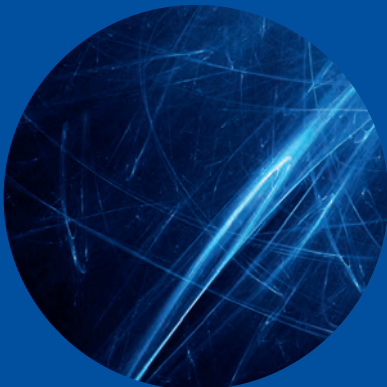
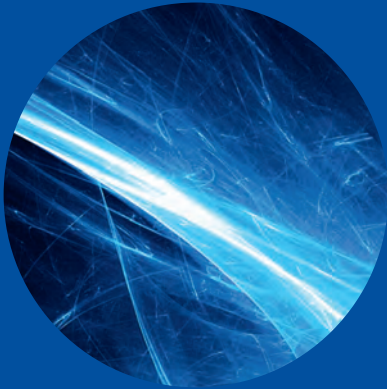






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foreword

Despite the difficult budgetary situation, in recent years the Austrian Federal Government has succeeded in increasing budget funds for science, research and innovation. With the RTI Strategy adopted in March 2011, the conditions to establish Austria for the medium to long-term among Europe's leading innovation nations were also put in place. The Austrian Council for Research and Technology Development has made an important contribution here as an independent strategic advisory body. With its annual "Report on Austria's Scientific and Technological Capability" in particular, the Austrian Council time and again provides important impetus to further improve the Austrian science, research and innovation landscape.

In September 2015, the Austrian Council for Research and Technology Development started into its fourth term in office. The eight members under Chairman Dr. Hannes Androsch and Deputy Chairman Univ.-Prof. Dr. Markus Hengstschläger are distinguished by many years

of experience in the most diverse areas of Austrian science and research and by their international expertise. The Austrian Council is therefore an important companion, supporter and trendsetter for Austria's research and innovation policy.

Our thanks are due in particular to the previous members of the Austrian Council for Research and Technology Development and their commendable commitment to the Austrian science, research and innovation landscape. With their experience, wide-ranging knowledge and personal dedication, they have supported the Austrian Federal Government here in securing and further improving Austria's attractiveness as an economic location.

The Federal Government looks forward in the best of confidence to the cooperation with the newly staffed Austrian Council for Research and Technology Development in achieving the joint goal of securing and enhancing our country's prosperity.



Dr. Reinhold Mitterlehner
Vice Chancellor and Federal Minister of Science,
Research and Economic Affairs



Dr. Hans Jörg Schelling
Federal Minister
of Finance



Gerald Klug
Federal Minister for Transport,
Innovation and Technology

Science and research are the conversion of curiosity and inquisitiveness via money into knowledge; innovations are the conversion of knowledge and ideas into benefits and money. All are based on the efforts to find solutions for important issues or pressing challenges.

And the challenges our societies and humanity face as a whole – and which we hope to meet with the aid of science, research and innovation – are multifaceted and complex. While, for example, the world's population around 1800 was only one billion, in 1950 it had already risen to 2.5 billion people. Today, the figure is circa seven billion, and according to United Nations projections, in 2050 it could be more than nine billion people, who will have to be supplied with food, water and energy; of course, education, jobs and health care will also have to be provided.

Solutions for all of these challenges, and others connected with them, can only be found with new ideas, inventions and innovations, which is why education, science and research are the key areas to be able to successfully shape our future. According to the UNESCO World Education Report 2015 there is, however, an annual funding gap of USD 22 billion to achieve the basic global education goals, whereby this is an infinitesimally small figure compared with the USD 1,776 billion, which was spent in 2014 on armaments around the globe.

But research and innovation systems worldwide are also undergoing an intensive growth process, in which global research and development expenditure has more or less doubled over the last twenty years. And even in the difficult years of 2009–2014, which were defined by the global financial and banking crisis and the subsequent economic and debt crisis in a number of countries, according to UNESCO's Science Report 2015, the gross global expenditure for research and development rose from USD

1,132,300 billion (2007) to USD 1,477,700 billion (2013), and has therefore developed considerably more dynamically than the global GDP in the same period.

This is, however, accompanied by a transformation process, which presents a challenge for Europe in particular. With China and other Asian countries, not only in the production area, but also increasingly in recent years in the area of research and development, new competition has emerged, which is increasingly condensed into the research expenditure of large-scale companies. The latest ranking of the 1,000 most innovative companies in the world, which is compiled annually by Strategy&, PwC's strategy advisor, consequently identifies Asia as the big winner in the competition for research funds. The USA has maintained its position, thanks in particular to Silicon Valley, whereas Europe fell behind in this global consideration.

In view of these developments, it is all the more important to once again achieve the good position which Austria in particular had carved out for itself by 2008, with increased efforts in the form of more budget funds with parallel target-oriented structural reforms, and consequently secure and further expand our international competitiveness. At the same time, however, it should also be noted that the development of a country on the basis of research and development can only succeed and a corresponding contribution to economic growth can only be generated if all sub-areas involved (from education to basic research and applied research, through to implementation in innovations) move in the right direction. Also important here: A chain is only as strong as its weakest link, and this, unfortunately, is what the education system in Austria currently is,

editorial



Hannes Androsch
Chairman
of the Austrian Council



Markus Hengstschläger
Deputy Chairman
of the Austrian Council

editorial

where for years, decades even, it has not been possible to adjust the education system to the requirements of the 21st century with an appropriately comprehensive reform. The measures defined in the education reform package of November 2015 can only be, and must only be, a first

step, which must be swiftly followed by others. We thank all those that participate in and support the work of the Austrian Council for Research and Technology Development, and invite all to continue down this path together with us, so together we can truly position Austria among the Innovation Leaders by 2020.

The Council
(from left to right and
top to bottom):

Markus Hengstschläger,
Sabine Herlitschka
Hermann Hauser
Sylvia Schwaag-Serger
Hannes Androsch
Helga Nowotny
Jakob Edler
Klara Sekanina







outlook

RTI Strategy 2020: Goals Appear Scarcely Achievable

Some five years have now passed since the Federal Government's RTI Strategy was adopted; we are another five years from the set 2020 time horizon. This prompted the Austrian Council to conceive its "Report on Austria's Scientific and Technological Capability 2015" as a mid-term review of the RTI Strategy, whereby the following key question is to be clarified: Can the overriding goal of the RTI Strategy – a place among the Innovation Leaders by 2020 – be achieved?

The Austrian Council has addressed and once again analysed the key weaknesses of the Austrian RTI system. It concludes that the core findings of the RTI Strategy are still topical today. The key starting points of the strategy remain the same: firstly, the politically-agreed

goal of becoming an "Innovation Leader", secondly the financial crisis, which is not yet completely over, and its resulting restrictive budgets. Accordingly, the majority of the RTI Strategy objectives have not forfeited anything of their topicality. The Austrian Council therefore continues to consider the Federal Government's RTI Strategy an important milestone in the future development of the Austrian RTI system.

The Austrian Council drew on data series from the 2010 to 2015 period for its Mid-Term Review. This five-year perspective produced stable development trends, from which the effects of the strategy could be easily deducted. It was on this basis that the Austrian Council evaluated whether or not the objectives of the RTI Strategy can be achieved by 2020.

Key Results of Mid-Term Review

Above-average economic performance, but deficits in terms of innovation performance

Austria's economic performance continues to be above average. Compared with the Innovation Leaders Denmark, Germany, Finland and Sweden, Austria's economic performance is very high: Per capita GDP in Austria has increased slightly since 2010 and is reflected in social prosperity that is clearly ahead of the leading innovation nations. Despite a deteriorating development, Austria continues to score well with comparably low unemployment. The employment rate has not actually changed much in the last five years, but it does show a clear increase in the rate of women in employment.

This is contrasted by the areas of innovation, environment and health and quality of life, with which it appears unrealistic that the goals will be achieved by 2020.

The catch-up requirement in the area of innovation performance is especially high. A differenti-

ated consideration does actually show that Austria should be rated better than it is with the Innovation Union Scoreboard (IUS); however, there continues to be a performance deficit compared with the leading innovation nations. The current development in the innovation performance area is therefore not expected to be sufficient to join the group of leading nations by 2020.

Education System (Without Tertiary Education): Goals Not Achievable Despite Positive Development Trends

The developments in the primary and secondary education system have been consistently positive in the 2010 to 2015 period; however, somewhat less dynamic compared with the leading nations. This means that despite the trends in the right direction, dynamic from today's point of view will not be sufficient to move up into the Innovation Leaders.

The performance of the Austrian education system

is very good in some areas; examples include the above-average high supervision ratio in the secondary area or the low number of early school-leavers. In other areas, such as the quality of school performance or social selectivity of the education system, on the other hand, Austrian performance remained clearly behind the Innovation Leaders.

For countries at the technological frontier with the goal of joining the leading innovation nations, it is not so much quantitative aspects, but rather qualitative aspects that are critical in the education system. The results of the Mid-Term Review therefore show: The goals of the RTI Strategy intended to improve the performance of the education system can scarcely be achieved by 2020 without additional input and efforts.

Tertiary Education System:

Performance Clearly Insufficient

Austria's performance in the tertiary education system must be classified as clearly insufficient. With the exception of the still increasing number of university graduates, which has continuously moved beyond the target horizon since 2010, no indicator has been able to improve its goal distance in the last five years or even achieve the respective target.

There have actually been positive developments in some areas, such as in the number of women in STEM subjects or with the immigration of highly qualified people. These are not, however, sufficient to achieve the goals set for 2020. The majority of the indicators even show a regressive trend. Of these, areas such as the number of graduates (doctoral) in STEM subjects and the amount of university expenditure per student are affected in particular; development dynamic since 2010 has fallen here below that of the Innovation Leaders.

From today's perspective only four of the total of 15 indicators, which are available for the tertiary education area, will have achieved the target value of the leading innovation nations or the goals set by 2020. The Austrian Council believes this

is far too low to be able to join the group of Innovation Leaders.

Universities and Basic Research:

Weaknesses in the Framework Conditions

Threaten Above-Average Research

Performance

The research output of Austrian universities and academic research institutions has risen continuously since 2010. This is demonstrated above all by the above-average number of successful project applications to the European Research Council and to individual universities improving their positions in international ranking tables.

This positive development is endangered by the weaknesses with important framework conditions for research quality, such as the competitive funding for basic research or the changeover to modern doctoral studies. In both areas, Austria's performance is well below that of the leading countries. Given the lack of dynamic developments, this will not change by 2020, and accordingly from the present perspective it is unlikely that the goal will be achieved.

Research and Innovation in the Corporate Sector:

Performance Advantage in Danger of Being Lost

Austria's current performance advantage could be lost in some key areas with research and innovation in the corporate sector. With a third of the indicators, the goal set for 2020 has actually currently been achieved and with a number of others, the goal distance from the Innovation Leaders is low. This applies, for example, to the positive performance of companies in export or the relatively intensive cooperation of science and economy. Innovation leaders could overtake Austria in many areas where Austria is currently ahead of the leading nations, e.g., in terms of attractiveness as a location.

Furthermore, with the majority of indicators, the goals have not yet been achieved and the development was not sufficiently dynamic, which is why the goals of the RTI Strategy appear to be scarcely achievable by 2020. This in particular applies

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to the weaknesses defined and familiar in the corporate start-ups area in recent years, with risk capital intensity, research and development intensity of the Austrian economy and with regard to the radical nature of innovation activity.

As a result of its Mid-Term Review, the Austrian Council summarily points out that the development dynamic and the improvements in the area of research and innovation in the corporate sector are insufficient to join the group of leading innovation nations by 2020.

R&D Funding: Regressive Trend Compared With Innovation Leaders

Both key indicators for R&D funding – the R&D quota and the private funding percentage of R&D – have been stagnating for some years now, with no sign of any change in the trend. Austria is in danger of falling behind the leading countries with regard to the 2020 target year of the RTI Strategy. The measures of the RTI Strategy, which could counteract this regression, have so far been implemented with far too little emphasis or, in the case of the research funding act for example, not at all.

For a country with the goal of becoming an Innovation Leader, the Austrian Council believes this development trend is insufficient in any case. A comparison of the current R&D expenditure with the “target” level shows that the target of 3.76 percent of GDP by 2020 most probably cannot be achieved.

Summary of the Mid-Term Review: Catch-Up Dynamic Insufficient – “Innovation Leader” Goal Not Achievable with Trend Remaining as It Is

The Austrian Council believes the RTI Strategy’s goal orientation still applies as it did before. The results of the Mid-Term Review clearly indicate, however, that the strategy alone is not sufficient to push forward into the group of Innovation Leaders by 2020. It is indeed evident that the trends in half of the objectives are headed in the right direction. It is, however, also clear that the

current measures to implement the RTI Strategy are insufficient to keep up with the development dynamic of the leading countries. This means that the Innovation Leaders will pull away from Austria if the trend remains as it is. In the remaining five years, much more intensive work to implement the strategy will therefore be required. Otherwise, Austria will not be an Innovation Leader in 2020, but rather could even fall back compared with other countries.

A new policy development phase is therefore required to achieve the goal of becoming an “Innovation Leader”: A package of reform steps must be implemented in place of the fragmented individual measures seen to date. This package must be harmonised with the entire RTI system.

The key question here is: How serious is the intention of becoming an “Innovation Leader” formulated in the RTI Strategy? If it is to be taken seriously, the body politic must afford greater priority to the issues of education, research, technology and innovation – as key factors for Austria’s future.

The Austrian Council suggests starting an active reform process to drive implementation of the strategy forward in a more uncompromising way. This must be supported at the highest political level. The Austrian Council believes this requires an “RTI reform agenda” under the supervision of the Federal Chancellery and in cooperation with all ministries responsible for RTI. It must be provided with binding political goals and clear assignments for the RTI Task Force.

Priority Areas of Action and Recommendations

The Austrian Council has identified five priority areas of action on the basis of indicator-oriented analyses and evaluation of the performance of the Austrian RTI system.

- Education system (including tertiary education)
- Basic research
- Start-ups and growth of innovative
- Early-stage companies
- Governance structures
- Private-sector R&D financing

The Austrian Council also believes there is a requirement in these areas for increased efforts to raise the overall performance of the Austrian innovation system. Following are the Austrian Council's recommendations (in summary form):

1. Intensifying the reform of the education system

to modernise the education system (increase in school autonomy, adjustment of the competencies between federal government and the states, whole-day school in the area of secondary level I with parallel performance differentiation and talent development, increase in early childhood development, increase in the number of multilingual educators, as well as better financial and staffing provisions in schools with special challenges).

The Austrian Council also recommends defining the goal anchored in the government programme of increasing the university expenditure rate to 2 percent of GDP as a minimum goal and providing the annually required additional expenditure of an average EUR 400 million for the tertiary sector. With the implementation of the legal steps for study place financing, the Austrian Council in particular also recommends measures to improve study conditions and especially to accelerate an increase in the number of graduates in STEM subjects.

2. Increasing competitively allocated financing for basic research

The Austrian Council urgently recommends a substantial and sustainable increase in the competitively awarded funds for basic research, in order to broaden the spearhead of superb research in Austria and to improve the research conditions of Austria as a science location. Otherwise, not only is the increased quality of the country's research performance seriously endangered, so too is the attractiveness of Austria as a location.

3. Further optimising the legal and financial framework for business start-ups and their growth

The Austrian Council recommends the framework conditions for funding start-ups in the knowledge and technology-intensive area be further optimised with the implementation of more

innovative concepts and supporting funding models. The Austrian Council once again recommends an inspection of the practicality of international models of tax breaks for younger and smaller knowledge and technology-based companies for Austria.

The Austrian Council also recommends developing funding options for innovative entrepreneurs and SMEs. The range of crowdfunding (including peer-to-peer lending and crowdfunding) should consequently be supported by an effective and efficient legal framework and integrated into a competitive overall strategy for corporate growth. In this context, the Austrian Council welcomes the crowdfunding initiatives of the BMFWF resulting from committee consulting sessions, especially the Alternative Financing Act. Furthermore, the creation of a business angel allowance should also be planned for equity capital reinforcement and facilitations with incidental wage costs for start-ups and research-active companies.

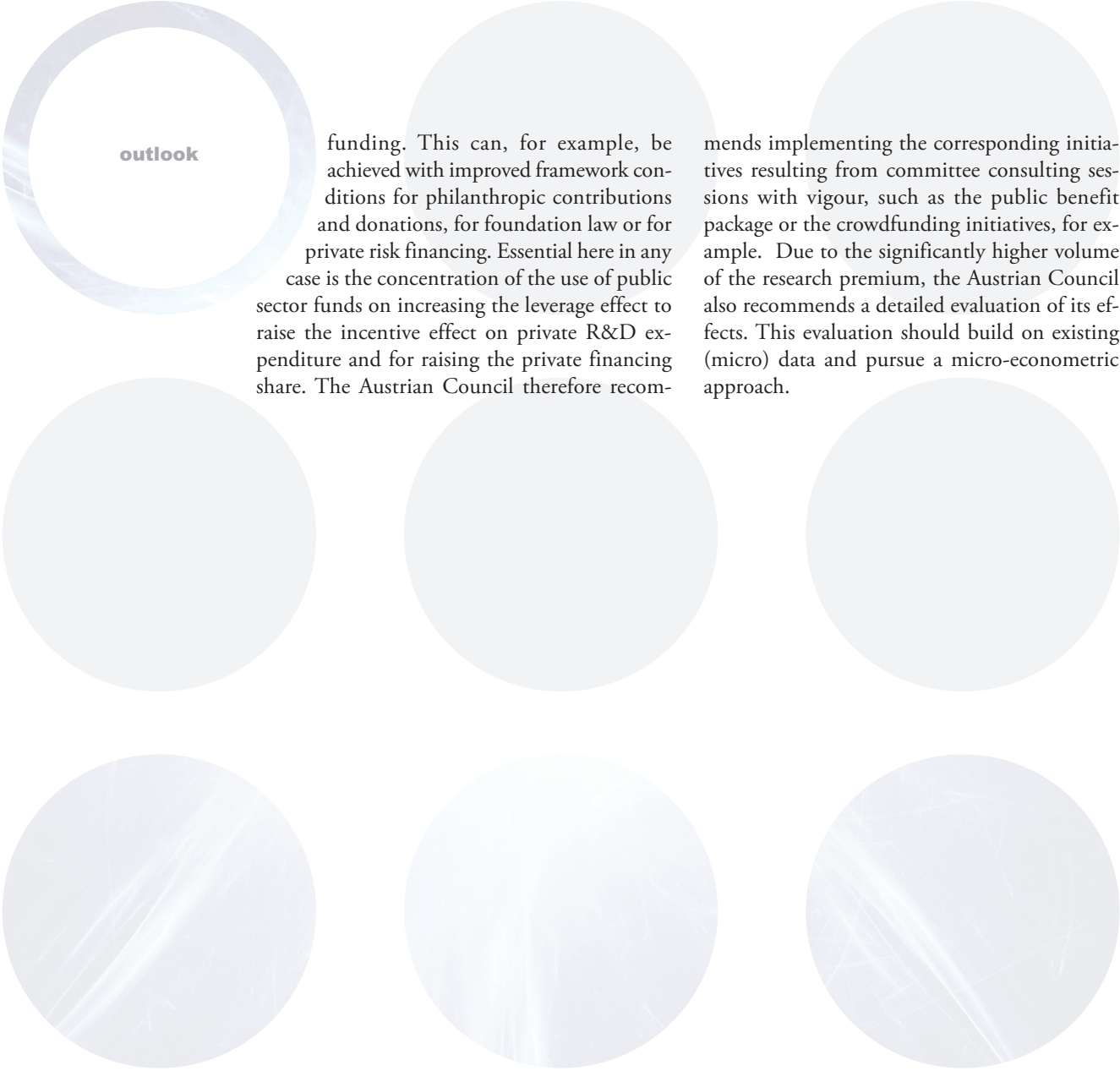
4. Improving governance structures for the implementation of the RTI Strategy

The Austrian Council recommends initiating an active and comprehensive RTI policy reform process to drive forward implementation of the strategy in a more uncompromising way. This must be supported at the highest political level. The Austrian Council believes this requires an "RTI reform agenda" under the supervision of the Federal Chancellery and in cooperation with all ministries responsible for RTI. It should be anchored in the Federal Government's plans and furnished with politically binding, specific and quantifiable targets. Clear assignments must in turn be derived from this for the RTI Task Force, which must be more aware of its control function for the RTI Strategy's implementation process than before.

