael Binder, for many years the head of the secretariat, moved to the Austrian Research Promotion Agency (FFG) as director of strategy. In the interim period, managerial responsibilities were capably carried out by the deputy head of the secretariat Simone Mesner. In September Ludovit Garzik was finally selected to succeed Michael Binder from a pool of highly qualified applicants. He commenced his duties as head of the secretariat on 1 November 2005.

In recent years the Council for Research and Technology Development has shaped the strategic guidelines for the national innovation system with professionalism and foresight. The secretariat will continue to provide competent support for the further development and implementation of the guidelines.

"For me, Austria's quality as a research location means seizing the opportunity and challenge of using sound basic research and the innovations which it generates to secure a vital and sustainable lead in a globalised economy. Research performance must be measured against the needs of science and industry and thus against the output which is achieved. If the goals are clearly defined, the task is to dimension the necessary input factors correctly," explained Ludovit Garzik.

Apart from budgetary requirements, the most important input factor is human resources. These must therefore be assigned priority in the strategic direction of funding schemes. Austria has outstanding researchers – some of them are in the

limelight while many work away from the public eye. We must create a suitable framework for cultivating this potential and ensure its further development by implementing assistance measures.

The Austrian Council is aware that the use of public funds brings with it an obligation to ensure transparency. The Awareness programmes form the basis for this. Above and beyond this, information is communicated to the scientific community and a wider public by the individual members of the Council as they participate in numerous events.

In the words of Ludovit Garzik, "these cornerstones of the Austrian Council's work form the secretariat's programme. The content-related aspects ensue from the areas of action defined in Strategy 2010. The task is to advance Austria's position as a centre of research, thus increasing the country's prosperity in the long term." ■

Mission and Goals

The central function of the Austrian Council for Research and Technology Development is to make a decisive contribution to the creation and implementation of a forward-looking research, technology and innovation policy in Austria by delivering systematic, independent and sound advice. The Council views itself as the network hub of the extensive Austrian technology and research landscape. The Council is the co-ordinator and driver for a wide range of activities, acting as a connecting link between the players, but also as a filter – and above all as a setter of priorities.

In order to carry out the remit assigned to it under law, the Austrian Council for Research and Technology Development is guided by a series of basic shared values and common goals:

Excellence – Promoting Quality and Outstanding Achievement

The goal is to give new impetus to quality throughout the entire innovation system by using monitoring and evaluation instruments to a greater extent, and to position Austrian research among the international front-runners in an increasing number of research themes, research projects and research teams.

Internationalisation – Thinking in a Global Framework

The goal is to position Austria as a strong and active partner in the European Research Area and over the next few years in particular to develop the country into a key network node in the European, and especially the Central and Eastern European, Research Area.

Co-ordination – Bundling the Forces of RTI Policy

The goal is to establish rigorous instruments for strategy co-ordination and co-operation and to arrive at a clear functional structuring of respon-

sibilities. This includes concentrating political responsibility at two ministries in keeping with international practice.

Efficiency – Goal-oriented Use of Funds

The goal is to enhance the development of Austria's funding system by means of efficient portfolio management that uses methods of monitoring and evaluation in order to make targeted and co-ordinated use of the funding instruments.

Equal Opportunities – Integrating the Gender Perspective

The goal is to realise equal opportunities for both sexes in RTI and thus to achieve proportional representation of women in all sectors and at all levels of RTI. Over the next few years, the percentage of women should be significantly increased in all areas where they are currently underrepresented. The essential tools for this are gender mainstreaming and greater efforts to promote women.

Multiplication of Knowledge

The goal is to raise the quality of education and further education across all stages of the system and to close the gap to the international front-runners in order to improve the transfer and further development of knowledge and new technologies within the framework of innovation and research processes. To this end, the permeability of the education and further education system must be significantly improved.

Locational Quality – Enhance Attractiveness

The goal is to anchor international and national companies with their central research units in Austria and to integrate them in the Austrian innovation system. ■



the austrian council



DI Dr. Knut Consemüller
Chairman of the ACI
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 AC
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 CEO of Siemens AG Austria studied physics at the Vienna University of Technology. In 1965 he joined Wiener Schwachstromwerken 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 are represented on the Council as advisory members. 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. The Austrian Council's second term of office commenced in September 2005; five of the eight-member advisory team were reappointed. The new members of the government advisory body are the director of the Vienna Technisches Museum, Dr. Gabriele Zuna-Kratky, the director of the Carinthian Economic Promotion Fund Hans Schönegger, and the director of Magna Education and Research GmbH, Jürgen Stockmar. Knut Consemüller was re-elected as chairman of the Council and Günther Bonn as his deputy for the Council's second term of office.



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. He is head of development of 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 (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

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

Elisabeth Gehrler,
Minister of Education, Science and Culture

Dr. Martin Bartenstein,
Minister of Economic Affairs and Employment

Mag. Karl-Heinz Grasser,
Minister of Finance

Secretariat

The secretariat supports the Austrian Council both in terms of organisation and content, in particular as regards 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.



**DI Dr.
Ludovít Garzik, MBA**
Head of the secretariat,
responsible for the manage-
ment and co-ordination of the
secretariat's activities and
external representation.

l.garzik@rat-fte.at



**Mag.
Simone Mesner**
Deputy head of the secretariat,
responsibilities: basic and
pre-competitive research,
humanities, social and cul-
tural sciences, international
research co-operation, life
sciences.

s.mesner@rat-fte.at

Mag. Michael Binder left the secretariat on 31 May 2005. We wish him much success in his new position as strategy director at the Austrian Research Promotion Agency.



**Mag.
Alexander Holik**
Back office and databases.

a.holik@rat-fte.at



**Mag.
Wolfgang Neurath**
Public relations, raising R&D
awareness, the *Innovatives
Österreich* programme, start-
up and growth financing,
co-operation between federal
government and the pro-
vinces, evaluation and new
instruments of technology
counselling.

w.neurath@rat-fte.at



Margarete Rohrhofer
Organisation and
office management.

m.rohrhofer@rat-fte.at



**DI
Brigitte Tiefenthaler**
Pre-competitive and industry-
specific research, co-operation
between science and industry,
nano-technologies, informati-
on and communications tech-
nologies, research for sus-
tainable development, pro-
motion of women and gender
mainstreaming.

b.tiefenthaler@rat-fte.at



**Mag.
Michaela Topolnik,
M.A.**
Monitoring, SMEs and inno-
vation promotion, security
research, indirect research
funding, RTI in the European
Structural Funds, EU research
and innovation policy,
ERA-Net.

m.topolnik@rat-fte.at



Technology Offensive 2001 to 2006, Distribution of Funds

R&D investments in Austria have developed positively and are now significantly higher than the European Union average and well on the way to achieving the goal of a research quota of three per cent of the gross domestic product by 2010. This was made possible not least by the additional public expenditure that was used to finance the two Action Programmes and payouts by the National Foundation for Research, Technology and Development. In 2005 the federal government spent EUR 1.74 billion on R&D, 42 per cent more than in 2000. This is also reflected in the government's Action Programmes used to channel some EUR 1.3 billion (in addition to the ordinary budget) into R&D between 2000 and 2006 inclusive.

■ Action Programme I comprised a volume of EUR 508.7 million in the period 2001–2003.

■ Action Programme II mobilised another EUR 600 million in the period 2004–2006.

■ Since 2004 the National Foundation for Research, Technology and Development has distributed EUR 125 million p.a.

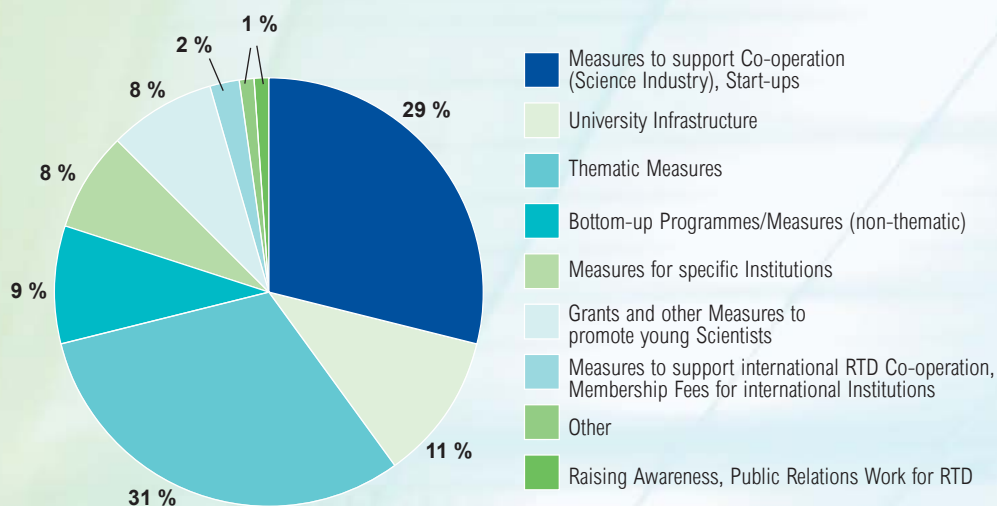
■ In 2005 the federal government initiated the issue of a further bond-financed “technology billion”. A first instalment amounting to EUR 50 million was paid out in 2005, followed by a further EUR 75 million in 2006.

■ Moreover, in the same period indirect research funding through tax incentives was substantially increased by raising the research tax allowance to 25 per cent, and then to 35 per cent and by introducing an 8 per cent research bonus.