5. Promoting measures to increase the private-sector share of R&D funding

The Austrian Council recommends focusing on measures to increase the private share of R&D

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funding. This can, for example, be achieved with improved framework conditions for philanthropic contributions and donations, for foundation law or for private risk financing. Essential here in any case is the concentration of the use of public sector funds on increasing the leverage effect to raise the incentive effect on private R&D expenditure and for raising the private financing share. The Austrian Council therefore recom-

mends implementing the corresponding initiatives resulting from committee consulting sessions with vigour, such as the public benefit package or the crowdfunding initiatives, for example. Due to the significantly higher volume of the research premium, the Austrian Council also recommends a detailed evaluation of its effects. This evaluation should build on existing (micro) data and pursue a micro-econometric approach.



Recommendations for 2015

Priorities for Awarding the Funds of the National Foundation for RTD 2016 –

Recommendation dated 26 February 2015

The Nationalstiftung FTE plays a very important role in the Austrian RTI system as an additional financing source for long-term strategic measures. The Council therefore once again regretfully acknowledges that the funds provided to the National Foundation have steadily

decreased in recent years, and on average are already significantly below the amount proposed in the annotations on the law.

Thus, once again a sufficient and sustainable allocation of funds must be advised so that the National Foundation can perform its functions.

Following detailed discussion, the Council recommends the following content-relevant orientation for awarding funds 2016:

(Recommendation of the Austrian Council in February 2015)

- Reinforcing of the research infrastructure by focusing on initiatives with corresponding critical variables and risk potential
- Reinforcing of the national human potential basis
- Risk capital reinforcement
- Reinforcing the contribution of intellectual property to growth and innovation
- Reinforcing innovation potential with "Open Innovation"
- Coordination and harmonisation of regional and federal RTI activities
- Excellence in basic research
- Measures to strengthen location Austria for research-active companies
- Research and technology initiatives for the industry location
- Measures to strengthen complexity research

The orientation here follows the principle of the National Foundation's long-term planning ability and continuity. With the beneficiaries' applications, factors to be considered in particular include the existing programmes in the de-

partments and agencies and (with regard to the focus on intellectual property) the planned compilation of a national overall strategy on intellectual property.

Recommendations of the Austrian Council for University Governance and Management Structures – Recommendation dated 4 March 2015

Background

With the coming into force of the University Act 2002 (German abbreviation: "UG"),¹ the universities were relieved by the Federal Gov-

ernment from micro-management (they have since been legal entities governed by public law²) and provided with extensive autonomy. As

¹ The lion's share of the provisions of the UG came into effect in 2004 and has been amended several times since then. Important changes came, for example, with the amendment of 2009 (rector appointment, management of organisational units), the amendment of 2012 (financing of universities, university area structuring resources) and 2013 (implementation of capacity-oriented, student-related university financing, among others).

² § 4 UG (on "Legal Form").



the highest-level bodies, university council, rectorate and senate are now responsible for the developments at the universities. The university council formally acts as the strategic management body and supervisory body of the university. The rectorate, which also represents the university in the outside world, is responsible for operative management. The senate is elected from among the professors, non-professorial teaching staff, the students and the general university staff, and is therefore the formal representative body of the university staff.

With the exception of the highest level of university management, the universities have extensive organisational autonomy. They are free to regulate their internal organisation³ and implement the structural measures that have become necessary in university management as they wish. This has resulted in different forms and an embraced diversity in participation.⁴ The individual universities developed location- and size-related and implemented existing structures in different ways. Continuous management in line with the subsidiarity principle, in which the self-determination and autonomy of the university management levels support a participative process, can, however, not be attested on all management levels on the basis of the responses received in a study performed on behalf of the Austrian Council⁵.

The financial autonomy of the universities is also extensive. A controlling influence of the Federal Government is only provided via the performance agreements (every three years between the respective university and the responsible ministry) and the connected allocation of the budget to the university. The University Act

states that reports must be written on this subject matter (knowledge balance with higher education statistical data reporting and a statement of accounts), which must be conveyed to the responsible department. The universities are also subject to participation and finance controlling according to § 15b of the “Bundeshaushaltsgesetz” (Federal Budget Act) and must therefore forward a quarterly report with planning data and a risk assessment to the BMWFW.⁶ As a strategic component the universities compile a development plan for an unspecified period, which is a key element of the performance agreements. The detailed reporting system therefore ensures transparency in the control and development of the universities. Adequate management tools for monitoring and controlling have been established for this at the universities.

With the UG, the universities were also enabled a reorganization of their HR structures. They received extensive autonomous scope for action, which enables a new staff development policy for new admissions in particular. The “appointment policy” – a cornerstone for the scientific profiling of a university – is especially important here. The budget for university staff is also highly relevant. Up to 80 percent of a university’s overall costs are staffing costs. Career models for young scientists are an equally important element of staff development, as this can significantly influence the staffing structure. The universities have met with varied success here to date, and it has not been entirely possible to develop an extensive staff development strategy either – even with the negotiation

recommendations

³ § 5 UG (on “Freedom from Ministerial Directions and Freedom to Adopt Statutes”); § 20 UG (on “Management and Internal Organisation”).

⁴ Governance und Partizipation – Empfehlung zur Fortentwicklung der österreichischen Universität, sec. p. 43–48; Österreichischer Wissenschaftsrat, 2013.

⁵ B. Elias, Pöchlhammer Innovation Consulting; Analyse der Governance- und Management-Strukturen an österreichischen Universitäten, July 2014, commissioned by the Austrian Council.

⁶ See UG § 15 (7).



recommendations

of a collective agreement⁷. An all-universities staff planning is, however, critically important if the staff structure is not to be exposed to random developments.

In addition to the legal specifications, however, it is social changes in particular that increasingly determine the development of universities. The ongoing transformation of society into a knowledge society has resulted in a sharp increase in student numbers over the last ten years. At universities, there are 39.6 percent more regular students; the number of study places at technical colleges rose in the same period by 86.3 percent. At all tertiary education institutions together there were a total of 376,710 students in Austria in the 2013/2014 winter semester. Science staff, infrastructure and budget could not, of course, be adequately increased in the same period. This results in partially unfavourable supervision ratios, outdated equipment and declining real expenditure per student.

Many subjects and subject groups are confronted with the problem of “extremely popular courses”. For especially high-in-demand studies, a regulation⁸ was actually anchored later on in the University Act which restricts the number of beginner students; there are, however, no or only restricted options for the universities to regulate the number of students. Academic autonomy is therefore actually a given with regard to the content and arrangement of the curricula; however, a capacity-oriented offering is

currently only possible within limits on the basis of the applicable regulation.

The enduring pressure of international students on Austrian universities (35 percent ordinary first-year students in 2013/2014 were from the EU or non-member countries⁹) can only be handled to a limited extent with the tools available to the universities to cope with these masses of students.

The currently existing framework conditions take the universities to their limits. In WS 2013/2014, Austria's public universities had 273,280 regular students. This is an increase of 42 percent¹⁰ compared with WS 2003/2004. On the basis of Austria's demographic development, the university planning forecasts 2011¹¹ assumed only a marginally increasing number of students by 2030 – although no massive growth is expected, the attractiveness of Austrian universities for students from the international environment and the general trend towards higher education remain, however, uninterrupted.

So far, this essentially welcome and necessary trend towards more education has resulted almost exclusively in an increasing burdening of tertiary education institutions, especially the universities. The challenge for the body politic in the future should not be, however, to achieve a tertiary rate of 40 percent by 2020, without making the entire range of education and further training attractive at all education levels. The capacity limits for universities are reflected more and more in their infrastructural facil-

⁷ The Collective Agreement for University Staff was finalised on May 5th, 2009 and came into effect on October 1st, 2009.

⁸ UG § 14h, § 124b.

⁹ Statistik Austria, Hochschulstatistik 2013/14; compiled on August 26th, 2014.

¹⁰ Statistik Austria, see 2 (ordinary students).

¹¹ University Planning Forecasts 2011 (Statistik Austria: A fall in ordinary students of 0.8 percent was recorded for the previous year).

ities in university teaching – too few science employees, and a rising number of students parallel with tight budgets in research in particular. Changes in the research funding policy, such as increased project-oriented research, the competitive awarding of third-party resources from funding programmes, as well as cooperation between companies and universities; although these resources have verifiably resulted in an increase in quality, they substantially stress university budgets due to the fact that full-cost funding is rarely a given. Ultimately, it is also profiling processes and priorities in teaching and research that have to be controlled during the course of future-oriented university management.

A new image for universities in society was also created as the changes were made. Universities increasingly have to operate in (international) competition. This is exhibited by numerous rankings, whose results are increasingly more important for a university's reputation. There is also parallel competition for the best brains in teaching and research, as well as for students. A "market" develops at the universities for this in terms of "knowledge follows money". In addition to income, factors such as research conditions, availability of resources, an excellent research infrastructure, the availability and possibility of raising research funds, and also the quality of life of a city or a state in which a university is located, grow more and more in importance for the recruitment of top researchers. For universities with tighter budgetary flexibility or an inimical environment, it will therefore be more and more difficult in the future to win over excellent scientists.

Against this background, Austria's universities have been undergoing a thoroughly successful development process since the University Act came into force. The changed framework conditions, however, mean there is reform requirement to equip universities in Austria as optimally as possible for the next decade.

As part of a study commissioned by the Austri-

an Council, the governance and management structures and the communication structures and culture at the universities in particular were examined in more detail; its results served among other things as the basis for the subsequent discussion process and the elaboration of the subsequent recommendations of the Austrian Council.

Recommendations

Adapting the Autonomy at Universities to Current Framework Conditions

The Austrian Council recommends extending the universities' autonomy for those functions that affect the determination of their capacities in teaching and research.

The number of available study places for study subjects or subject groups is determined for this by the universities on the basis of available resources and in terms of a quality-oriented development (e.g. an improved supervision ratio).

Depending on the budgetary possibilities and following the principle of an adequate study place financing, the respective number of study places must be negotiated within the scope of the performance agreements with the responsible ministry and determined accordingly for the coming period.

For the approval of students for bachelor, master and doctoral studies, the universities should also be enabled to define selection and admission criteria, which facilitate top-quality and profile-oriented education for students in line with the available capacities. Clear regulation is indispensable for the implementation of capacity-oriented study place financing.

Modification of the Selection Procedure for Appointing the Rector

The Austrian Council recommends the selection procedure for appointing the rector be modified.

With regard to the regulations of the tender and the right of nomination for the position of

recommendations



recommendations

rector¹², the Austrian Council recommends a modified procedure to provide an “election proposal” at the universities. As regulated in § 21(1)Z2 University Act, the position of rector is tendered by the university council and a selection committee is set up in accordance with § 23a. The selection committee, on which the senate chairman and the university council are represented, compiles a shortlist of three candidates from the applications. The application of an acting rector must also be considered here. This shortlist of three candidates should, unlike the existing regulation, be binding for the senate with the option of proposing maximum two more candidates for the election to the university council.

The Senate’s Role in University Management

The Austrian Council recommends further emphasising the senate’s advisory function. Operative issues should, on the other hand, be exclusively incumbent on the rector’s competence. A functioning communication and clear distribution of competencies between the committees is critical for constructive cooperation by the management bodies. The senate should position itself in a stronger advisory body role here. In terms of a continuous subsidiary organisation and improved participation of subordinate levels, in this respect the senate should incorporate decisions of appointed college bodies, commissions or committees more intensively as the basis for its advisory function. This would in turn guarantee a direct influence of these levels on the development of the universities. In the discussions held as part of the study commissioned by the Austrian Council, it was once again emphasised here that a prompt and extensive integration of those involved, especially at

informal level, can positively influence the development processes.

Design of the Development Plan of the Universities as Long-Term and Binding Planning Tool

The Austrian Council recommends structuring the planning horizon of the development plans at universities over at least two performance agreement periods or even beyond.

The development planning is an important component of transparent profiling and further development at universities. It is not subject to any defined time horizon. In terms of a long-term and binding planning tool, it does however appear beneficial to design the planning horizon of the development plan considerably beyond the duration of one performance agreement period of three years. The performance agreement as a medium-term planning tool should be based on this without duplicating it; rather, it should illustrate the requirements and the services offered and supported by the universities and their budgetary provisions in a focused way.

Optimisation of Staff Composition of Management Committees at Universities

The Austrian Council recommends appointing university internal and external experts in the management committees at universities.

The combination of university internal and external competencies for the management of universities has proven its value at some locations in optimally dealing with the far-reaching changes at the universities. The Austrian Council believes the benefit of integrating non-university management knowhow should also be considered in the future with the composition of the management team.

¹² See § 23 (3); §§ 23a, 23b; § 25 (5, 5a): The rector must be selected by the university council from a list of three proposed by the senate for an appointment period of four years. Re-election is permitted.

Staff Development and Qualification of Management Staff

The Austrian Council recommends establishing a long-term staff development strategy at the universities. In terms of an attractive and sustainable staffing development, the perspectives and development options of employees should be communicated transparently by the university management from the very beginning.

The staffing structure at universities is evaluated rather critically in places. The percentage of third-party funded employees with time-restricted contracts is very high – especially at universities with a high percentage of project-oriented research. The set-up and removal of third-party funded employees should therefore be planned, clearly regulated and controlled in a structured manner by the rectorate (staffing development).

Where necessary, the Austrian Council recommends a staffing separation into scientific and economic agendas for the management of larger organisational units at the level of the faculties and centres/departments.

The management staff at universities (managers of organisational units) is increasingly confronted with classic management tasks and integrated into internal university strategy processes. The results of the study¹³ show that the expenditure for this is classified as “high or very high” with two thirds of those surveyed.

At large universities in particular it is, however, increasingly important for management at the level of faculties (or centres/departments) to support the rectorate both at scientific and economic level. In addition to scientific competence, economic management expertise is consequently also required more here. Structures

should therefore be created where necessary, which enable and optimise a clear separation of the respective responsibilities, and therefore support the rectorate with strategic control of the university.

In terms of a future-oriented staffing development, it is therefore also indispensable that management be developed and supported on various levels. In addition to scientific competencies, skills in management and staff leadership should be increasingly integrated into training as criteria for management positions.

Knowledge Balance and Performance Agreements Reform

In terms of reduced administration cost, the Austrian Council recommends coherent processes be developed for compiling performance agreements and the content of knowledge balances.

The number of required indicators should be reduced to control-relevant indicators (“*hard accountabilities*”). Knowledge balance indicators, which are used for international comparisons (keyword “rankings”), should also be coordinated with the corresponding indicators.

The performances of universities of the arts must only be mapped within limits with the usual sets of indicators (for knowledge balance or rankings). These should therefore develop evaluation criteria that illustrate the performances at universities adequately and in a comparable way at an international level.

Internal Structures and Communication at Universities

The internal organisation must, with the exception of the highest management level, be defined autonomously by the universities¹⁴. On the basis of their heterogeneity, this consequent-

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¹³ See B. Elias, Pöchlacher Innovation Consulting; Analyse der Governance- und Management-Strukturen an österreichischen Universitäten; chapter 3.6; July 2014, as commissioned by the Austrian Council.

¹⁴ See UG § 20 (4).



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ly resulted in individual differences in the organisational forms. These differences must basically be adjusted positively and to the requirements of the individual organisations.

In the study on communication and management structures at universities, the quality in communication and information policy is evaluated critically by those surveyed. It evaluates the satisfaction with the “integration into” and the “results from” strategic processes and decisions concerning organisation and administration as relatively low¹⁵.

The Austrian Council recommends communication satisfaction be evaluated at universities and necessary changes be made where required. In this context the results from legally prescribed quality audits¹⁶, from which improve-

ments in the communication structure can be derived, should also be incorporated. The duration and performance of decision-making processes can benefit significantly from this. The funding of an appreciative communication culture should take priority in the management of universities. Communication cannot be ordered; well-coordinated organisational structures can, however, make a positive contribution, whereby the development of an “integration into” is also a factor.

Bringing “the best brains” to a university and keeping them there is an important component of a successful university policy. To achieve this, promoting an appreciative communication culture should be a high priority requirement in the management of universities.

Recommendation of the Austrian Council for Supporting an Improved Crowdfunding Culture in Austria – Recommendation dated 7 May 2015

Background

The cornerstones of a legal framework for alternative financing models such as crowdfunding or crowdinvesting have been defined since the Austrian Federal Government’s advisory session on 24 March 2015. A differentiated draft of an Alternative Financing Act (German abbreviation: AltFG) is now also a given. The Austrian Council for Research and Technology Development initiated this positive development to deal with the additional framework conditions, supporting measures and mechanisms to utilise the

full potential of these new possibilities for the innovation location Austria.

Crowdfunding is a special form of crowdsourcing and designates a form of financing with which private investors, i.e. the crowd, finance big ideas, products or services via small amounts. Crowdfunding is an early-phase financing mechanism and provides risk capital for setting up new companies or the (partial) financing of innovation projects of small and medium-sized companies. Crowd-based innovation models can

¹⁵ See B. Elias, Pöchlhammer Innovation Consulting; Analyse der Governance- und Management-Strukturen an österreichischen Universitäten; fig. 16.

¹⁶ See UG § 14; HS-QSG § 18.

also be applied with a wide range of research and technology development. The processing is mostly via crowdfunding platforms that provide contracts as digital marketplaces and support the performance of standardised processes. Crowdfunding as a phenomenon is currently not subject to any standardised systematisation, however the following crowdfunding models are differentiated: “Donations”, “Rewards”, “Pre-Sales”, “Lending” and “Investing”:

- Crowdfunding projects, which are subject to the “donation-based” model, collect donations or endowments. This form of financing is generally based on altruism. Investors do not receive any direct return. This form of crowdfunding is used in many cases to finance creative or social projects (e.g. Betterplace¹⁷) and is also frequently applied in the area of regional crowdfunding (e.g. Nordstarter¹⁸), for financing art projects (e.g. Art Basel cooperates with the Kickstarter platform) or less often for science financing (e.g. ScienceStarter¹⁹).
- With the “Rewards” model the crowd receives material or ideational appreciation from the project implementer. This can be the early usage possibility of the result with a product development. No money, however, is returned to the backer.
- In the “pre-sales” model, the financing of the project or company is performed via advance orders of new products or services. A pre-financing of the production costs is consequently enabled via crowdfunding. At the same time, this variant can also be used as a market research method, as pre-sales provides

first insights into demand, and market and price models can be determined.

- Projects with the “lending” model cover the area of private micro-credits (crowdlending) for projects. The private funder awards their money via a platform operator or directly to a person or a company of their choice. Interest on the amount given in a defined period is expected as return flow. The interest rate is agreed variably on the basis of supply and demand per project.
- The “investing” model is also referred to as “crowdinvesting” and enables participation in the early phase financing of start-ups or innovation projects in small and medium-sized companies, mostly already from approx. EUR 100. The crowd investors participate in the company with dividend certificates or as typical silent partners. They can reduce the investment risk by distributing their risk capital over several projects. Better-known platforms in Germany include Seedmatch²⁰, Companisto²¹ or Bankless²², among others. In Austria, there are currently six platforms that operate in this mode: CONDA²³, 1000x1000²⁴, Crowdcapital²⁵, dasErtragReich²⁶, GREEN ROCKET²⁷ and Regional Funding²⁸.

This wide range of crowdfunding is still insufficiently spread in Austria, especially compared with the Anglo-American area of influence. Knowledge about crowdfunding in Austria is restricted to knowledge about individual projects, which are mostly dominated by “donations” or “rewards-based” models, and can

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17 <https://www.betterplace.org/de>

18 <https://www.nordstarter.org/>

19 <https://www.sciencestarter.de>

20 <https://www.seedmatch.de/>

21 <https://www.companisto.com/de/>

22 <http://www.bankless24.de>

23 <http://www.conda.at>

24 <https://1000x1000.at/>

25 <https://www.crowdcapital.at>

26 <https://www.dasertragreich.at>

27 <https://www.greenrocket.com/>

28 <https://regionalfunding.at>



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therefore be described as superficial. Furthermore, the few Austrian projects involving the funding of innovation and science projects via crowdfunding are still in their infancy.

Recommendation

The following recommendations for action are based on the survey results of a broad-based study on the potential of crowdfunding of all five above-mentioned concepts for innovation location Austria²⁹ and on the regulatory efforts of the Austrian Federal Government (draft: Alternative Financing Act, German abbreviation: AltFG):

(1) Anchor Crowd Innovation in the Minds of Austrians

A well-informed handling of crowdfunding requires wide-ranging knowledge of financial issues, communication, technology and social media, psychology, legal issues and economy in particular.

The Austrian Council recommends a broadly applied, by the public sector organised information and education campaign to establish more knowledge of crowdfunding in the general public.

(2) Start-Up Funding for Crowdfunding Projects

The first preparation and implementation of crowdfunding projects is costly. The Austrian Council therefore recommends start-up funding for the individual campaign planning and performance for innovative individual people, start-ups, SMEs or university and research institutions.

Projects that reinforce the governance structures of Austrian university and research institutions with crowdfunding initiatives, e.g.

crowdfunding initiatives of innovative alumni associations of Austrian university institutions. The full potential of diaspora projects will also be utilised. Start-up funding of innovation projects will be supported by dedicated people with migration backgrounds, who set up companies in Austria or further develop research networks and want to use their international networks to do this. The Austrian Council recommends the development of an own funding programme for this.

(3) Introduction of a Transparency Label

To establish trust and transparency, the Austrian Council recommends the introduction of a transparency label for crowdfunding offers. This is to be coordinated with current developments at European level.

(4) Opening Up the Innovation Policy:

Increased Integration of Crowd Intelligence

As is already the norm with innovative companies, the Austrian innovation policy should also serve crowd intelligence more and more in its work. The “Test Tube Governance” concept can be used to identify interesting contributions and innovative ideas of existing development departments, fora, committees and think tanks with online participation of the crowd and integrate these into current policy decision processes. Projects of this kind will be prepared in cooperation with classic media (media mix). The Austrian Council recommends the design and development of a transparent “Test Tube Governance” platform for better integration of crowd intelligence into innovation policy issues in cooperation with a recognised media partner, such as an online daily newspaper or weekly magazine.

²⁹ Willfort, R. et al. (2015): Crowdfunding und Crowdsourcing: Potenzial für den österreichischen Innovationsstandort, Vienna/Graz 2015.

(5) Supporting Regions via Crowdfunding

Regional networks strengthen the economic power of a region and prevent emigration. Regional crowdfunding promotes the creation of jobs and provides new key responsibilities and perspectives for regional interest groups. The rapid implementation of regional showcase or lighthouse projects provides the required application knowledge and supports distribution. The Austrian Council recommends the development and implementation of regional crowdfunding showcase or lighthouse projects. These must be optimally prepared with the respective administrators, policy responsible people and media (media cooperation), in order to be able to ensure swift successes (quick wins).

(6) Intensification of Crowdfunding Research

Science has only recently begun to explore the possibilities of crowdfunding. The Austrian Council recommends funding more research via Open Innovation in general and via crowdsourcing and crowdfunding in particular, as well as making the crowdfunding phenomena available to a wide-ranging general public with the financing of know-how transfer projects, especially from the Anglo-American area of influence.

The Austrian Council also recommends the sustainable establishment of a centre for research via

alternative financing forms in Austria in line with the Cambridge Centre for Alternative Finance model at Cambridge University in the UK.

(7) Creation and Implementation of a Crowdfunding Roadmap

The Austrian Council recommends the use of a work group to prepare and implement a crowdfunding roadmap for Austria with the inclusion of administrators and innovation stakeholders (ministries, innovation and funding agencies, etc.). In addition to other important topics, the following factors should also be part of the roadmap:

- Further development of existing funding mechanisms
- Development of lighthouse projects at national level
- Improvement of the legal framework conditions and creation of tax incentives for crowd investors
- Development of a crowdfunding transparency label
- Development of information, continuing education and monitoring measures for the sustainable anchoring and preparation of knowledge-based decisions on crowdfunding and crowdfunding

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Statement by the Austrian Council for Research and Technology Development on the Draft of an Ordinance to Amend the Higher Education Area Structural Funding Ordinance (HRSMV) – Recommendation dated 28 May 2015

With this draft for the modification of the ordinance on the higher education area structural funding ordinance, awarding performance-related funds will have a greater influence on the financing form of the universities. For the coming performance agreement period 2016 to 2018, in addition to the basic budget, a further 750 million are planned as part of the HRSMV. Of this EUR 97.5 million (13 percent) will be

competitively awarded as tendered (partial amount for cooperations). The lion's share will be distributed to the universities on the basis of an input factor (number of examination-active students; 60 percent) and an output factor (number of graduates; 8 percent).

The Austrian Council for Research and Technology Development believes this is indeed a step in the right direction; however, the goal of



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expanding competitive and performance-oriented funding to universities can only be achieved to a certain degree. The volume of funding used is an insufficient financing share for universities and in particular does not replace any capacity-oriented study place financing.

Share of Performance-Oriented Teaching and Research Indicators

A large part of funding (60 percent or EUR 450 million) will be distributed aliquot to the universities on the basis of examination-active run ordinary studies. Calculated on the number of students listed under this (currently 178,203), and if, for a moment, we leave out the weighting of the seven subject groups, on average this corresponds with EUR 841.7 per student per year, which a university receives for this.

Eight percent or EUR 60 million is estimated for the partial amount for graduates of regular studies. This is equal to approx. EUR 583 per graduate, if we apply the average number of graduates in recent years (2011-2013).

In addition to the insufficient volume of this funding to implement a student-related financing of the universities, a capacity-oriented access management is also lacking in some study areas, whereby “mass study subjects” with this distribution key are preferred.

Funding Young Talent Researchers

A partial amount for structured doctoral study courses will be introduced as a new indicator for calculating the HRSMV. This performance-related indicator is oriented on the number of doctoral students with an employment relationship with the university. The goal is to increase the number of structured doctoral studies, which are linked with specific quality criteria. The listed criteria are without doubt and exception obligatory for the supervision of all doctoral students. Four percent or EUR 30 million are provided for this within the scope of the HRSMV. With 7,486 students at the moment in this employee group, the universities receive approx. EUR 4,000 for three years for this per

doctoral student. The universities can, however, only partially enter this as additional funding in their books, as the non-payment of the “doctoral colleges”, which were previously funded by the FWF, will also be compensated with this. This also only accounts for a smaller amount of the costs that are used for educating doctoral students here.

Knowledge Transfer and

Development of Cooperations

The partial amount for knowledge transfer is EUR 112.5 million. According to § 6(1) this, funding in future will be calculated on the basis of the acquisition of FWF projects and EU projects, and awarded aliquot to the universities. The revenue from FWF projects will also be considered with a factor 2. With this partial amount, however, the non-payment of overhead costs will also be compensated by the FWF, for which approx. EUR 15 million from the FWF’s budget have to date been used up.

With the financing situation of the FWF remaining as it is, this will nevertheless further burden the application situation and approval rate (approx. 25 percent with individual projects) – by way of comparison: With the Swiss sister organisation SNF, the approval rates are currently above 50 percent. The funding that the FWF awards as competitive should therefore be increased accordingly. With the regulation the increased incentive to acquire EU projects will certainly continue to be a given and thoroughly desirable.

Research activities at universities with a high percentage of third party funding projects, which do not originate in FWF or EU funding, will not be supported by the strict regulation either. This could result in an unfavourable development for the motivation of cooperations, especially with businesses.

For the partial amount for cooperations EUR 97.5 million therefore remain, which will be awarded competitively as tendered. With the awarding of HRSMV funding for 2013-2015 with approx. half the amount (EUR 48 mil-

lion), 61 cooperation projects were funded with up to 30 percent of the project amounts. The goal of achieving more synergies between the universities, as well as between universities and other research-intensive institutes and businesses, can certainly be achieved with success using this mechanism. This will in particular improve the joint procurement of research infrastructure facilities and equipment and the utilisation of synergies in teaching. A doubling of the budg-

et available for this is therefore very welcome.

The Austrian Council would point out that it believes it is unnecessary to orientate the total funding awarded on the percentage share of the universities in the basic budget. The partial amount of the HRSMV funding provided for this should in particular contribute to supporting cooperations, but also to funding competitively excellent projects locally, regardless of their size.

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The Austrian Council for Research and Technology Development's Recommendation on Social Business in Austria – Recommendation dated 30 July 2015

Background

On the basis of international developments in the areas of social innovations, social entrepreneurship and social business, the Austrian Council for Research and Technology Development, together with the Federal Ministry of Labour, Social Affairs and Consumer Protection and the AWS (Austrian Federal Promotional Bank), has commissioned the Vienna University of Economics with a survey of the potential for social businesses in Austria.

Social businesses are organisations whose principal goal is a positive social effect and which generate at least 50 percent of their income via the market through the sale of goods and services and not through donations or subsidies. Furthermore, social businesses also feature key stakeholders, e.g. employees who participate in positive effects, and a predominantly limited profit payout, as profits are primarily used for the social goal. The last two factors must be recognised as target criteria. Based on estimates there are approx. 1,200 to 2,000 social businesses in Austria. An increase to 1,300 to 8,000 companies is expected by 2025.

Social business is a very young sector, which can massively expand and support Austrian society with the solution of a range of pressing problems. There is a great deal of latent potential

here, but the sector is already making relevant contributions to value creation and employment. The ecosystem for social businesses is only now being set up. At the same time, the demand for social and sustainably produced goods and services is also increasing.

There is currently no purpose-dedicated support for social business in the Austrian public sector on a financial, intellectual (know-how) or legal level. At the moment, the possibilities for hybrid organisations between classic NPOs and profit-oriented companies appear limited and are linked with high organisational expense. Appropriate framework conditions must be set up here.

Recommendations

Against this background, the Austrian Council for Research and Technology Development recommends:

1. Adjusting Legal Framework Conditions for Social Businesses

For social business companies in Austria the Austrian Council recommends establishing an own legal form with the goal of creating legal certainty for social entrepreneurs, potential investors, clients and customers.

Furthermore, the Austrian Council also recom-

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mends amending public benefit legislation so that foundations can invest directly in social business companies. Public benefit foundations are currently severely restricted when they want to provide financing for social businesses. Investments by foundations in social business should therefore be given appropriate tax incentives. This also applies for private investors. This would then sustainably mobilise private capital for meeting social challenges. The creation of an own legal form, the amendment of public benefit legislation and the introduction of tax incentives for private investments should be implemented as quickly as possible, but by 2017 at the latest.

2. Providing Public Sector Funding for Social Businesses

Social business start-ups and incubators also require monetary support to fund new businesses in this area.

The Austrian Council therefore recommends the introduction of measures to support innovative social business start-ups. Specifically in a

first phase in 2016 and 2017, 15 social business start-ups should be funded with up to EUR 150,000 each. This funding should be implemented as part of incubation programmes.

3. Improving the Effect Measurement of Social Businesses

Private backers, public benefit organisations, social entrepreneurs and social businesses in Austria are lacking a standardised reporting framework, which would enable a comprehensible reporting method for successes and social effects.

The Austrian Council therefore recommends uniform report provision standards for measuring the effects of social business activities. The subsequently improved public perception and media presence of the sector would in turn support private investments, e.g. through sponsoring. The Social Reporting Standard in Germany (www.social-reporting-standard.de) serves as a good example here. Specifically the Austrian Council recommends the establishment of a lean monitoring mechanism that is adequate for all company phases.

Statement by the Austrian Council for Research and Technology Development on the Consultation Paper “Prototype for an All-Austria Development Plan” –

Recommendation dated 4 August 2015

General Position of the Austrian Council

- 2 percent of GDP for the tertiary sector by 2020 at the latest
- Implementation of a capacity-oriented study place funding with fair access regulations and improved study conditions
- Increased knowledge transfer and cooperations at universities
- Compilation of one or more measures papers on the implementation of the all-Austria university development plan

Higher education policy has the key task of defining a holistic concept and stable framework conditions. One important framework condition here is the financing of teaching and research at universities.

The goal of using 2 percent of GDP by 2020 for the tertiary sector was reaffirmed in the last government programme. According to the current calculations³⁰ this would mean an increase from 1.47 percent or EUR 4.66 billion (2012) to EUR 8.16 billion by 2020. The increases required for

³⁰ Forschungsquotenziele 2020 – Aktualisierung 2014; K. Hranay, J. Janger, WIFO, September 2014.

this could not, however, be achieved in recent years. The Austrian Council has repeatedly referred in this respect to the fact that, according to the available financial framework, the financing shortfall consequently grows and the under-financing of universities remains a given.

It is also regrettable that the legally stipulated study place financing and a definition of the criteria for capacities, while considering the quality in teaching and research, to date could not be implemented. An increase in the competitive financing share for research, as targeted in the RTI Strategy, could not be achieved to date either.

The Austrian Council for Research and Technology Development estimates the improvements in the higher education area targeted in the all-Austria university development plan and especially at the universities can therefore only be implemented within limits.

As an overall concept, the “Prototype for an all-Austria university development plan” consultation paper³¹ is based on several previous processes (higher education partnership dialogue, university plan project, work groups of the university conference, etc.) and relevant publications³².

Section I – University policy goals are underscored by a joint development of universities and technical colleges in the Austrian higher education system. The most important key points and developments for the universities are addressed. Specific goals, however, are still only

formulated in general in this paper. The Austrian Council therefore believes it important that the process for profiling and forming intra and inter-university priorities is clearly structured and worked out in a specific time horizon.

Section II – deals with quantitative objectives. The goal of increasing the number of examination-active students in the right direction and at the same time improving the supervision ratio is indeed a positive factor. The objectives with regard to the overall number of students remain, however, part of the outlined forecasts. A capacity-oriented development in line with a goal definition is not illustrated herein. This is regrettable, as even in the current Austrian university development plan a calculatory under-capacity is found at 17 of 21 universities.

Section III – illustrates existing measures and the status of evaluation and quality assurance. On one hand, these are reports (knowledge balance) of the universities, which are used for controlling the universities; on the other hand the quality management is checked regularly with external audits. With regard to performance measurement, the Austrian Council once again recommends reducing the indicators available for this to control-relevant “hard accountabilities” and definition in line with international comparability.

Given that this consultation paper is a development planning tool, the Austrian Council for Research and Technology Development recom-

recommendations

³¹ The mechanism of an all-Austria university development plan (ÖUEP) – provided for in the University Act (§14d UG), but discontinued on 31 March 2014 – nevertheless will now be used by the BMWFW as a strategic planning mechanism to optimise an overall strategy of the university sector. The ÖUEP planning horizon includes two performance agreement periods.

³² Österreichischer Hochschulplan, BMWFW, December 2011; Universität 2025, Austrian Science Council, November 2009; Universitäre Profilbildung im Kontext des österreichischen Hochschulraums und des Universitätsgesetzes 2002, E. Pichl, Zeitschrift für Hochschulrecht 11, December 2012.



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mends the objectives be linked with precise measures and a specific time horizon, in order to increase the obligation of an all-Austria university development plan.

The quality of teaching and research at the universities is front and centre here. Both sides are responsible for this: the students, of whom high quality performances are expected, and the universities, which must provide high quality teaching and research at the institutes under optimum conditions. Increasing the number of students and graduates here, optimising study conditions, modernising the research infrastructure, intensifying basic research, etc., can, however, only succeed with a massive expansion of the required staffing and infrastructural capacities at the universities. With the available resources planned for the next performance agreement period, it will not, however, be possible to meet all expectations. Structural changes at the universities alone will not be sufficient for this. If more students are to be educated in terms of the formulated quality goal and the research quality and quantity are to be increased, these too must also be guaranteed with significantly higher financing. In its recommendation on the research and higher education rate³³, in the recommendation on the development of the higher education and science system in Austria³⁴ and in the recommendations of the reports presented on Austria's scientific and technological performance³⁵, the Austrian Council for Research and Technology Development has repeatedly referred to the budgetary adjustment and increase required for this.

If Austria is to succeed in terms of the RTI Strategy in education and research, at the political level a significantly improved funding of education and research must be combined with a clear commitment to the strategy.

Section I – Higher Education Policy Goals

The roles and primary tasks of the universities and technical colleges are considered together in this development plan. This cohesive approach should be pursued and expanded on in the interests of a holistic university development. In this respect, the Austrian Council for Research and Technology Development would therefore recommend, as already addressed above, goal-specific measures and subsequent processes in the Austrian universities development plan (ÖUEP) should be specified, supplemented with defined goals, resulting in the establishment of motivation-oriented control.

On the measures presented in the Austrian universities development plan in this section

... for the further relief of the universities there is still the expansion of the technical colleges system obligatory programme ...

... a better coordinated studies offering between universities and, where required, universities and technical colleges, which could result in university networks.

... the university studies offering should be geared towards demand and quality improvements. A participatory process is planned for this.

the Austrian Council has determined that

- a “harmonised studies offering” also depends significantly on coordinated, social non-selective study access regulations.
- the study place funding and admission regulations at technical colleges are only condi-

³³ Austrian Council recommendation on financing universities and research up to 2020 of 16 January 2014.

³⁴ Austrian Council recommendation on the development of the university and science system in Austria of January 5th, 2013.

³⁵ Report on Austria's Scientific and Technological Capability 2015, p. 34 ff.; 2014, p. 26 ff.; 2013, p. 23 ff.; 2012.

tionally coordinated with the access regulations at universities and that an adequate solution should be intensively sought for the curiosity that students in Austria with non-admission to a technical college (can) bypass to a university.

- in the addressed participatory process, building on the presented literature on this topic including a multi-year discussion within the scope of the university plan and the university conference, measures should be worked out and implemented in a defined time horizon.

The priorities mentioned under research and teaching are also necessary developments for the universities. The objectives connected with these, however, also remain very general in the development plan.

To bolster basic research, the Austrian universities development plan (ÖUEP) specifies that it is important to “*create both the environment and a budget basis ...*”. The freedoms for this must on one hand be created by “*organisation-internal structural changes*” and on the other hand “*considered in the programme formation of the FWF*”.

The Austrian Council specifies that this must be connected with a clear increase of the budget funding available for teaching and research, especially for competitive funding. A sufficient budget basis will not be possible with structural changes alone.

Important, already initiated activities are mentioned under item 4, “Intensification of the knowledge and technology transfer”. The Austrian Council believes it is also especially important here to point out that on the universities’ side in particular, there would have to be more activities integrated into teaching and research to motivate entrepreneurship and entrepreneurial thinking. The focus on quality in teaching and teacher training also, among other things, tackles these training goals and is supported by the Austrian Council. Furthermore, freedoms and resources for funding innovative ideas at the universities should also be created, consequently forming the basis for spin-offs and start-ups.

On the point of career concepts for scientific young talent, the Austrian Council must point out that a massive expansion of the positions available for this would be urgently required. At the same time, transparent criteria must be established for the selection and evaluation of career opportunities, which enable a quality-oriented and rigorous selection of the most suitable candidates.

With respect to international exchanges, but also to “brain gain”, more possibilities should also be created for qualified candidates after a stay abroad, so they can apply for attractive positions in Austria.

The “Students” chapter in particular addresses the improvement of the supervision ratio and the socio-economic student structure. Extremely ambitious goals are defined here; this is described in detail in section II. The supervision ratio (measured on the number of examination-active students) will be improved; the number of examination-active students (+10 percent) will be raised, and 10 percent more graduates will be registered. Structural measures, e.g. inter-university and cross-university cooperations between universities and technical colleges in teaching etc., must be initiated for this. Without any significant increase in the university budget, however, these goals are only possible within limits.

With regard to the “socio-economic composition” of the students and graduates, the Austrian universities’ development plan (ÖUEP) correctly specifies that legislators and universities must ensure that they reduce, and do not increase, social selection with access regulations. Nor should this contradict a performance-oriented selection of suitable students at the beginning or in an early study phase.

To enable an increase in the percentage of “non-traditional admissions”, the Austrian Council believes the scholarship system must also be further expanded parallel with this. A substantial raising of the income limits would significantly improve the situation for many students.

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Furthermore, however, the creation of an education-loving society must also be possible in all development phases, from pre-school development right through to tertiary study age. Family, social and education policy are required here as one, in order to enable socially just access to education.

The “Financing” chapter addresses both an increase in efficiency with inter-university cooperations and the need for a medium to long-term budget increase.

The target values – 2 percent of GDP for the universities area, the increase in competitive funding for financing basic research or the increase in university expenditure per student at the level of the countries defined as Innovation Leaders³⁶ – were defined in the Federal Government’s RTI Strategy. The Austrian Council for Research and Technology Development’s annual monitoring report³⁷ does, however, once again show that an ambitious education and research policy is required for this.

Section II – Quantitative Objectives

The quantitative objectives illustrated in this section largely develop in line with the current university forecasts.³⁸ As also defined in the Austrian university development plan (ÖUEP), *“future first-year students can only be determined as a result of open university access in Austria with forecasts”*. A planning component oriented on the actual capacities of the universities and subjects is therefore not discernible and under the given conditions is also only possible within limits. These quantitative objectives are therefore not

preparatory measures to enable a capacity-oriented study place financing, which the Austrian Council believes is an important building block of a quality-oriented development of universities in Austria, and once again should be the focus of the approaching negotiations on funding the universities. With these regulation mechanisms, it is also only possible to shift student flows within limits, e.g. to motivate more students for STEM subjects.