The Austrian Council for Research and Technology Development made funding recommendations directing funds from the two R&D Action Programmes to suitable programmes and measures. These recommendations covered 12 per cent of the public funds made available by federal government in the period 2001–2006; if the first two instalments of the research bond are included, this percentage increases to over 13 per cent. In addition, the Austrian Council also makes recommendations regarding the use of funds from the National Foundation.

Distribution of funds from Action Programme I (2001–2003: EUR 508.7 million) and Action Programme II (2004–2006: EUR 600 million) by category.

Action Programme 2001 to 2006, Distribution of Funds by Category



Source: Austrian Council, own calculation

Funds from the two R&D Action Programmes are used to support schemes which assist research and technology with universities, non-university research institutions and companies as the beneficiaries.

The Austrian Council recommended that the Action funds be used in several instalments. The ministries followed the Council recommendations during implementation. By November 2006 almost all the final funds from Action Programme II had been recommended for release.

The funds from Action Programmes I and II were distributed as follows: The majority of funds (29 %) were awarded for measures designed to support co-operation between science and industry, almost one third was used to fund thematic programmes. Eleven per cent was spent on university infrastructure, 9 per cent on non-thematic bottom-up measures, with almost the same amount going to fund specific institutions or measures to promote young scientists (grants, mobility promotion), In Action Programme II, two per cent of funds was spent on awareness raising measures

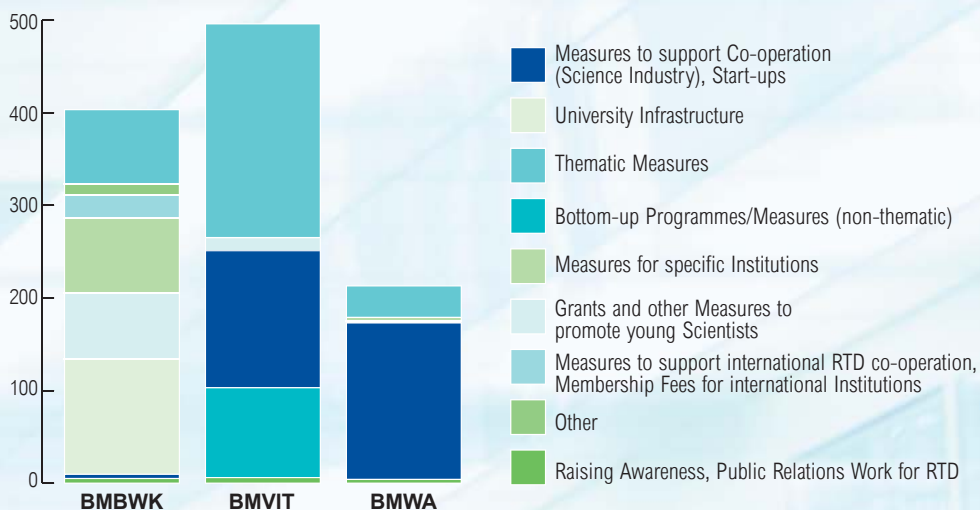
and public relations for RTD. As this allocation was only made during Action Programme II, a total of just under 1 per cent of the funds was used for this purpose during the reporting period. Two per cent of funds was used to promote international collaborative projects and for membership fees of international organisations.

The BMVIT used the funds mostly for thematic programmes and for measures to support collaborative projects between science and industry. The BMBWK used most of the Action Programme funds for university infrastructure and on measures to assist specific institutions; however, priority was also given to funding grants and other measures to promote human resources and thematic programmes. The BMWA mainly financed collaborative projects and start-ups etc.

Action Programme funding was awarded to programmes proposed by the ministries as follows: (Source: BMF, Budget 2006):

- BMVIT: 44 %
- BMBWK: 34 %
- BMWA: 22 %

Action Programme 2001 to 2006, Funding by Categories and Ministries



Source: Austrian Council, own calculation

contact



Ministry for Transport, Innovation and Technology

A-1030 Wien, Radetzkystraße 2
Tel.: +43/1/711 62-0
www.bmvit.gv.at



Ministry for Education, Science and Culture

A-1014 Wien, Minoritenplatz 5
Tel.: +43/1/531 20-0
www.bmbwk.gv.at



Ministry of Finance

A-1015 Wien, Himmelpfortgasse 4-8
Tel.: +43/1/514 33-0
www.bmf.gv.at



Ministry for Economic Affairs and Labour

A-1011 Wien, Stubenring 1
Tel.: +43/1/711 00-0
www.bmwa.gv.at



Austrian Council for Research and Technology Development

A-1220 Wien
Tech Gate Vienna
Donau-City-Straße 1
Tel.: +43/1/205 01 20-555
Fax: +43/1/205 01 20-900
office@rat-fte.at
www.rat-fte.at