As already described above, the goals with regard to the share of examination-active students, the number of graduates and the supervision ratios for the two approaching performance agreement periods are ambitious. If we apply the evaluation of the capacities in the Austrian universities’ development plan, it also becomes clear that, with the exception of most STEM subjects, hardly any capacities are available in the individual subject groups and subjects at the universities.

With regard to the targeted supervision ratios, a differentiated consideration of the situation in the different subjects, as addressed in the Austrian universities’ development plan, is certainly required to be able to perform efficient staff planning and development.

The Austrian Council supports this performance and future-oriented expansion of the university sector in Austria, and therefore emphatically calls on the Government to put more emphasis on education, science and research and to fund the structural and financial measures required for this across and beyond department boundaries.

³⁶ Innovation Union Scoreboard (IUS).

³⁷ Report on Austria’s Scientific and Technological Capability.

³⁸ See Universitätsbericht 2014; 7.4 Hochschulprognose 2014 – the future development of student numbers, pp. 200 ff.

Statement by the Austrian Council for Research and Technology Development on the Amendment to the University Act 2002 and the Research Organisation Act – Recommendation dated 20 August 2015

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General Position of the Austrian Council

- The Austrian Council supports the further development of the university system in Austria and considers the current process to adjust the legal principles to current requirements, especially with regard to career paths, access regulations and study entrance and orientation phase, an important step towards bolstering the attractiveness and quality of Austrian universities.
- The universities compete internationally in research and teaching. Appointing the best “brains” to a university was always a critical factor for the reputation of universities. The same also applies for the selection and funding of young candidates for an academic career. The best young talent researchers can only be promoted with the establishment of strict quality criteria in their career. The rectorates are responsible for creating comparable and transparent criteria at the universities. The Austrian Council believes there is a lot of catching up work to be done here, especially as the legal framework conditions for a continuous university career will change the staffing structures for the long-term, and to date no universities have used an effective staffing development strategy.
- The role of the universities in the national and regional innovation system is of key importance. The universities form the required nucleus to provide an attractive environment for innovation, as well as the establishment of further institutions and businesses in a re-

gion. The legal framework conditions for the universities are critical here, so that cooperation between science and economy is also “lived” in practice. In this respect, the rectorates are given an important function, as the management of the university must actively assume the control functions enabled in the law. The Austrian Council still sees considerable potential here to better establish the role of the universities in the network of the national innovation system.

Preliminary Note

In its statement on the “Prototype for an all-Austria university development plan” consultation paper, the Austrian Council for Research and Technology Development has already elaborated on its position on university policy objectives and quantitative objectives. For this reason, appropriate additions will be made in this statement for the areas in question.

Additional topics and proposals on the further development of the universities were also worked out by the Austrian Council in the recommendation of March 2015 on *Governance and Management Structures at the Universities*, which should also be considered in future changes.

UG Amendments with Regards to Career Models

The Austrian Council welcomes the fact that the amendments to the UG will very consciously create the legal framework of career models for researchers.

The Austrian Council has called for the creation of continuous career models in earlier documents³⁹. With the amendments to the UG

³⁹ See Recommendation of Management and Governance Structures at Universities; Austrian Council, March 2015; see Report on Austria's Scientific and Technological Capability 2015; pages 11, 43 ff.

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which affect §§ 98, 99 and 109, important steps are introduced for this, which, however, require critical consideration.

Appointment Procedure for University Professors

Articles 98 and 99 of the Austrian University Act regulate the different appointment procedures for university professors.

The changes proposed in this draft to amend the University Act enable flexibility in the definition of the number of §-99 professors at a university (in § 99 [3] the regulation of the number was struck to that of 20vH) and the expansion of the group of university professors (§ 94 Para. 2 Z1) by the growing group of associate professors (§ 98 [14]; § 99 [4])⁴⁰. The number of positions will be defined in future in the development plan and no longer as regulated by the rectorate. The establishment of plannable, continuous career models at universities has been called for repeatedly by the Austrian Council. The proposed legal regulation now provides for this possibility. There is consequently the option of installing flatter hierarchies and more flexible career models at the universities.

The Austrian Council has therefore specified that the highest premise with appointments with application of articles 98 and 99 must be precisely as with the definition of the quality requirements for career opportunities (associate professors) with the assertion of international quality criteria. The sharply diverging opinions on this point at universities/faculties/institutes

are also reflected in § 99 (5) formulated for this, which calls on the rectorates to check the international competitive standards for qualification agreements to determine if they meet the required quality criteria.

Career models for young scientists are an important element of staffing development at universities. The possibility of concluding career opportunities with qualification agreements⁴¹ enables a Tenure Track model at the universities, which is essentially structured in three phases (1) Qualification phase, (2) Qualification agreement/assistant professors, (3) Associate professors. The change to associate professor is coupled here with achieving certain goals in the qualification agreements and results in the removal of the time limit of the employment relationship. With the planned amendment, affiliation of people with professorship qualifications is now also possible.

This career model, widespread at “Anglo-American” organised universities, does, however, require a continuous and performance-oriented selection procedure and an international standard evaluation concept, beginning with selection of the candidates for career opportunities. This already begins with the tender of the positions provided for this and the selection criteria for candidates of career opportunities. The same applies for professors according to § 98 (2) if the tender is performed in national and international media that are essential for the respective scientific area, and not, as provided for in the proposed draft, only published in a newsletter.

⁴⁰ (4) Those that have achieved the qualifications in acc. with § 27 Para. 5 of the Collective Agreement concluded in acc. with § 108 para. 3 in the version applicable from October 1st, 2015 according to the agreement made (associate professors), are part of the scientific and artistic university staff in acc. with § 94 para. 2 Z1.

⁴¹ See § 27 Collective Agreement for university staff.



The Austrian Council specifies that transparent performance evaluation procedures with international staffing have to date not been sufficiently “lived” at all universities. As provided for in § 99 para. 3 to 6, the rectorates are responsible for the quality of the selection procedures and quality standards to be defined. On the basis of the existing framework conditions, the rectorates have to date not been able to meet this obligation entirely. The Austrian Council recommends here, in cooperation with external evaluators, AQA for example, that a suitable selection process be further developed here. On the basis of the current existing framework conditions, an automatic transfer to the next qualification level is not recommended.

The Austrian Council emphasises the fact that in particular after the qualification phase – which usually last two years – and after an agreed four-year research and teaching activity as assistant professor (qualification agreement), a transparent and international quality standards-compliant evaluation of the candidates must be performed. If there is a suitable process for this, it must reflect the qualification goals defined by the university, faculty and the institute in question on the basis of international standards with the candidates. Based on these criteria, the evaluation of the candidates should be performed before an assistant professor takes up office, however primarily by external evaluators/appraisers. The goal should be a quality-oriented procedure, whereby the staffing of all scientific positions is performed via an application and evaluation procedure. The rectorates are requested here to continue or establish even more comparable criteria with high quality standards.

In this respect, it is also very important that a good staffing structure (staffing development of

individual specialist areas, age structure) can only develop in the long-term if this is oriented on the university’s organisational structure, e.g. on the structure in faculties, institutes, research or service facilities (e.g. ZID or analytics labs).

The positions to be staffed in these areas are allocated a job description and a description of the position in the organisation.

On this point, the universities are in particular required to interconnect the staff planning and the development of priorities at the universities. A sustainable staff development strategy, which illustrates the long-term changes on the basis of a changed staff structure in an organisational and staff appointment plan, must therefore be promoted at all universities.

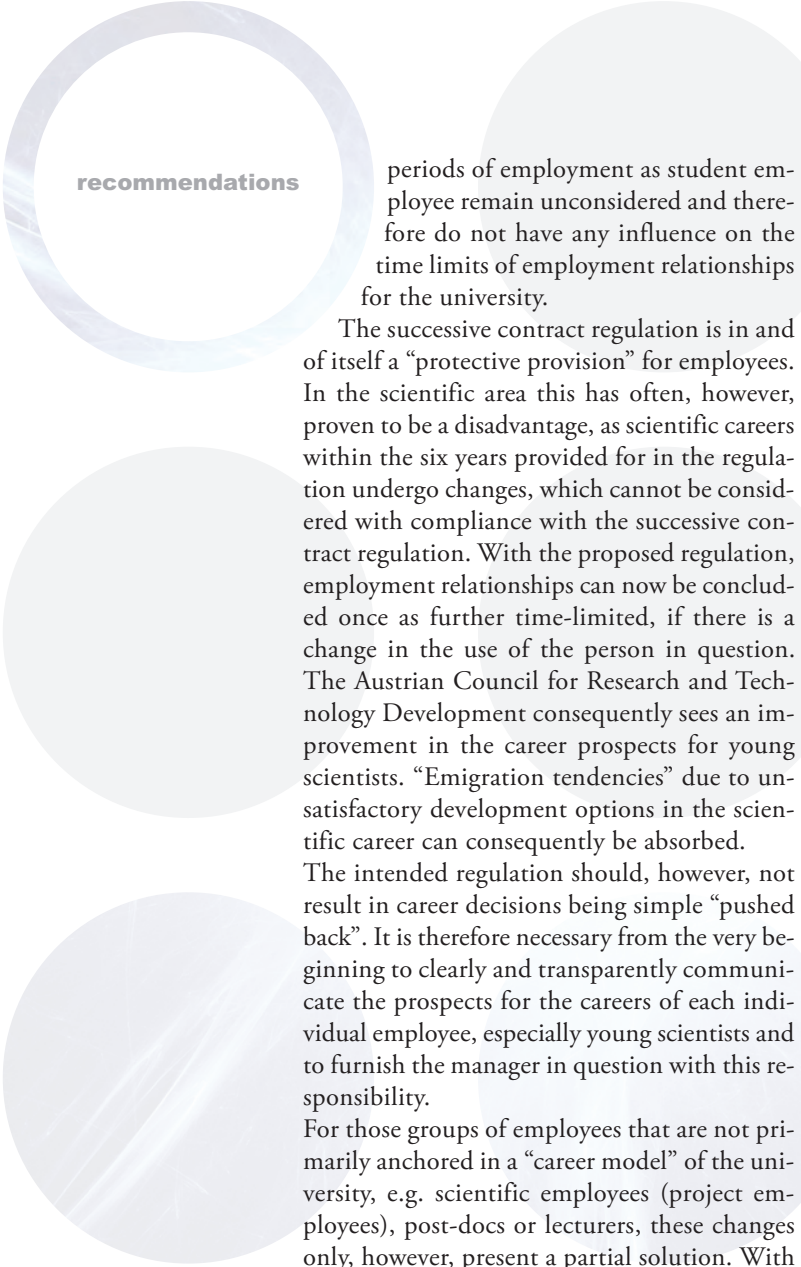
With regard to the reinforcement of the “intra-mural participation and mapping of new career paths in organization law”, it is conceivable that the careers of the scientific staff are primarily determined and promoted by enabling the profiling of international competitive scientific work and more attractive offers in teaching, in the flattest possible hierarchy. A broader staff structure at the level of university professors should therefore be set up. The integration of qualified associate professors into decision-making committees complies here entirely with the nature of a modern managed university.

Successive Contracts Regulation

§ 109 para. 2 deals with the topic of time-limited employment relationships and “successive contract regulation”. § 109 is extended in this draft for the amendment by para. 3 and 4. The provision in para. 3 now allows a new time limitation of an employment relationship to a period of six years⁴², if the employees in question change to another use. Para. 4 clarifies that the

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⁴² With part-time employment.



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periods of employment as student employee remain unconsidered and therefore do not have any influence on the time limits of employment relationships for the university.

The successive contract regulation is in and of itself a “protective provision” for employees. In the scientific area this has often, however, proven to be a disadvantage, as scientific careers within the six years provided for in the regulation undergo changes, which cannot be considered with compliance with the successive contract regulation. With the proposed regulation, employment relationships can now be concluded once as further time-limited, if there is a change in the use of the person in question. The Austrian Council for Research and Technology Development consequently sees an improvement in the career prospects for young scientists. “Emigration tendencies” due to unsatisfactory development options in the scientific career can consequently be absorbed.

The intended regulation should, however, not result in career decisions being simple “pushed back”. It is therefore necessary from the very beginning to clearly and transparently communicate the prospects for the careers of each individual employee, especially young scientists and to furnish the manager in question with this responsibility.

For those groups of employees that are not primarily anchored in a “career model” of the university, e.g. scientific employees (project employees), post-docs or lecturers, these changes only, however, present a partial solution. With regard to top-quality teaching it is therefore essential that more jobs for “senior lectures” be created.

Further flexibility and improvement of the contract certainty of employee groups in precarious employment relationships should also be provided in the form of no-time-limit employment relationships with the university, while complying with the labour law regulated grounds for termination or dismissal.

Change of Research Organisation Act

Basically, the Austrian Council for Research believes the integration of the Austrian Archaeological Institute (ÖAI) and the Institute for Austrian Historical Research (IÖG) into the Austrian Academy of Sciences (ÖAW) is a positive development.

With regard to the ÖAI, in addition to the integration of the ÖAI into the ÖAW for the “sustainable safeguarding of the institute”, organisational framework conditions should also be regulated in the present FOG amendment and the following elements should be considered without fail within the context of the performance agreements.

The ÖAI considers itself a scientific institution for archaeological basic research with main focus on field research, but also as a platform for Austrian and international research institutes and makes its specific logistics and its know-how available for this purpose. This feature of the institute must also remain intact without fail after the integration. The ÖAI also forms an important component of the Austrian culture policy, especially overseas with a tradition reaching back to the 19th century. The ÖAI institutions abroad are held in high esteem and guarantee the performance of archaeological projects, including for other Austrian institutions (universities, etc.). The all-Austria importance of the institute, which is expressed by numerous projects at home and in neighbouring countries, should also be noted.

The ÖAI management has compiled a strategy paper for the future of the ÖAI at the ÖAW, and has already discussed this (positively) with the responsible people at the ÖAW.

The Austrian Council believes it is important here that the position of the ÖAI is not put under pressure by the integration into the ÖAW, and a long-term safeguarding of the contractually defined conditions also provides the basis for the following performance agreement periods. With regard to the pending reforms and the new strategy orientation, a sustainable safe-

guarding of the existing budgetary framework conditions is required.

The long-term safeguarding of the infrastructures of the head office, the branch offices and the excavations must in particular be considered here. In contrast to the norm with the funding of research infrastructures, a basic amount for research infrastructure must be secured for this, as funds for workers, guards, required vehicles, etc., for example, cannot be competitively acquired.

Properties managed at different research facilities (excavation houses), the excavation house in Aigeira (Greece), for example, are an essential component of the scientific usage and should be

secured for long-term usage by the ÖAI. Required Federal Government investments should be accepted as binding for this.

The number of funded people that are currently employed at the ÖAI should also be maintained after the Institutes's integration into the ÖAW, and staffing capacities that are freed up, e.g. with retirements or sabbaticals, should be filled again as part of the new ÖAW structure or there should be a reimbursement of costs. This also applies for currently vacant positions (leave periods). A sustainable safeguarding of the Institute and proper performance of its tasks would not, however, be guaranteed here.

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Recommendation of the Austrian Council On Use of the Funding from the Special Tranche of the National Foundation 2015 – Recommendation dated 7 September 2015

Preamble

The Foundation Board of the National Foundation RTD has already decided on funding to the tune of EUR 63 million for 2015. On the basis of the final annual statements, another EUR 22 million are also expected to be available.

For the awarding of this additionally available National Foundation funding for 2015, the Austrian Council for Research and Technology Development has recommended inviting beneficiaries to provide for the following prioritisation on the basis of the priorities decided on for 2015:

(i) Reinforcing the research infrastructure

(ii) Measures for reinforcing complexity research and

(iii) Support for start-up initiatives

The Austrian Council herewith underscores its prioritisation for awarding funding of the Nationalstiftung FTE 2015 and sees in the specific focusing of the topics the possibility of achieving critical values in the funding, as well as accelerating the cooperation between the beneficiaries of the National Foundation.

The Foundation Board has complied with this recommendation and has referred the beneficiaries in its invitation to apply for the special tranche 2015 to the prioritisation of the Council.

In accordance with § 11 para. 1 Z 1 of the RTD National Foundation Act, the Austrian Council for Research, Technology and Development was requested on the basis of the decision of the Foundation Board of 23 June 2015 to provide a recommendation for the use of the additional funding of the Foundation to the tune of EUR 22 million for 2015.

The applications of the beneficiaries for the additional funding by the National Foundation basically comply with the Council's recommendation of the prioritisation of the National Foundation of 6 March 2014 and can in principle therefore be supported. The Austrian Council has also analysed the applications, in particular with regard to its orientation in accordance with the prioritisation formulated in its letter to the Foundation Board of 30 June 2015.

recommendations

Recommendation

After in-depth consultation, the Austrian Council for Research and Technology Development recommends the financing

of the following submitted applications within the scope of the special tranche of the National Foundation RTD 2015.

Institution	Programme or Initiative	Volume Applied For	Recommended Volume
FFG*	R&D Infrastructure funding	18 Mio. Euro	13 Mio. Euro
FFG	Complexity Science Hub Vienna	2 Mio. Euro	2 Mio. Euro
FFG**	Spin-off & Start-up – Initiative in the framework of the “Global Incubator Network”	3 Mio. Euro	–
FWF	Open Science Infrastructure	6.27 Mio. Euro	3 Mio. Euro
aws***	Programme for implementing a virtual international incubator “Global Incubator Network”	5 Mio. Euro	4 Mio. Euro
aws	aws industry.startup.net – alliances between start-ups and the industry	2.1 Mio. Euro	–
Total		36.37 Mio. Euro	22 Mio. Euro

*FFG = Austrian Research Promotion Agency **FWF = Austrian Science Fund ***aws = Austrian Federal Promotional Bank

The Austrian Council recommends financing the **R&D infrastructure funding initiatives** of the **FFG** with **EUR 13 million**. This project corresponds with the prioritisation recommended by the Austrian Council to reinforce the research infrastructure for the special tranche 2015. The **FWF** application for funding an **Open Science Infrastructure** will be financed with **EUR 3 million**. It is also an important form of infrastructure funding. For this reason, a joint communiqué will be sent out for these tenders; operatively, however, they will be

processed separately, but under the shared virtual umbrella of “R&D Infrastructure Funding and OPEN SCIENCE”.

As the other priorities set by the Austrian Council are also to be covered, the R&D infrastructure funding unfortunately cannot be completely financed on the basis of the oversubscription of the special tranche 2015. With the requirement of a positive evaluation of the project, however, a further financing within the scope of the National Foundation will be provided for in coming years.

Against the background of the future social and economic challenges and their increasing interaction, complexity research is a further important research priority that will have to be supported. The **Complexity Science Hub Vienna** also submitted by the FFG will therefore be recommended for financing with **EUR 2 million**. The support of innovative start-ups by appropriate incubator models appears against the background of the current results of the Council Report on Austria's Scientific and Technological Capability 2015 to be a key factor and, in addition to research infrastructure and complexity science, has therefore been raised to pri-

ority level for this special tranche of the National Foundation. The joint application of **aws** and **FFG** for a **programme to implement a virtual international incubator "Global Incubator Network"** meets this requirement particularly well. It is therefore recommended this be financed with **EUR 4 million**. The spin-off & start-up initiative submitted by the FFG within the scope of the "Global Incubator Network" appears to build on the "Global Incubator Network" of **aws**, and therefore will be submitted again after it has been established.

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Recommendation for Funding Research and Development in Austria –

Recommendation dated 7 September 2015

Background

Current estimate of the research rate targets – The achievement of an R&D rate of 3.76 percent (in percent of GDP) by 2020 was defined as a goal within the scope of the implementation of Federal Government's Strategy for Research, Technology and Innovation in 2011. WIFO studies show that the development of the R&D rate does actually show a slight upward trend. However, the required increases to achieve the 3.76 percent goal will not be reached. The current figures show an accumulated additional financing requirement with the public sector financing of more than EUR two billion.

Despite the need for a budget consolidation in view of the scarcer financial resources, there is an urgent requirement for an increase in financial resources for research, education and innovation, especially because investments in these areas require a long time to be able to fully develop their overall economic effect. It is therefore imperative that greater parts of the budget be freed up for the future areas of education, research and innovation. Special importance is

awarded in this respect to the securing of sustainable, long-term financing of the universities. As centres of education and research they are guarantors for these two key factors of the future capability of a knowledge-based economy and society.

Financing Situation at Universities

The goal of achieving 2 percent of GDP by 2020 for the tertiary sector was confirmed in the last government programme. According to the current calculations, this would mean an increase from 1.47 percent or EUR 4.66 billion (in 2012) to EUR 8.16 billion by 2020. The current financial framework, however, indicates that this development cannot be complied with. The financing shortfall grows, and the under-financing of the universities remains.

The universities receive a share of more than EUR 10 billion for the coming 3-year performance agreement period. Annual expenditure of approx. EUR 3.8 billion is, however, only about 50 percent here of what is available for universities in Switzerland or Bavaria – and this with a significantly lower number of students. In



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Switzerland, approx. 143,961 students studied in 2014/2015; in Bavaria, it was 242,160 and in Austria 304,160.

The budget increase is far from keeping up with the expanding student numbers.

This means that supervision ratios, infrastructure and even research performance suffer here, as the capacities for research, education, knowledge transfer and even administration at the universities in recent years have not increased by the same amount. In addition to logical and socially compliant access regulations, an increase in the funds provided by the Federal Government to the universities is therefore also imperative.

Furthermore, the level of competitively awarded funds for financing basic research must also be increased further. This could not be increased sufficiently in the past to advance forward to the leaders in Europe. The base budget of the universities in Austria compared with the competitively awarded funding volumes shows a significantly higher percentage. The case is precisely the opposite in Switzerland. If there is no trend reversal here, the Austrian universities will fall even further back in the international ranking. Furthermore, with approx. EUR 800 million, the Swiss national fund has an annual budget about 4 times higher, compared with the FWF. This comparably low allocation of funds of the most important funding bodies for basic research in Austria peaks on two levels: Firstly a growing number of superbly rated projects can no longer be approved due to insufficient budget, and secondly this contributes to the continuing, frequently cited “brain drain”, as researchers (young talent) migrate due to the falling approval rate and do not consider a return to Austria.

As an important location factor in the national innovation system, the universities must, however, be perceived as key institutions for an attractive environment for companies and non-university research institutes. This potential must be leveraged and utilised by guaranteeing

the quality of research and teaching and continuously improving the framework conditions required for this.

This is all the more urgent as the requirements at the universities are no longer only restricted here to education and research, but rather, in addition to research and teaching, the completion of their social assignment (“Third Mission”) is also required, whereby a higher knowledge transfer to achieve social goals must be made: both with increased cooperations between universities and businesses and with the best possible trained and educated graduates, who can bring their knowledge to the businesses.

The performances of the universities are in particular measured however, in increasing student numbers, higher research output, more publications and increasing graduate numbers.

Recommendation

Financing

The Austrian Council recommends closing the financing gap of approx. EUR 2 billion (accumulative) to be able to achieve the goal of an R&D rate of 3.76 percent of GDP by 2020, and the reallocation of resources from less productive areas into research, education and innovation to consequently promote long-term economic growth.

Universities

The Austrian Council recommends:

- The implementation of capacity-oriented study place financing in combination with fair access regulations and performance-oriented study progress. This must continue to be a priority goal in order to improve study conditions and supervision ratios. This can only be achieved with a significant increase in the budget available for this.
- Adjusting the funds for competitive financing of basic research by 2020 to that of the Innovation Leaders. This is equal to an annual increase of 12 percent to achieve the calculated target value of circa 0.91 percent of GDP.

- Increasing the annual awarded amount of the FWF by 2020 for competitive research to at least EUR 400 million p.a., so that training of young talent researchers is guaranteed and basic research can continue to make its contribution to providing a solution to society's challenges.
- The Austrian Council therefore once again recommends vehemently pursuing the goal of 2 percent of GDP by 2020 at the latest.

The data for universities in Germany, Switzerland and Austria was compared to estimate the situation with university financing. The following tables illustrate information on the tasks for universities, student and graduate numbers and current supervision ratios at selected universities.⁴³

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	Students in universities 2014/15	Expenditure in billions €	Funding / graduate (in €)	Funding / student (in €)
Austria	304,160	3,838	102,869	12,619
Switzerland	143,961	7,220	216,284	50,152
Bavaria	242,160	6,308	142,415	26,051
	Students in universities	Expenditure in billions €	Funding / graduate (in €)	Funding / student (in €)
TU Vienna	29,002	0,322	134,167	11,103
ETH Zurich	18,616	1,469	334,472	78,911
TU Munich	35,979	1,203	169,127	33,436
	Students in universities	Expenditure in billions €	Funding / graduate (in €)	Funding / student (in €)
University of Vienna	92,011	0,537	42,343	5,836
University of Zurich	25,634	1,274	214,767	49,700
LMU Munich	50,327	0,579	62,151	11,505

⁴³ Data records for 2013, if not otherwise noted.

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Statement of the Austrian Council on the Draft of the Vivisection Criteria Ordinance – Statement dated 2 November 2015

Preamble

Austria would like to present itself internationally as an attractive location for research activities. An increasingly negative attitude towards key science topics can, however, be seen in the body politic and the general public. Keywords such as genetic engineering and nuclear research have negative connotations, and results of the Eurobarometer account for a bottom of the league position of the country in the area of interest in science⁴⁴. Only 35 percent of

the general public see positive effects provided by science and research in essential areas of life. New processes, technologies and research areas are rejected per se, even when only a proximity to the above-mentioned topics is presumed. In this respect, it is also neglected that this basic attitude, which is expressed in numerous everyday details, damages the science location, and as a further consequence, also results in regressive innovation.⁴⁵



⁴⁴ Special Eurobarometer 401 (2013.)

⁴⁵ See also, inauguration speech by Rector Markus Müller, Medizinische Universität Wien, held on Oct. 27th, 2015.

Europe, and especially Austria, are currently involved in the global competition in the Life Science area in particular, in which the Asian countries above all have moved up into the research leaders in the last decade. Self-imposed restrictions and debates on the reliability of scientific methods must not result in research in Austria only being possible under unacceptable conditions.

The development options of a research location depend very much, among other things, on the legal framework conditions and administrative requirements. In addition to a plethora of scientific methods, medical, pharmaceutical and biotechnological research also employs animal testing. Many experimental approaches, in the field of toxicology, for example, could reduce the number and severity level of animal tests by establishing alternative methods. The research institutions, however, point out that animal testing is ultimately an indispensable research component. "Animal testing is necessary for medical research at the highest level," says Sonja Hammerschmid, Rector of the University of Veterinary Medicine Vienna^{46, 47}. "Cell culture and computer model tests cannot replace these tests."⁴⁸

The goal of the ordinance currently in draft form to define a catalogue of criteria to objectivise the damage-benefits analysis (Vivisection Criteria Ordinance) is to create a comprehensible basis for test approvals. The ordinance is based on a provision of the Animal Experiments Act 2012 and must be consistent with the European Animal Experiments Directive 2010/63/EU. The catalogue of criteria must not violate the Animal Experiments Act and the Animal Experiments Directive. A legal check to determine that the current draft is free of con-

tractions was not made by the Austrian Council and is not considered in this statement either.

Statement

Animal tests are an essential component of research work in the area of life science, medicine and pharmacology. The current ordinance will serve to shape the harm-benefit analysis to be performed by the authorities for the approval of animal testing projects as transparently as possible. While considering all ethical standards, animal tests must also continue to be seen as an indispensable element of research for the benefit of people, animals and the environment.

The Austrian Council for Research and Technology Development generally tackles the topic of ethics in research head on and takes ethical issues and standpoints of different stakeholders in the areas of research and development very seriously. When performing animal tests, the physical and psychological stress of the test animals must be kept as low as possible. Austria is an international forerunner with the detailed discourse with various stakeholders that preceded the compilation of the ordinance draft, especially with the integration of NGOs in this area. The creation of transparency with comprehensible evaluation criteria forms an important basis for a structured and rational consideration of a sensitive issue.

In this context, however, we should not forget that with regard to the Animal Experiments Act 2012, the national legislation in many respects accepted stricter regulations into the new law than were already anchored in the old animal experiments act. Austria is therefore at the head of the ranking of possible political liber-

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⁴⁶ <http://kurier.at/lebensart/leben/forschung-braucht-tierversuche/159.000.173>

⁴⁷ https://science.apa.at/rubrik/politik_und_wirtschaft/Tierversuche_Fuer_Forschung_auf_hoehstem_Niveau_notwendig/SCI_20151016_SCI40111351026096204

⁴⁸ <http://diepresse.com/home/science/4845589/Wissenschaft-braucht-Tierversuche>

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ties in the implementation of the European Animal Experiments Directive (this is a harmonisation directive), which in the medium-term could contribute to a deterioration in the competitiveness as a life science research location.

The Austrian Council specifies that an intensification of the framework conditions for science and economy will only result in bypasses and sidesteps to other regions, and therefore on a global level does not result in any improvement in the situation for animals. With the implementation of the European Directive, the Austrian Council believes this draft of the ordinance is a very comprehensive measure within the scope of interpretation.

The implementation of obligatory European Law minimum standards in Austrian Law should basically be performed so that it does not result in any exaggerated tightening of the regulations in Austria. The catalogue of criteria now in the appraisal phase will not result in any significant additional bureaucratic hurdles. The

Austrian Council therefore believes the administrative, and consequently also financial additional expense, which is stipulated in this draft, in practice must not hinder the applicable research, and the risk of quality jobs going abroad must also be counteracted.

Furthermore, the Austrian Council also specifies that the development of alternative procedures for animal tests in research work must be enforced wherever possible (e.g. replacement by cell cultures). The reduction in regulatory stipulated animal tests and the adjustment of these framework conditions for other detection methods must be targeted. In this respect, the Austrian Council welcomes all measures that contribute to improved conditions for animals in research and secure Austria as a research location. The route of intensive dialogue must be travelled further with all participants and all affected, and the underlying laws must be adjusted to rapidly changing technological insights and procedures. A high level of legal certainty for research institutions must be guaranteed in this respect.



Recommendation Regarding the Use of the Funding Provided by the National Foundation for RTD for 2016 – Recommendation dated 30 November 2015

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Preamble

In the context of funding for 2016, on the basis of the Foundation Board's decision of 29 September 2015, an invitation was made to the Austrian Council for Research and Technology Development on 19 October 2015 in acc. with § 11 para. 1 Z 1 of the RTD National Foundation Act to submit a recommendation on the use of the Foundation's funding for 2016. This is to be made on the basis of the applications submitted.

The total application volume for 2016 is **EUR 125,911,570 m.** The Foundation Board asked the Austrian Council for a statement on available Foundation funds for 2016 on the basis of four possible scenarios:

- 1) EUR 40 million
- 2) EUR 50 million
- 3) EUR 60 million
- 4) EUR 15 million (worst case scenario)

In view of the difficult financial situation, the National Foundation is also assigned special significance, which is manifested in the support of long-term effect inter-disciplinary research measures (see § 2 of the RTD National Foundation Act).

The Austrian Council advocates a sufficient and sustainable financing of the National Foundation. The Austrian Council is very much concerned with the **extremely fluctuating allocation of funds**. The amount of allocated funds since 2008 at the latest tends to hover far below the EUR 125 million per year provided for in the legal stipulations.

The basis for the decision on awarding funds are the strategic importance and socio-political relevance of the projects submitted and their classification in the overall context of Austrian research funding. The Austrian Council for Research, Technology and Development also defined the following priorities for awarding funds for 2016:

- Reinforcing of the **research infrastructure** by focusing on initiatives with corresponding critical variables and risk potential
- Reinforcing of the **national human potential basis**
- **Risk capital reinforcement**
- Reinforcing the contribution of **intellectual property** to growth and innovation
- Reinforcing innovation potential with “**Open Innovation**”
- Coordination and harmonisation of **regional and federal RTI activities**
- Excellence in **basic research**
- Measures to **strengthen location Austria for research-active companies**
- **Research and technology initiatives** for the industry location
- Measures to strengthen **complexity research**

Recommendation

The applications of the beneficiaries for the funding by the National Foundation basically comply with the Council's recommendation on the prioritisation and in principle can therefore be supported.

Following in-depth consultation and with consideration of the 4 financing scenarios set out by the National Foundation, the Austrian Council for Research and Technology Development recommends the following distribution of funds (see table below).

Should the worst case scenario of EUR 15 million be the case, the Austrian Council for Research and Technology Development recommends no allocation be made to the beneficiaries and the funds be held over to 2017 instead. In the event of a figure above EUR 15 million but below EUR 40 million with the allocation of funds of the National Foundation, the Austrian Council recommends to be consulted once again.

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Recommendation Regarding the Use of the Funding Provided by the National Foundation for RTD for 2016 – Recommendation dated vom 30. November 2015

Institution	Title	Applied for total in EUR m	Scenario 1 Recommendation EUR 40 m	Scenario 2 Recommendation EUR 50 m	Scenario 3 Recommendation EUR 60 m
FFG*	Programm "Competence Headquarters"	10.00	4.00	4.00	5.00
FFG	Bridge building programme / BRIDGE	20.00	5.00	7.00	8.00
FFG	Research partnerships – Industry-related dissertations	5.00	3.00	4.00	4.00
FFG	R&D infrastructure funding	15.00	0.00	0.00	0.00
FFG	Spin-off & Start-up Initiative as part of GIN	8.00	0.00	0.00	0.00
FWF**	Special research areas and PhDs	17.10	7.00	10.00	12.00
FWF	Matching Funds for supporting young researchers and women	3.001	3.00	3.00	3.00
ÖAW***	PostDoc Fellowships	3.00	0.00	0.00	0.00
ÖAW	goldigital: Projects for scientific digitalisation	2.00	2.00	2.00	2.00
ÖAW	HumanIS – Humanities and Information Science	4.00	0.00	0.00	0.00

*FFG = Austrian Research Promotion Agency **FWF = Austrian Science Fund ***ÖAW = Austrian Academy of Sciences

Reason – Comment

The Headquarter Programme has been in place for some time, and comparably high amounts have been invested in this programme. The background research work shows that the average funding sum per funded project was just under EUR 1 million. With a view to a critical mass, the Austrian Council believes an allocation of funds with less than 4 projects does not appear very beneficial.

Bridge is a long-established programme. The cooperation between science and economy is an attractive option. For this reason the Bridge Programme must be preferred in view of scarce resources. An allocation of funds as high as possible is recommended according to the resources available.

This relatively new programme line promises a boost to human resources in terms of training; the industry shall be integrated in this programme, too. It is recommended this be financed with at least EUR 3 million.

As the Austrian Council has already determined, an own funding mechanism for setting up research infrastructures of critical dimensions is not provided in Austria. These findings are also reflected in the focus points of the National Foundation recommended for 2016. A project of this kind, however, would have to have greater dimensions for a beneficial implementation, which currently exceeds the budgetary options of the National Foundation. In terms of a long-term and appropriately dimensioned financing, a consideration within the scope of the Research Financing Act would be conceivable. The Austrian Council believes the application itself is not specific enough. A prioritisation is indispensable for the scarce, limited funds. The application harbours the danger that, while all areas are actually considered according to the scattergun approach, not enough money is available for the individual areas.

The establishment of the Global Incubator Network (GIN), in whose framework the Spin-off & Start-up Initiative is embedded, was only recently recommended during the course of the special tranche of the National Foundation 2015 for funding. The Austrian Council believes it first remains to be seen if the framework for this, the GIN, can be successfully established before further components of this concept are implemented.

The special research areas ("SFB") are a superb funding concept with very high quality and maximum requirement for research and teaching. Financing of the SFBs is an essential factor of top-quality interdisciplinary research in Austria.

The PhD programme ("DK") received a very positive evaluation in 2014 with a view to its value for training highly qualified scientists. It is also evident that, although the PhD courses are among the core tasks of the universities, the additional and complementary financing of the structured PhD programme by the FWF appears to be essential for the universities until further notice.

Matching Funds is an innovative governance model that promotes an efficient interconnection of federal and state funding, and it in particular pursues the priorities and recommendations of the RFTE.

The Austrian Council believes the PostDoc Fellowships concept is not especially innovative. There is already a series of comparable measures in this area, especially at European level. The actuality of the orientation towards Eastern Europe must also be questioned. Bringing researchers to Austria in particular requires appropriate framework conditions, such as suitable payment and Tenure Track.

The basic idea of an integration of the humanities, social sciences and cultural sciences is welcomed. Innovative and promising projects can be initiated here together with businesses.

The application, and its unique position in particular, are viewed critically here. The objectives are broad and not well focused.

recommendations

Institution	Title	Applied for total in EUR m	Scenario 1 Recommendation EUR 40 m	Scenario 2 Recommendation EUR 50 m	Scenario 3 Recommendation EUR 60 m
LBG*	Start-up/expansion International Research Center for Open Innovation in Science	6.00	3.00	4.00	5.43
CDG**	10 CD labs	10.109	4.00	5.00	6.00
aws***	Venture Capital Initiative (VCI)	5.633	0.00	0.00	0.00
aws	Social Business Initiative	6.75267	3.00	4.50	6.75
aws	Entrepreneurship	4.50	2	2	2
aws	Service Start-up initiative	5.8159	4.00	4.50	5.82
Total		125.91157	40.00	50.00	60.00

*LBG = Ludwig Boltzmann Society **CDG = Christian Doppler Research Association ***aws = Austrian Federal Promotional Bank

Statement by the Austrian Council for Research and Technology Development on the “Austrian ERA Roadmap” Draft – Statement dated 15 December 2015

Background

The Austrian Council for Research and Technology Development (Austrian Council) was invited by the Federal Ministry for Science, Research and Economic Affairs to make a statement on the “Austrian ERA Roadmap” draft of 27 November 2015.

The intensification of the networking in, across and beyond the European research area is an important competition component of Austrian research and development. The Austrian Council therefore supports the comprehensive objectives of the Austrian ERA Roadmap. Struc-

Reason – Comment

The Open Innovation priority of LBG is very welcome. The support of this important and well-prepared issue is imperative.

The CD labs are a proven mechanism in promoting the cooperation between science and economy and for promoting knowledge transfer. The Austrian Council believes the question remains as to how much this long-term and established initiative is also to continue being fed into by the National Foundation. This does not concur with the intention of the National Foundation to fund new and risky projects.

Basically, the Venture Capital Initiative does actually address a weak point of the Austrian RTI landscape. The fund's investments over recent years must now take effect in the system. The percentage of investments outside Austria is still too high. This trend must continue to be monitored. Additional funds are therefore not recommended for 2016 either.

The initiative supports social businesses that address social and economic challenges with new and innovative approaches. The plan therefore focuses on the important trend of social innovations and links it with the start-ups concept. Social businesses make an important contribution to meeting the existing and future challenges of our society (education, migration, demographic change, etc.). It is recommended that the initiative be fully supported in line with the funds available.

The Austrian Council believes the initiative is extremely innovative and focuses precisely on the point where leverage is the greatest, i.e. young people. This is about a small pilot project, with which much can be achieved with relatively little funding. The explicit integration of existing projects must be positively emphasised here. The sustainability of the application in question was not, however, convincingly presented and requires further examination over time.

Knowledge-intensive service innovations are an important component of a knowledge-based society, as identified by the western industrial countries, and are therefore an important step towards Austria's innovation leadership. The support of service start-ups is therefore attributed a major effect. The application is the logical continuance of existing initiatives in an important start-up area. Capacity Building (and Acceleration) are key activities in this field in particular. The application scores points with its clear description and detailed illustration of the individual modules.

tural measures are an important factor in the implementation of the mentioned goals and activities. The implementation of information structures, additionally required investments in research infrastructures, more career and job opportunities, the setting up of higher performance data infrastructures, etc., must, however, be accompanied by the provision of the necessary resources.

Feedback Mechanisms (Information Feedback) of Different Levels from European Committees

Austria can essentially avail of good network interconnections at European level. The setting up of an "Austrian Research, Technology and Innovation Hub" in Brussels will act as an interface to the outside world here, but also inward in particular. Supplementary measures in addition to the planned networking platforms will create



recommendations

incentives to improve the information flow from relevant committees into national stakeholder organisations. The offers of the ERA Portal Austria on the web are a positive highlight and are also thought of highly at international level.

Impact-Oriented Analysis of the Austrian Funding System at Programme Level

The Austrian Council believes the stipulated goal of “Further development of the evaluation culture in Austrian R&D” should result in a stronger impact-oriented analysis of the R&D programmes. Of course, a duplication of already available evaluation results must be prevented.

Austria's Focus on Priority Issues

As the Austrian Council recommended in its report on scientific and technological capability, the reform of governance and setting of priorities are essential success factors with the implementation of the RTI Strategy.

The structuring of the roadmap in chapters and preparation of the measures into objectives and tools already represent a very high level of specification. This has consequently provided a very good overview of the individual, partially already ongoing activities. Due to the variety of the named tools there is, however, a high level of expectation that every area will receive the intensive attention of every institution involved here. The Austrian Council notes that, in addition to the commitment of the stakeholders, this specification also obliges resources for administration and documentation. Clear focus and prioritisation with individual measures must be targeted here.

(Visibility of the Austrian ERA Roadmap Also Within the Organizations) Positive Basic Attitude Towards Planned Issues

The ERA Roadmap requires clear visibility with experts to achieve the above-named commitment. The Austrian Council believes it is indispensable that the measures named are accepted both at the ministries and agencies, and in the individual research institutions (universities, non-university research institutes, etc.), as part of the work culture. This also includes the active communication and announcement of the respective activities and the successes achieved. A resulting positive basic attitude will also motivate other partners in the RTI system to actively enter into the process. The Austrian Council considers the exchange of information to be both a collectable debt and deliverable debt for all participants.

Convergence On Issues in the Austrian Council's Work Programme

The Council Board has accepted numerous issues into its work programme, which also appear again in the priorities of the ERA Roadmap. The Austrian Council considers it imperative to transparently organise the objectives, measures and mechanisms of all players of the science system, so that an optimum knowledge exchange can be made and duplicates and redundancies are prevented.

The Austrian Council invites all involved to an intensive dialogue and considers this an essential success factor in implementing the ERA Roadmap.



Update: Accomplishments

Education/Research and Migration

A country's education system is also the basis of its research and innovation system. The Research Council has therefore ceased dealing exclusively with the tertiary education system in recent years, and increasingly turned its attention to the pre-school and school area as well. In the course of its monitoring of the Federal Government's RTI Strategy, the Austrian Council also focuses on the implementation of the education area objectives it contains.⁴⁹

The migration issue has also become more important for the Research Council in performing this task and meeting the challenges that innovation location Austria is expected to face in coming years⁵⁰. Austria has become an immigration country, and the demographic development of our country is determined more and more by migration.

According to current forecasts, Austria's population will also grow in the future, and this actually from currently 8.48 million (based on 2013) to 9.03 million in 2025 and 9.62 million in 2060. This is equal to growth of 7 and 13 percent. The age structure will shift here significantly to older people. At the moment, 18 percent of the population are 65 and older; in 2020 it will be approx. 20 percent (from circa 2035) or even more than 25 percent. The ab-

solute number of people over 80 will even rise by 2030 from currently 424,000 by more than half, i.e. 53 percent to 648,000. At the same time, the amount of people born abroad (currently 1.37 million across Austria) will grow further as a result. These currently account for 16 percent; by 2030 their number is expected to rise to 1.99 million (22 percent), by 2060 to 2.47 million (26 percent).⁵¹ These figures clearly show that Austria does require migration from abroad into the country due to the "ageing" society and the declining working population it entails. Optimum conditions must therefore also be ensured to secure the country's economic performance in increasingly tougher global competition.

Migration and integration will also play an important role here. Since the immigration waves of the early 70s, integration has primarily been understood as the responsibility of "foreigners" and "migrants" in terms of an adjustment. Structural or social obstacles were not topicalised, or even noticed for the most part. But if integration is to succeed, the entire society must be called on and a new integration concept, which brings both the responsibilities of the migrants and the political and social integration efforts into the picture, would also be required.

⁴⁹ See: Austrian Council (2012, 2013, 2014 and 2015); Report on Austria's Scientific and Technological Capability. Vienna http://www.rat-fte.at/leistungsberichte_download.html

⁵⁰ See: Austrian Council (2013); Österreich 2050. FIT for the Future. Vienna: Holzhausen Verlag.

⁵¹ Statistik Austria (2015); future demographic development of Austria and its federal states 2014 to 2060 (2075); with differentiation according to country of birth. In: Statistische Nachrichten. Issue 1 (January) 2015. Vienna.



The Austrian Council primarily concerned itself in 2015 with the preparation of the available data on the “Migration, integration and education” topic. The issue’s discussion was ultimately also compelled by the fact that Prof.

Dr. Markus Hengstschläger is a member of both the Research Council and the Migration Council, convened by Federal Minister for the Interior Johanna Mikl-Leitner.

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RTI Platform Austria: Networking Information

The RTI Platform Austria in existence since 2007 serves the intensive exchange of the federal states and the funding agencies in all areas of the innovation system. In 2015 the second round of meetings in all states was completed with the two platform meetings in Vienna and Thallern (Lower Austria). The Austrian Council is primarily integrated with the RTI platform as a coordinating and supporting partner. During the course of the meeting in January 2015 the participants were also given the opportunity to view the Campus Neumark and the Media

Quarter. The RTI platform has increasingly dealt in its summer assessment in Lower Austria with the topics of science communication, innovation-promoting public sector procurement and migration. The networking with the alternating “federal government-states dialogue” introduced the year before and organised by the Ministry of Science, was successfully continued. An additional information pool for region-specific R&D issues could consequently be established.

Open Access: Looking for a Strategy

Open Access – In a stricter sense, this means unlimited online access to scientific publications. It involves the global availability of publications, swift scientific exchange, and the ability to provide the scientific results of large groups to interested parties or users. This progress would not be possible without the rapid development of new communication technologies. A broad acceptance of these technologies also supports the dedication of many organisations to promote Open Access publications.

Open Access, however, not only changes the scientific work (cooperation); the benefits in knowledge transfer, know-how networking, democratisation in information access, efficiency in research, etc., are evident. Open Access also has secondary effects. The business model of publishing houses (especially scientific literature) consequently changes, and discussions on necessary changes in copyright and patent law also abound. There is also a need to set up repositories,

establish sharing policies and the use of data, to name but a few.

The efforts to increase quality in science are an important Open Access driving force. More than two million scientific publications, some 5,500 daily, now appear each year. Thousands of publications are published every year in individual disciplines. This can truly be described as an “information explosion”.

Quality assurance in research is therefore a highly topical issue. The peer-review model proven in science has since reached its limits, which is why new models and mechanisms that enable the selection of top quality scientific work with less time input and deployment of resources are being sought. The discussions on Open Access continue on the issues of Open Data, Open Research and Open Science, etc. The challenges must be highlighted in discussions and solutions must be found. The requirement for discussions, which will certainly also be controversial, remains high.



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The Austrian Council for Research and Technology Development participates in several Open Access Network Austria (OANA⁵²) work groups. The range of topics including, (i) Copyright, (ii) Public sector publication infrastructure and (iii) Performance agreement, were discussed in the “Pol-

itics and Law” work group and a results report⁵³ was compiled.

The “National Open Access Strategy” work group pursues the goal of supporting the development of a national strategy. Various approaches were discussed for implementation at technical, infrastructural and political level and 16 recommendations were formulated.⁵⁴

⁵² Open Access Network Austria; <http://www.oana.at/>

⁵³ Results report of the WG policy, http://www.oana.at/fileadmin/user_upload/p_oana/oana/AG-Politik_Bericht.pdf

⁵⁴ Recommendations for the implementation of Open Access in Austria; “National Strategy” work group of Open Access Network Austria; <http://dx.doi.org/10.5281/zenodo.33178>



Basic Expertise: Reports and Studies 2014

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RTI Strategy: Mid-Term Analysis

On 9 September 2010, the cabinet commissioned the Austrian Council for Research and Technology Development with the compilation of an annual report on Austria's scientific and technological capability, which will be presented to the National Council together with the Federal Government's research and technology report. In addition to a comparative analysis of the performance of Austria's RTI system, the report will also include the results of the strategic monitoring of the implementation of the Research, Technology and Innovation Strategy (RTI Strategy) of the Federal Government and evaluate the measures in question and their goal orientation.

The RTI Strategy, which will also continue to be managed in the current government programme as an important orientation framework for the RTI policy of the Federal Government, was worked out in 2010 with the participation of six ministries. The Austrian Council has welcomed the strategy as an important milestone for the Austrian RTI policy. It has emphasised this several times, both in its statement on the RTI Strategy and in its previous reports on Aus-

tria's scientific and technological capability.

The Austrian Council has drawn up a preliminary intermediate balance five years after the initiation of the strategy development process and five years before achieving the target horizon. It broached the following issues in this respect: How is the implementation of the RTI Strategy progressing? Where does the Austrian RTI system stand today? Will the goals set out in the RTI Strategy be achieved? Will Austria be an innovation leader in 2020? Also critical here were the issues of how much energy and resources are required to actually be able to achieve this goal.

The Report on Austria's Scientific and Technological Capability 2015 was conceived as a mid-term review to evaluate the RTI Strategy and the measures to date, half way to the announced target horizon and to answer the questions posed above. The Austrian Council was concerned here with both pointing out the positive development and addressing difficulties with equal clarity. The essential results of the report are presented in the "Outlook" chapter of this Annual Report.

Book Outlines the "Future of Innovation"

Providing thought-provoking impulses and getting to grips with the topic of innovation outside of the day-to-day policy – these are the goals of "Designing the Future: Economic, Societal and Political Dimensions of Innovation", a book edited by the Austrian Council, published in August 2015 (see also page 76).

The fact that this is not a purely intellectual treatment is firstly apparent because numerous articles also include specific implications for the RTI policy. Secondly, it also shows that only an

in-depth handling of the development conditions of innovation provide a basis in both historical terms and in today's world for future-oriented political decision-making. The focus of a large part of the articles is consequently on the future requirements of and for innovation.

The individual articles of this book will discuss the various dimensions of innovation in the past and the present, as well as their relevance for the world in the 21st century. **The first part** begins with the Enlightenment in Europe, the

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‘invention’ of invention and the development of the key institutions of the knowledge society. **The second part** focuses on the modern development conditions of innovation, as we know it today. **In the third part**, an attempt is made to look into the future and sound out possibilities and to examine what role research and innovation might have in the future for the economy and society, and how the future can be rethought and restructured.

A series of prominent scientists have contributed articles to the book. The most renowned authors include Philipp Aghion (Harvard University), William Kerr (Harvard Business School), John Komlos (LM Universität München), Matthew Rhodes-Kropf (Harvard Business School) and Mark Schankermann (London School of Economics). Furthermore, the future Council members Helga Nowotny and Jakob Edler have also written an article for

the book, which will provide stimuli to reinvigorate the required discussion on the key role of innovation in the past, present and future from the angle of new perspectives. Both the international comparisons and the various points of view of the authors will incorporate new arguments here into the RTI policy discourse. The Austrian Council believes the book clearly demonstrates: If we succeed in sustainably establishing the key basic conditions for innovation outlined in numerous articles, a self-determined shaping of the future that will meet the major social challenges of the future is also possible. It is essential here that the required steps be taken as quickly as possible and pending reforms not put off any longer. Investments in research, education and innovation require a long time to be able to have a positive holistic economic effect. This means that everything that is currently being neglected will have negative consequences in the future.



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The Role of Research in Times of Low Growth

Gross domestic product growth is a key factor in determining an economy's performance. It basically applies that economies in a catch-up process (Catching-up Economies) exhibit higher growth rates than already developed economies, whose growth rates level off over time on a lower level. For the latter economies it also applies that higher attention must be paid to quality growth after a period of strong quantitative growth. The growth rates in developed European economies and in Austria have regressed sharply compared with the 70s and 80s. During the financial and economic crises, many economies have to some degree not grown at all over years. This resulted in the question among economists as to whether or not the decades of constant growth rates had ended.

Research, education and technological progress generally apply as "the" main growth drivers – so can they also be attributed this role when economic growth is only moderate in the long term? This question was pursued over the course of a study. The main result: Science, innovation and education can and must make an important contribution to managing and adjusting society and the economy to these framework conditions.

They can

- increase resilience by contributing to making society and economy less dependent on GDP growth.

- secure or create short, medium and long-term scope for distribution and prosperity by contributing to reducing the costs connected with our spending and lifestyles.
- enable sustainable growth (e.g. green technologies, climate protection, reduce health costs, demographic dividends, resource efficiency, among others).
- promote prosperity models, policies, lifestyles and structures that enable a good life beyond the scope of economic growth.
- contribute to solving global problems by integrating global perspectives into their viewpoints.
- contribute to stronger social cohesion with the integration of civic perspectives.

Very specifically, research and development can and should contribute to

- describing and modelling alternative growth routes and scenarios, while incorporating the most important influence variables and developing goal systems with the integration of key social players.
- embedding research and teaching in the social goal systems.
- redirecting research and teaching towards "growth neutrality".
- gearing scientific institutions and research programmes towards dealing with the key civilisation and growth risks, as well as resisting, including, overcoming and shaping the consequences of climate change and resource limits.

WIFO: Quota goal 2020 “Scarcely Achievable”

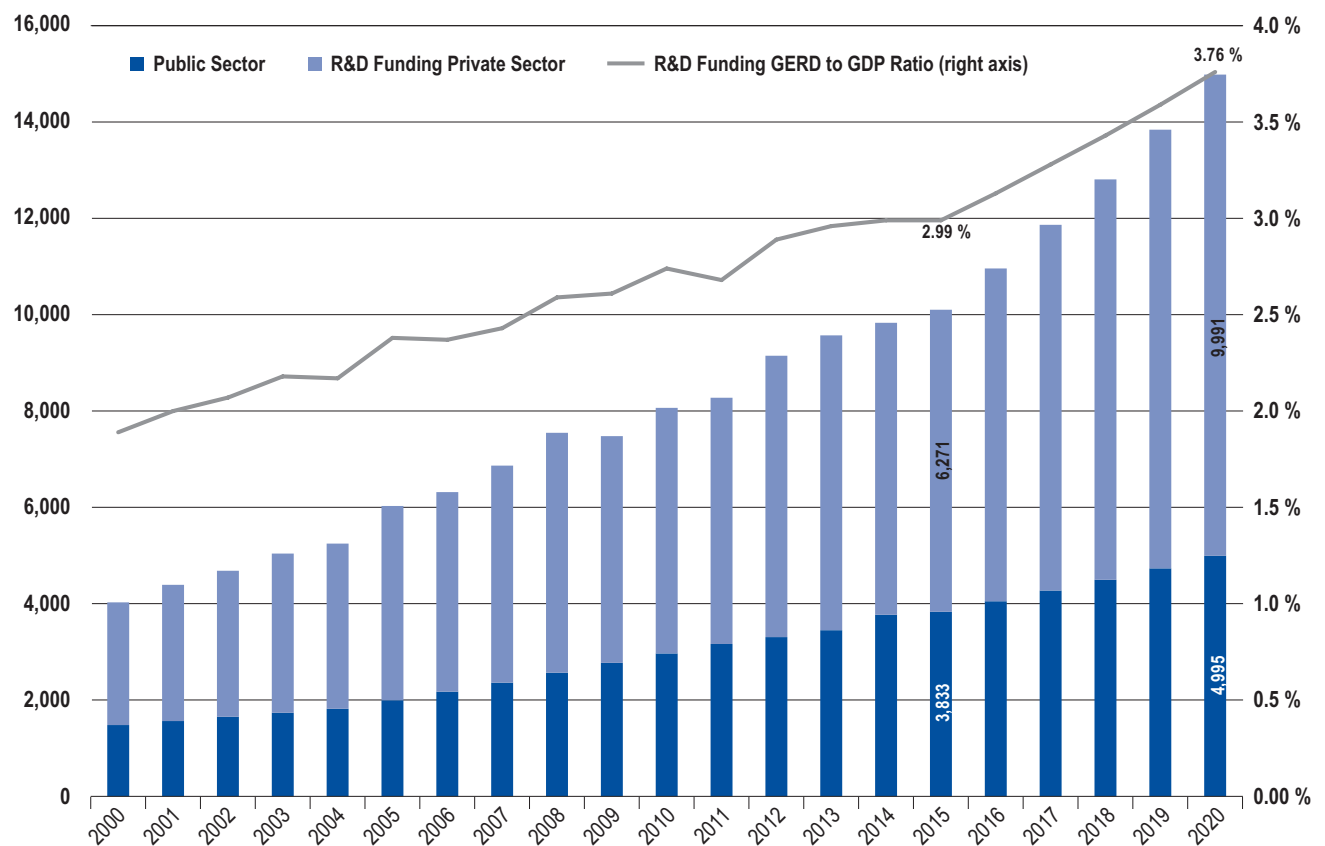
An important step towards the improvement of the framework conditions of Austrian science and research was already taken with the implementation of the Federal Government’s Strategy for Research, Technology and Innovation in 2011. The achievement of an R&D quota of 3.76 percent by 2020 was also specified as a goal. In its government programme, the Aus-

trian Government has once again classified science and research as basic pillars in Austria’s general nationwide development. The 2 percent quota (in percentage of GDP) for tertiary education institutions by 2020 was announced as an objective of the government programme.

Austria’s dynamic catch-up process with regard

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Figure 1: Trajectory of Funding to Achieve the Target GERD to GDP Ratio of 3.76 Percent in 2020 (in EUR m)



Source: WIFO Forschungsquotenziele (Research Quota Targets) 2020.



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to its R&D activities in the years 1995 to 2007 has come to a standstill in recent years. On the whole, the probability of achieving the R&D rate goal of 3.76 percent in 2020 compared with the previous year's study of WIFO has not increased; on the contrary: With the given framework conditions, WIFO believes it is unlikely this goal will be achieved. According to the federal financial framework, public sector financing will stagnate. However, it will do so at a level which, after high increases in recent years, is now clearly above its target value of one third. Even if private financing were to suddenly develop a high dynamic again after a period of very weak increases, this dynamic would have to exceed that of the pre-crisis period 2000 to 2007, when Austria exhibited the highest R&D

increase rates among the OECD countries. At the same time, WIFO stipulates: Even if significantly more money was suddenly spent on research and development, the Austrian research sector could not take to absorb everything. According to WIFO, it is also unlikely that there will be a trend change in the final years before 2020. A relocation of a very large R&D site of an international company, which at the same time also brings numerous researchers to Austria with it, could positively influence the current perspectives for the R&D rate by 2020. According to WIFO calculations, Austria is currently (especially in view of the current federal financial framework) headed for an R&D rate between 2.97 and 3.35 percent in 2020.

Innovation-Promoting Public-Sector Procurement – When the State “Buys” Information

When the state focuses on buying in, especially with particularly idea-rich domestic companies, this can have innovation policy effects. This is scientifically proven, and it is precisely this effect that the Austrian Federal Government wants to achieve according to the RTI Strategy.

The goal is to increase use (indirectly) of the huge budgetary volumes invested by the public sector (circa EUR 40 billion) in funding innovative products and services, and at the same time to supply public offices and citizens with more modern and more efficient products and services.

In 2012, the Austrian Council commissioned a study on the implementation status of the guiding concept for innovation-promoting public sector procurement and other movers and shakers, initiatives and potential at regional and national level. The following barriers to the implementation of full-coverage innovation-promoting public sector procurement were identified here:

Structural obstacles:

- Political backing
- Responsibilities and fragmentation of (innovation-promoting) public sector procurement
- Legal framework conditions
- Corruption
- Data situation for (innovation-promoting) public sector procurement

Operative obstacles:

- Financial and staffing resources
- Know-how and expertise of operative “buyers”
- Motivation and incentives with innovation-promoting public sector procurement

On the whole, it was shown that Austria is well on the way to dealing with the issue in which federal government strategies are anchored, and has already achieved some successes in specific implementation.

The available resources, widespread political backing, qualified operative buyers, fragmen-



tation and the unsatisfactory data situation in particular were identified as future areas of action. A recommendation on the topic of innovation-

promoting public sector procurement coordinated with the most important stakeholders will be compiled as a next step.

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Study Creates a Science Communication Roadmap

How is technical-scientific knowledge to be passed on to children and young people in Austria? A study carried out by Joanneum Research tackled this question. The study is to be considered a visualisation of the current offering with a highly descriptive character and will serve as the basis for further steps and more in-depth analyses. It appears necessary to promote interest in research and therefore an open-minded view by society with regard to science. Science communication is an essential component in implementing concepts such as Citizen Science and participatory research, i.e. research for and with people, and consequently to utilise social innovation potential.

In total, 439 science communication offers were identified in the study, which corresponded with the selected definition and which were sent an online questionnaire. During the survey, the addressed organisations were given the

opportunity to submit further suitable offers. Another 34 offers were then also registered. In total, the study recorded 247 offers.

The results of the survey show major regional differences. On the whole, there is an east-west slope, both with the number of offers and their intensity. The study also showed that the financing structures of science communication are very different from region to region. A very high quantitative percentage of contacts with scientific topics takes place in museums, where school excursions evidently generate a very high proportion. The large variety of science communication does, however, pose a challenge, especially for children, young people, parents and teachers who want to use the offers for themselves or as multipliers. The study showed that consumers believe finding the right offers is time-consuming and complex.

Study: “Long Night of Research 2008 to 2014: History, Analysis, Potential”

The Long Night of Research (German abbreviation: LNF) hit a new visitor record in 2014. Against the background of the event's growing complexity and because of partially more difficult framework conditions in planning, this analysis implemented as a study evaluated the effects of campaigns and organisational structures, and therefore provides a basis for further optimisations. The project was implemented by zbc³ (beilein.zanon communications).

In addition to historical development, impressions and experiences of LNF 2014 from the

perspective of visitors, organisers and responsible parties were also prepared in the form of questionnaires, interviews and reports. Already known requirements were confirmed in the key statements, but new recommendations for the event were also formulated. Basically, the previous organisational form and the assignment of expertise and responsibilities were welcomed, and more cooperations are called for, especially with schools, media and sponsors.

http://www.rat-fte.at/tl_files/uploads/Studien/11092015_LNF%20Imactanalyse.pdf



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Open Access: Questions for the Austrian Context

Whether or not scientific publications should be available online free and unlimited is hotly debated. Scientific and economic advantages and disadvantages are weighed up and discussed inconsistently. The Austrian Council for Research and Technology Development has commissioned a working paper for this⁵⁵, which will gather together arguments and open issues, address possible benefits and concerns, and motivate discussion.⁵⁶

What is Open Access?

Open Access involves unlimited online access to scientific research. Published research results, but also monographs, articles and other dissertations will be free under a “Creative Commons License” and made accessible without limit. In a stricter sense, Open Access also involves unlimited, free access to scientific data and information on which published results build.

Why is Open Access important?

Open Access may improve the quality of scientific research. When knowledge develops, already available ideas can be re-combined and established doctrines can be radically broken down. Regardless of whether new research results are cumulative or disruptive: free and unlimited access to knowledge stocks is a basic improvement of research conditions. It provides fuel to accelerate innovation. Research is impacted by the quality of access to different knowledge resources; the greater the variety and the better the access to resources, the sooner

science will be in a position to resolve complex problems.

Open Access enables virtual communities with decentralised innovation processes. Open Access is based on hardware, software and the participation of the most diverse players. Open Access can therefore be compared with a complex network composed of various human and electronic artefacts. Open Access provides an institutional framework in which the social practice of “learning by doing” is realised, and both “providers” of new knowledge stocks and “users” find a platform that enables knowledge spill-over effects. As assimilating knowledge competencies is an essential factor of research, duplicates of projects can be better avoided and knowledge exchanges and transfers are aided.

Open Access also provides a framework to utilise these different knowledge resources, and at the same time increase the quality of science and research. Sharing information and the free availability of knowledge are cornerstones of scientific work. In contrast to closed innovation systems, this approach also enables efficiency increases.

Where Are the Problems?

- *The unlimited access to knowledge stocks is seen as a market failure*

From the perspective of welfare economics, unlimited access to knowledge stocks results in a market failure and justifies the establishment of intellectual property. Unlimited access to

⁵⁵ Ghafele, R. (2015). Open Access – Fragestellungen für den Österreichischen Kontext. Eine Analyse zur Festlegung des Untersuchungsrahmens.

⁵⁶ Extracts of the working paper are illustrated in the following section. The full publication is available at <http://www.rat-fte.at/publikationen.html>

knowledge stocks can be compared with a public asset. This signifies that its value does not decrease as more people use it; as a consequence, there are no marginal production costs. These aspects of unlimited access to knowledge stocks result in a market failure and society is confronted with undersupply.

- *Open Access puts the role of publishing houses in doubt*

Open Access puts the traditional model of publishing houses in an uncertain position, because usually the copyright was licensed as an exclusive to the publishing house. In traditional specialist journals, the reader pays for the content or its library. Typically, the access to scientific publications and data was offered bundled and universities can count on an annual income of several million euros. In the UK, for example, 20 universities together pay approx. EUR 18 million per year to one of the most important scientific publishing houses, whose market share with 2,200 specialist journals is approx. one quarter of the publications in the natural sciences and medical area worldwide.

Where Is the Need for Action??

- *Clarify Open Access with national IP strategy*

It is imperative to clarify an Open Access strategy in the context of a national IP strategy. The two innovation goals should not be pursued independently of one another, but rather coordinated.

- *Implement awareness-promoting measures at universities*

Many scientists are not aware of the advantages and disadvantages of Open Access. There is also a lack of understanding about the flexibility that copyright provides. Scientists should be better informed about Open Access, and awareness of “intellectual property” and “open innovation” should also be increased.

- *Clarify competencies and do not shy away from political decision-making power*

Open Access requires political decision-making power. On one hand, suitable measures and guidelines must be created at institutions level, but legislative steps must also be taken to create the legal framework and therefore support the further development of Open Access. In the European context, the member states are also be called upon to develop a position on Open Access.

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New PIXI book: “Lina wird Forscherin” (“Lina Becomes a Researcher”)

The PIXI book compiled on the initiative of the Austrian Council for 3 to 6 year-olds with the title “Meine Freundin ist Forscherin” (“My Friend is a Researcher”) in 2014 has found popular appeal in the target group. The first run of 35,000 copies is almost out of stock and 10,000 copies were already printed after just one year. A follow-up publication focusing on scientific careers and working at universities was compiled in 2015. In cooperation with Carlsen-Verlag, another story was developed surrounding the main protagonist, Lina. The story informs about scientific careers and explains the sequence of possible study gradua-

tions. The second PIXI book appeared with the support of numerous partners from the domestic RTI system.



The Benefit of Evaluations

Background

Austria is a European leader with regard to the number of evaluations in the RTI area. There is, nonetheless, much scepticism, as the effectiveness of these examinations is questioned. There is therefore the requirement for an evidence-based estimation of whether and to what degree improvement potential exists for RTI evaluations in Austria.

Objective

The goal of the project was a systematic examination of the quality and impact of programme evaluations, i.e. the question as to what it ultimately brings about. The meta-evaluation is intended to work out a synthesis of the Austrian evaluation practice of recent years in the RTI area. MMag. Landsteiner was entrusted with performance of the study. MMag. Landsteiner works as an independent evaluator in Brussels and previously, among other positions, with the Austrian Quality Assurance Agency on programme evaluations.

Key Results

The conclusion and key result of the study: there are no individual causes, but rather factor bundles of considerable complexity. The previous evaluation practice in the RTI area was shown to be conditional in equal measure on design features of individual programme evaluations and on context factors. The one solution that could instigate a critical further development across and beyond the status achieved to date is consequently not available.

Limitations for arranging programme evaluations and the benefits of evaluations result from the features of the institutional arrangement. Evaluation reports and the evaluation processes behind them only conditionally go into that which the evaluation standards describe as optimum steps for higher usefulness. This results in contributions that do not optimally realise the evaluation prop-

erties recommended by the standards and considered to be necessary. From the viewpoint of the greatest possible usefulness, it should therefore be endeavoured to move from a structurally conditional compromise situation, to improved conditions for planning, performance, communication and use of programme evaluations.

The evaluation standards are designed as practical instructions for solving problems with the creation of benefits; however, they cannot solve problems that are outside the range of a specific evaluation project. Good solutions in line with the standards must also be enabled by evaluation “orderers” in arranging the evaluation orders (jobs).

Potential for the planning, performance, communication and use of programme evaluations then remains to be utilised in the respective projects on the basis of capacities and competencies. The meta-evaluation therefore concludes recommendations that are based both on an evaluation-theory level and on the level of institutional embedding of the evaluation function. The recommendations made are geared towards the further development of a dynamic and system-evolved evaluation practice. As the previous evaluation practice already generated obvious benefits, the recommendations are not based on a radically disruptive change, i.e. a break with the practice applied so far. For the evaluation method level, a naming of all possible improvement options would certainly imply referring to the entire content of the standards. Recommendations in this respect will only be made for those viewpoints that appear the most essential.

Ultimately, a highly developed evaluation culture is based on socio-cultural factors, such as openness for fact-based criticism and the readiness for open discussion, which do of course evade a specific influence.

The entire study is available on the Austrian Council’s website at <http://www.ratfte.at/publikationen.html>.

Great Potential for Social Business in Austria

Background

While the boundaries between state, market and non-profit sector appeared clear until a few years ago, in recent years they have increasingly been questioned. Social business is a form that can be positioned at the interface between the market and the third sector. Against the background of limited public sector funding with parallel rising requirement for social and community services (demographic changes, unemployment, etc.), social business is discussed as a promising concept to unite social goals and market-economy action. Since the Nobel Peace Prize was awarded to Muhammad Yunus (if not before), the concept has, however, also grown in importance in Austria. A series of awards, training programmes and events, which are grouped around the Social Business and Social Entrepreneurship topical areas among others, reflect this development.

In spring 2015, together with Austria Wirtschaftsservice GmbH, the NPO & SE Competence Centre of the Vienna University of Economics was therefore commissioned to carry out a study on Austria's social business potential. The current importance and future potential of social businesses were analysed based on systematic literature research, the analysis of secondary data records and a survey of experts.

Country Difference and Modes of Action of Social Businesses

- An analysis of more than 110 articles and policy documents shows that the generation of **market revenue** with the sale of goods and services and a **priority social objective define social businesses**. The effects of the organisation on different stakeholder groups (e.g. employees, environment) and a limited distribution of profits are partially discussed as definition criteria and considered in politics and science.
- In the European comparison there are **major differences** in the quality, acquisition and in-

stitutional arrangement of social businesses. While, for example, the UK with "Community Interest Companies" has created an own legal form for social businesses and its data collection functions well, in Germany or Sweden, for example, just as in Austria, there are no own institutional frameworks for social businesses.

- **Four different models** can be identified with regard to the modes of action of social businesses. In integrated social businesses, target groups are integrated directly as (i) employees or (ii) customers into the value creation process. (iii) Differentiated social businesses use cross-financing models in which an activity, with which the market revenue is achieved, serves to finance services and activities for the target group. (iv) Sustainable businesses are ultimately models that do not address any target group in terms of a disadvantaged group of the general public, but rather offer sustainable goods and services produced in a socially compatible way. This can be performed with sustainable production, the use of green materials or the creation of local jobs.
- In the Austrian context there are **numerous examples** for all four types of social businesses, such as (i) the Kaffeehaus Connection, which provides employment and mentors for young migrants, (ii) Helioz, a company that sells equipment for water disinfection in developing countries, (iii) the Footprint association, which supports the victims of trafficking in women and quantifies its services via sports portfolios or (iv) Gebrüder Stitch, who produce ecologically and socially sustainable jeans.

Social Businesses in Austria

- An analysis of secondary data enables an initial cautious estimate that currently at least 1,200

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to 2,000 organisations in Austria comply with the working definition of social businesses, used within the scope of this study. These are composed of start-ups and **established non-profit organisations**.

The organisations differ greatly with regard to their age, employee numbers, their income and activity areas and target groups. 200 organisations, for which there is specific data, generated annual turnover of just under EUR 700 million and employed more than 16,000 people. The greatest part of all of these effects is achieved with established players in the social area.

- The **estimates of 18 experts** on the number of social businesses currently in operation in Austria confirm the plausibility of the above estimate of 1,200 to 2,000 organisations, however they also indicate a significantly higher level of diversification.
- Future-related estimates by experts assume some **1,300 to 8,300 social businesses in 2025**. It is therefore expected that the number of organisations in the next ten years **will double at least**. On average approx. 160 new organisations per year must be set up for this. The social change in values, changes in the corporate culture and the changing role of the state must be seen as the most important driving forces of this development.
- The greatest obstacle for the development and at the same time the highest potential to accelerate the growth of the social business sector is in the **financing and education** areas. Legal frameworks conditions and the **networking** of social businesses among each other and with other players in the field are also influence factors of the future development.

Recommendations of Study Authors

- Against the background of this great potential, the recommendation can be made to the body politic and decision makers to **support the creation and development of social businesses in Austria**. The results show that these organisa-

tions contribute to providing effective solutions for social challenges in areas such as social inclusion, environment or education, while they create jobs and value creation. Social businesses and **social innovations**, which can later be scaled by the organisations themselves or by the public sector and private side, often emerge.

- **High potential** is present in both the social start-up area and with for-profit start-ups in the technology area and with **classic NPOs**. The latter are also already heavily represented in the study's data material. Expert talks suggest that new and innovative project ideas are often developed here; however, there is a lack of capital and structure to implement them.
- Social businesses must be seen as **complementary to the existing social system**. They can also contribute here to developing new ideas, people and resources for processing social tasks, and therefore strengthening and supplementing the public and civic sector.
- **The requirements** of social businesses **differ** according to organisation type and development phase. There are differences between younger and older organisations in particular. Financing, further training and parallel consultation are especially important topics with social start-ups. For established NPOs, in addition to financing ongoing operation, expertise and capital for scaling successfully offered concepts tend, by contrast, to be more important.
- **Public benefit foundations** also become more important. The reform of public benefit foundations could provide new possibilities and stimuli for financing social businesses. Some need for action can also be identified within the scope of foundation and public benefit legislation.
- Given **regional structures and infrastructure** should be considered with the funding of social businesses. In the federal states, a targeted funding of the ecosystem with the integration of existing players would be especially beneficial to strengthen the sector.

Proposals for measures

- **Financing offers for social businesses** focusing on incubation and financing social start-ups and innovation development with established players
- **Education and further training offers** for social businesses in start-up and innovation-relevant topical areas (e.g. marketing, financing, communication, setting up partnerships, business modelling)
- **Monitoring and use of current European developments** in the social business area, e.g. with **public sector procurement**
- Funding **networking and identity-formation** within the area and across and beyond classic sector limits
- **Improvement in public benefit and foundation legislation** as well as the establishment of an own legal form for social businesses
- Funding of the development of criteria for **impact measurement and reporting standards**
- Campaigns for creating awareness and (social) entrepreneurship education at universities and schools

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Study on Innovation Performance of the Salzburg Region

Hailing the title “From Mozart to Schumpeter: A Triple Helix System Approach for Enhancing Innovation in the Salzburg Region of Austria”, Marina Ranga from the “H-Star Institute” of Stanford University/USA and Ludovit Garzik, Managing Director of the Austrian Council for Research and Technology Development, analysed the innovation performance of the Salzburg region from the perspective of a triple helix model. The most important players and their interactions in the knowledge, innovation and consensus areas have been illuminated more precisely here to illustrate the major challenges involved with innovation at regional level. Several political recommendations to improve innovation performance in this extremely tourism and culture characterised region were also made. The analysis shows a more intensively developed knowledge area compared with the innovation and consensus areas, which, however, is nevertheless still behind other Austrian regions in the areas of education and research. The innovation area has only developed rather weakly. The main reasons for this are the strong regional orientation towards services and the production sector in the low and medium technology area, the lack of large industry centres and clusters, low horizontal and vertical networking among

businesses, as well as the low start-up density compared with other regions, even if the number of start-up companies has increased continuously in recent years. The corporate culture is under-developed and the pool for start-up founders is limited. Business support facilities, such as impulse centres, technology parks, regional business incubators and the COMET competence centres, which support cooperations between universities and businesses, have a very limited effect. The consensus area has developed well with regard to institutions, legal framework conditions and political mechanisms. It does, however, suffer under insufficient trust mainly due to political reasons and the lacking communication between the institutions, as well as the resulting negative effects on innovation governance and the consensus-building process. Interactions between the individual areas are very rare. The great cultural legacy of the region is a burden, but it does also present an opportunity. A stronger connection between the cultural attractions and the creative potential of the region, paired with initiatives to bring well-trained “human capital” to the region and keep it there, as well as initiatives for promoting the local corporate culture, could improve the region’s innovation performance.

Global Entrepreneurship Monitor: Innovative Companies in Focus

Background

The Austrian Government has set itself the goal in its RTI Strategy, among other things, of increasing the number of research and innovation-related start-ups by 2020 per year by 3%. Currently, however, there are no reliable databases to measure these increase rates at RTI-related start-ups. An extensive empirical survey based on tested methodology is first required to be able to operationalise and systematically examine the achievement of this goal. RTI policy measures can also be organised better, and their effects can be examined more precisely on the basis of this data.

For this reason, within the scope of the Global Entrepreneurship Monitors (GEM) initiated regularly by the OECD, the Austrian Council for Research and Technology Development set up and co-financed an RTI-related module for recording innovative start-ups in Austria.

The Global Entrepreneurship Monitor

The “Global Entrepreneurship Monitor 2014” (GEM) is a global study of corporate activity. FH Joanneum is responsible for the Austrian contribution.

An RTI module has been set up on the conventional GEM basic module. The GEM is based on a survey in a representative group of the general public, and therefore delivers a first suitable indicator for the number of RTI-relevant start-ups.

Results

As part of the National Expert Survey (NES), 39 participating experts were also asked to mention beneficial and inhibiting entrepreneurship factors in Austria. Results are allocated here during the evaluation and analysis to specific topic blocks (e.g. entrepreneurial training and further training, government policy, specific promotion programmes, etc.), i.e. divided into coding groups. In this open part of the survey,

each expert names three beneficial and inhibiting factors for entrepreneurship in Austria. The following graphic shows the number of individual points named in the respective topic block and analyses the beneficial and inhibiting factors for entrepreneurship in Austria. The inhibiting factors are shown here on the dark side of the scale marked with minus signs. The number of points named for the respective factors that support entrepreneurship in Austria are shown on the bright plus side of the scale.

According to the expert feedback, the specific funding programmes also installed in first place in the Europe comparison are especially beneficial factors. Added to this is the well-developed business-oriented infrastructure.

The inhibiting factors in particular include the business-related bureaucracy and taxes, as well as business financing aspects. The experts largely agree that bureaucracy, taxation and fiscal burdens are detrimental for a dynamic corporate landscape. The World Economic Forum’s Global Competitiveness Report 2014/15 confirms this, and also lists the areas of bureaucracy and taxes as problematic factors for businesses in Austria. These aspects are also identified in the World Bank Group’s Doing Business Report 2015 as competitive disadvantages for Austria, and therefore represent the greatest obstacles to entrepreneurial activity. It remains to be seen how much the tax reform 2016 and other planned measures will improve this situation.

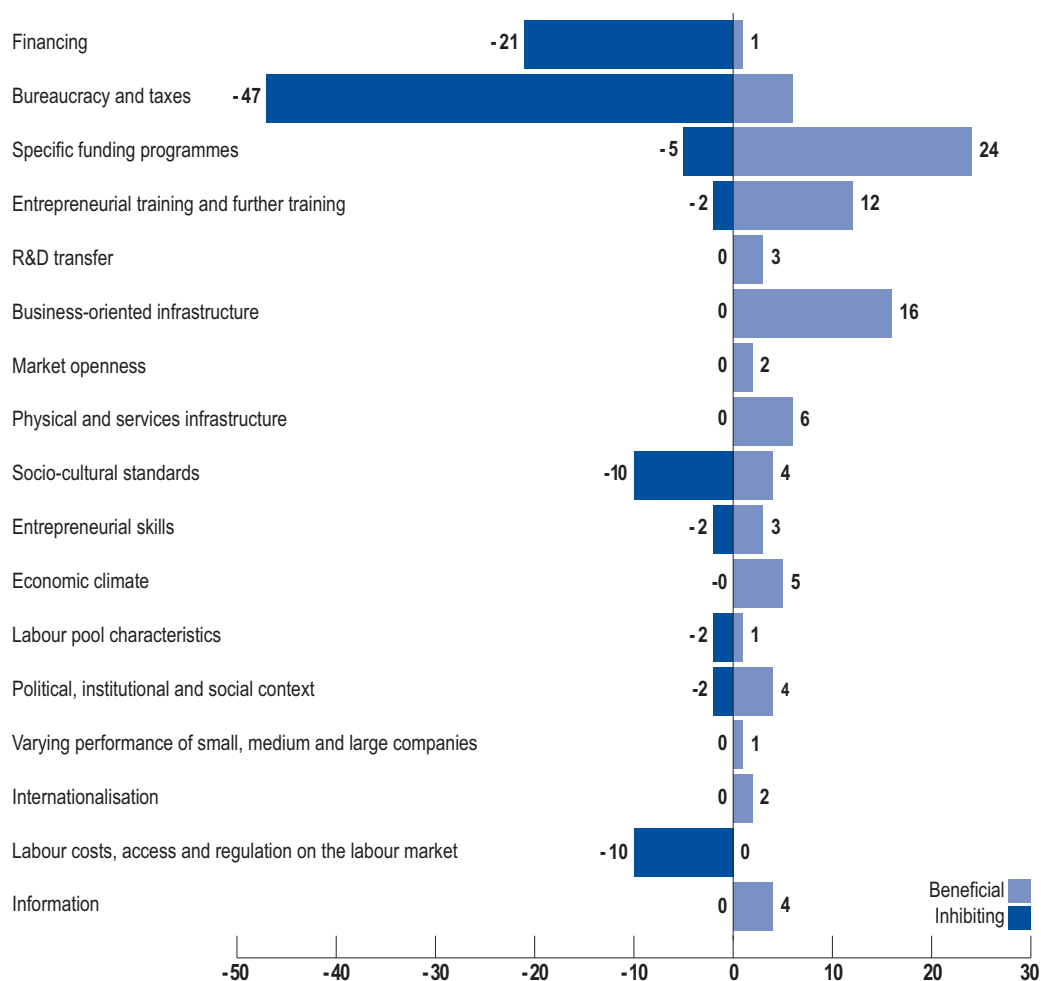
The respective experts believe the Austrian funding system is a beneficial factor. Institutions (such as Austria Wirtschaftsservice GmbH, the Economic Chamber, the Research Promotion Agency, etc.) and the targeted and diverse service offering are mentioned positively. A continuous further development and adjustment, especially with regard to efficiency and tailored services for RTI businesses is, how-

ever, advisable. Experts believe even more now than in the 2012 survey year that the area of corporate financing is a significant obstacle. The insufficient equity capital provision, the lack of private financing and venture capital and difficulties obtaining loan capital, for ex-

ample, are named. The problems of difficult access to risk and growth capital was also referred to several times. A study by the OECD (2015) on small and medium-sized companies and entrepreneurship financing shows a fall in credits

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Figure 2: Expert Opinions on Beneficial and Inhibiting Factors for Entrepreneurship in Austria



Source: GEM National Expert Survey 2014

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to SMEs by five percent in 2013, whereby a part of this fall can also be explained by the reduced credit demand due to the weak economy.

The business-oriented infrastructure for companies in Austria is seen as thoroughly positive. This means a significant improvement over 2012, as this topic area was evaluated as rather inhibiting. Experts emphasised the constructive start-up scene, the adequate start-up

consultancy and the simplified international accesses for start-ups here as especially positive. The experts also believe entrepreneurial training and further training is a beneficial factor. Particular reference is made here to the improved knowledge transfer between start-ups, entrepreneurship as training priority at universities in particular, as well as increasing training courses in the area of entrepreneurial training and further training in 2014.

International Activities

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Japan-Austria: Exchange with a Leading RTI Nation

Japan continues on its course as one of the leading science and technology nations of the world. But what is currently being researched in Japan? And what do the right political framework conditions look like? These and other questions on the topic of research and development determined the first “Japan-Austria R&D Talk” on 25 March 2015, which was held on the initiative of the Austrian Council for Research and Technology Development at the foreign trade centre in Tokyo. Austrian Council Chairman Dr. Hannes Androsch, and representatives of Austrian companies in Japan had the opportunity of meeting representatives of international Japanese companies for talks.

Talks were also held with representatives of the *Council for Science, Technology and Innovation* (CSTI) and the *Japan Science and Technology Agency* (JST) as part of the business trip to Japan. Meetings with representatives of the *Mitsubishi Chemical Holdings Corporation*, *Austrian Business Council-Luncheon* and *Panasonic* beefed up the programme.

Potential weak points and the upcoming re-

search strategy were also discussed in the talks. In what is now the 5th baseline plan to promote science and technology (2016–2020), Japan focuses on research dealing with social challenges in particular. Priorities include (i) “Implementation of a clean and cost-effective energy system”; innovative technologies for renewable energy, efficient technologies for power generation, technologies for transformation, storage and transporting energy, among others, will be driven forward, (ii) “Ensuring a healthy and active ageing society as top nation in the world”; Japan has developed into the highest ageing society in the world with various effects on Japanese society, the labour market and economy. Research topics in Japan will include, among others, medication development, development of medical-technical equipment, regenerative medicine, realisation of genome-based medicine, cancer research, mental/neurological illnesses, infectious diseases and currently incurable diseases. The (iii) “Development of a next generation infrastructure as top nation in the world” is a further priority.

Delegation Trip Switzerland: Trip to a Role Model

Switzerland is considered a role model of successful research policies. At the beginning of the three-day study trip, Mauro Dell’Ambrogio, Swiss State Secretary for Education, Research and Innovation (SBFI) cited the competition for funds between researchers and research institutions and the multicultural nature of the Swiss research landscape as positive driving forces. The delegation participants, lead by the Austrian Council for Research and Technology Development, also had the opportunity at this

meeting in the SBFI to discuss the pillars of science and research funding in Switzerland with representatives of the Swiss National Fund (SNF) and the Commission for Technology and Innovation (CTI).

RTI Switzerland Financing Structure

Numerous players commit their services to the federalist organised Swiss Education, Research and Innovation System (BFI). Both public sector and private entities are involved in providing the serv-

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ice, its financing, legislation and control. Mauro Dell'Ambrogio emphasises that the Federal Government does not operate any special innovation policy for this, controlling is, however, performed to a certain degree via the financing. With annual funding of circa CHF 7 billion, the Federal Government contributes more than 50 percent to financing research, and therefore almost exclusively funds basic research. The federal universities, ETH Zurich and ETH Lausanne receive some CHF 2.4 billion as basic funding and are therefore financed by more than 50 percent by the Federal Government. The universities (10 locations in total) and technical colleges in Switzerland are, as is the entire education system, very much influenced by the cantons. For universities, technical colleges and vocational training the cantons also receive basic funds from the

federal government to the tune of approx. CHF 2.5 billion. A further CHF 1.5 billion is awarded by the Federal Government to the universities, of which approx. two thirds is spent on teaching and one third on research. The majority of universities (approx. 60 percent) are, however, financed by the cantons. 20 percent comes from third-party funds (companies) and some 20 percent from national and international research funding. Only 10 of the 26 cantons have a university. For financing at canton level there is a balancing finance system for this to replace the costs for students in or from another canton. The access entitlement to universities is generally, as in Austria, linked with secondary school leaving qualifications (with the exception of medicine). Study fees are granted, differ from canton to canton, and can be between approx. EUR 385 and EUR 3,000 per semester.

Council delegation with
Prof. Kim
(centre) at Roche
Pharma in Basel





On the whole, research is financed up to 30 percent by the Federal Government and up to 70 percent by private funding. The volume of private funding is approx. CHF 37 billion. The respective businesses invest some CHF 17 billion of this in Switzerland. Approx. CHF 20 billion are invested by Swiss companies in research and development outside Switzerland. For Swiss innovation policies this involves the challenge of keeping the percentage of financing that is applied in Switzerland as high as possible. The State Secretary argues here that a good education policy and good research do of course contribute to this, but so do (and especially) framework conditions such as infrastructure, taxation and labour market policies.

An important factor here is the intensive international orientation of the university system in Switzerland. More than 50 percent of professors are from outside Switzerland. Approx. 70 to 80 percent of doctoral students have international origins. This strong international orientation has already been in place for some generations, and also contributes to constructive competition within Switzerland. The universities are also highly oriented towards competition.

Swiss National Science Foundation (SNF)

In 2012 the SNF awarded funding amounts to the tune of CHF 755 million (EUR ~630 million). Over 3,500 research projects with more than 14,000 researchers are supported with these funds. 24 percent of contributions went to the humanities and social sciences, 35 percent to mathematics, natural and engineering sciences and 41 percent to biology and medicine. In addition to the funding budget, there are also expenses for overhead. On the whole, approx. CHF 1 billion (EUR 950 million) are currently available for competitive research in Switzerland.

The approval rate of the SNF is more than 50 percent. Urs Baltensperger, Professor at the Paul Scherrer Institute and president of the specialised committee for international cooperation of the SNF, emphasises that “neither the researchers’ work nor the reviewers’ work goes in the waste-

paper basket”, but rather that superb work can also be funded.

The SNF’s excellent situation has in particular been secured by a political decision, whereby the budget has doubled over the last ten years. In the future, the SNF would like to see a budget increase of approx. 4.9 percent per year, so it can fund the performance of research at universities accordingly.

The **Commission for Technology and Innovation (KTI)** is the funding agency for innovations by the Federal Government. It is responsible for the research of science-based innovations in Switzerland with financial resources, professional consultancy and networks. Andreas Reuter, Director of the KTI, presented the mechanisms and operating modes of the KTI on the trip. In 2014 the KTI provided approx. CHF 152 million (EUR 127 million) for subsidies and advisory activity. On the whole, some 185 people are involved; however, there is only one small office with approx. 30 employees (17 percent). The other employees are integrated into the activity as if in a “militia system”, so to speak. Five percent of employees are deployed for innovation mentoring, 39 percent are start-up coaches and 39 percent are commission members. Start-up funding is also a priority of the KTI. Entrepreneur training courses with several modules are offered, in which to date 2,500 to 3,000 students have participated. 216 start-ups were consequently supported in 2014. The five-year “survival rate” is a remarkable 87 percent, which indicates a solid selection of the start-ups.

Simon Sommer, Head of Research at the Jacobs Foundation, spoke about the **foundations in Switzerland**. 13,064 public benefit foundations were counted in Switzerland in 2014. This means that every 615th Swiss person has set up a public benefit foundation. The estimated volume of these foundations is currently approx. CHF 70 billion. Approx. CHF 2 billion are allocated each year to funding.

The reason for this enormous number and the volume is the extremely liberal foundation legislation in Switzerland. Foundations are entirely tax-

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exempt here. Money is no doubt actually “concealed” from the Tax Office “tax-sparingly”, but in Switzerland the view is that the benefits provided here are greater than if strict taxation measures were to be put in place.

F. Hoffmann – La Roche AG was another stop for the delegation trip. The company based in Basel employs approx. 88,500 workers and is active in more than 150 countries. In 2014, it generated turnover of approx. CHF 47.5 billion (EUR 39.6 billion).

The **Tech Transfer & Entrepreneurship Lab** was presented to the delegation members at ETH Zurich. High-tech start-ups and spin-offs are an increasingly more important indicator for universities. Marjan Kraak, Head of the Spin-off Group at ETH Zurich, connects the success of spin-off start-ups with the work at ETH Zurich.

ETH has a research budget of some USD 1.6 billion. Approx. 1.05 of this comes from the Swiss

Federal Government. The basic research at ETH has enormously high significance and is an essential component of the success in applied research and in setting up companies.

Approx. 500 professors research and teach at ETH. 70 percent of these come from abroad. Approx. 19,000 students are currently trained at ETH; some 37 percent of them come from abroad.

Strong research partnerships with companies are a massive plus for ETH Zurich – the partnership with IBM or Disney Corporate Specialists, for example.

The interest in spin-off start-ups grows continuously. At the moment, 20 to 24 start-ups are registered each year. An entire apparatus for supervision has developed for this, the “Networking Opportunities”, the “Spin-off Dinners”, the “ETH Founders Community”, the “Yearly Business Plan Competitions” and the “ETH Entrepreneur Club”, for example.

Cooperation between South Korea and Austria

Supporting cooperations in science and research and with businesses – that is the goal of the “Letter of Intent” signed on 30 October 2015 by Austria and South Korea. The agreement was signed by Professor Heui Jae Pahk, President of the Office of Strategic R&D Planning of the Ministry for Trade, Industry and Energy

(MOTIE) in South Korea, and Professor Markus Hengstschläger, Deputy Chairman of the Austrian Council for Research and Technology Development. The cooperation here will in particular promote the exchange of information between scientific institutions and businesses.





events

Discussion on the “Future of Innovation” – 19 January 2016

“Taking a look over and beyond Austrian boundaries and the narrow time frame of daily politics is one of the key tasks of the Research Council. This in particular affects research and innovations and their implementation because of the long-term nature and importance for the competitiveness and attractiveness of our location,” explained Hannes Androsch, Chairman of the Council for Research and Technology Development at the “The Future of Innovation” event. On 19 January at the invitation of the Research Council, the Institute for Higher Studies (IHS) and Bank Austria, renowned experts from home and abroad, such as Prof. Mark Schankerman (London School of Economics), Prof. Philippe Aghion (Harvard) and Prof. Christian Keuschnigg (Uni St. Gallen), discussed issues here for a future innovation policy and the

arrangement options in this policy area in particular. Topics such as “Growth through Innovation” or the issue of the effectiveness of policy shaping in this area were also addressed here, as were financing (risk) and the importance of patents. Austria’s situation was illustrated at the event, and the view of global challenges was broadened.

In recent years the Research Council has already motivated a future-oriented discussion with regard to possible structural changes in Austria and future scenarios for innovation within the scope of its two publications, “Austria 2050 – FIT for the Future” and “Vision Austria 2050”. The presentations given at the event appear in the book, “Future of Innovation” published by the Austrian Council for Research and Technology Development, which was presented at the Alpbach Technology Talks in August 2015.

Austrian Global Academy: “Location of Innovation” – 23 April 2016

Knowledge transfer of international innovation experts in the Austrian RTI landscape – such is the goal of the Austrian Global Academy, which was initiated by the Austrian Council for Research and Technology Development and is geared towards Austrian innovation managers and political decision makers. Current global aspects of the RTI policy will be incorporated here into the discourse on the innovation system in Austria.

The first Austrian Global Academy on the “Location of Innovation” topic was held on 23 April 2016. During the day the movers and shakers in the Austrian RTI community intensively got to grips in a specialist seminar with the topic of innovation in the context of current international developments. The seminar was thematically accompanied by international experts Marina Ranga (Stanford University) and Max von Zedtwitz (Tongji University Shanghai) with the objective of enabling an intensive ex-

change of experiences and deriving success concepts for location Austria.

Within the scope of a well-visited evening event, the two innovation researchers then provided an insight into the “Location of Innovation” topic. While Ranga dedicated herself in her keynote in particular to the challenges of entrepreneurial universities in the age of the fourth industrial revolution, Zedtwitz focused on the global dimension of innovation.

Following the enormous success of the first Austrian Global Academy, the second Academy quickly followed in January 2016 hailing the title “Asian Competitiveness: Opportunity or Threat for Austria?”. The Global Academy is to be established as an annually repeated event, which will occupy a fixed place in the domestic RTI landscape. The Academy is implemented in cooperation with Bank Austria and the Vienna Institute of Strategy & Competitiveness (VISCO).

“The Value of Science”. The Value of Science Aside from the Economical Benefit –

6 May 2015

Can the value of science be measured aside from its economic benefit? This was the question put to a crème de la crème group of experts on 6 May 2015 at the invitation of Universities Austria and the Austrian Council for Research and Technology Development. The answers varied greatly:

Universities Austria President Heinrich Schmidinger, for example, sees the universities as the biggest “think tank” in the country. The universities are also a “motor for value creation, without which Austria’s social structure can be neither maintained nor further developed,” explained Schmidinger.

Peter Skalicky, Deputy Chairman of the Austrian Council for Research and Technology Development, on the other hand pointed out that, “the answer to the question about the value of science has changed and developed over time in the area of tension between unintentional knowledge production and the basic sciences and applied sciences, which will contribute to solving society’s problems.” He believes the basic sciences are a foundation for innovation – the magic word of the 21st century.

The US American economist Paula Stephan of Georgia State University was invited as a

keynote speaker. In her presentation, Stephan analysed the connection between scientific research and economic growth. This correlation is indeed evident, but it is nonetheless difficult to measure the precise yields of public research financing, as the gaps between research and growth can be very long. The economist says attempts to measure the value are not without their problems, as there is the danger here of favouring applied research at the cost of basic research. Paula Stephan believes public sector research funding is in particular required to counteract precisely this factor, but this would indeed mean, “killing the goose that laid the golden egg”.

Univ. Prof. Dr. David F. J. Campbell (University of Applied Art and Alpen-Adria University Klagenfurt), Univ. Prof. Dr. Ulrike Felt (Institute for Scientific and Technology Research, University of Vienna), Dr. Elisabeth Freismuth (Rector at the University of Music and Performing Arts, Graz) and Prof. Dr. Gi-Eun Kim (Seocheon University Seoul and Member of the Austrian Council for Research and Technology Development) then discussed Professor Stephan’s theses and their own views and experiences.

events

Presentation of the Global Entrepreneurship Monitor – 23 June 2015

The report on the entrepreneurship situation in Austria was presented within the scope of the Global Entrepreneurship Monitor on 23 June 2015. The special topic of Research, Technology and Innovation (RTI) for Austria was examined for the first time with this global highest benchmark of entrepreneurial activity. FH JOANNEUM with its Institute for International Management is responsible as a GEM partner since 2015 for surveying start-ups and established companies in Austria.

At the podium, a group of first-rate experts

with the participation of the Austrian Council for Research and Technology Development in the person of Council member Dr. Karin Schaupp, discussed current trends and topics concerning Austrian start-ups. State Secretary Harald Mahrer was also enthusiastically in attendance.

The study results show that RTI companies on the whole, especially however, independent-researching, technology-leading and innovative niche players expect higher employment growth and are internationally more active. They are,

events

as it were, the avant-garde of the Austrian corporate landscape. In brief: More than 87 percent of domestic young entrepreneurs are active in RTI-based companies and a good third are successful niche players with new products or services on markets with little or no competition.

Research and development are, according to the current study, not only important as the basis of the business activity of start-ups (20.8 percent), but rather start-ups themselves also provide research results (19.1 percent). Furthermore, 8.8 percent of young entrepreneurs are active in spin-offs, i.e. companies that are set up directly out of research institutions or universities.



Council Member
Dr. Karin Schaupp
(centre) at the GEM event
in June 2015

Book: The Dimensions of Innovation – 26 August 2015

On the occasion of the 70th anniversary of the Alpbach Forum the Austrian Council presented the book, “Designing the Future: Economic, Societal and Political Dimensions of Innovation” on 26 August 2015. The book is designed as an anthology and illustrates the topic of innovation from the most diverse perspectives.

Renowned international authors got to grips with the issues of the economic, social and political dimensions of innovation. The articles show how a self-determined shaping of the future in accordance with the major challenges is possible if the key requirements for innovation can be sustainably met. It is essential here that

the required steps be taken as quickly as possible and pending reforms not put off any longer. The anthology includes 19 articles by 29 authors from the USA, the UK, Germany, China, South Korea and Austria. These are affiliated with renowned international institutions, such as Cambridge University, Harvard University, Stanford University, Hong Kong University, EU Commission, Deutsches Institut für Wirtschaftsforschung (DIW), LMU Munich and London School of Economics, among others.
Published by: Austrian Council
Title: Designing the Future: Economic, Societal and Political Dimensions of Innovation
Publishing house: Echomedia
Year of publication: 2015

With articles by Philippe Aghion, David Ahlstrom, Ufuk Akçigit, Hannes Androsch and Johannes Gadner, Patricia Fara, Ulrike Felt, John Komlos, Alexander Kritikos, Mark Schankerman and many others.

events



Social Business: Presentation of the Study – 15 November 2015

The study by the Vienna University of Economics on the potential of social business in Austria commissioned jointly with Austria Wirtschaftsservice GmbH (aws) and the Federal Ministry of Labour, Social Affairs and Consumer Protection was presented on the evening of 5 November. Social businesses contribute here to motivating people to perform social tasks and develop ideas and innovations for this. They create jobs and value creation with their market orientation. But how much potential is actually latent in these new companies? What do they need to be successful? All these and further questions were answered for the first time by the presented study by the Vienna University of Economics and Business (details on page 63 of this Annual Report). In addition to a presentation of the key study re-

sults, the participants also had the opportunity to discuss the further developments with Federal Minister Rudolf Hundstorfer, State Secretary Harald Mahrer and Klara Sekanina from the Austrian Council for Research and Technology Development. Selected social entrepreneurs also provided insights into their entrepreneurial every day: Ruffboards, for example, produces longboards from recycled snowboards; the employees are ex-prisoners. talentify.me considers itself a peer-2-peer learning platform and provides economically priced grinds, whereby older students help younger students. Gabarage Upcycling Design on the other hand employs patients with addictions, who create new design objects from discarded old objects.



events

TTIP and Research: Estimate Attempt – 27 November 2015

Discussions on the “Transatlantic Trade and Investment Partnership” (TTIP) treaty between Europe and the USA are mostly highly emotional, so an objective evaluation is only partially possible. Nevertheless, the Austrian Council for Research and Technology Development would like to make a contribution to a differentiated TTIP consideration – especially with regard to TTIP influence on education and research in general, on research policy decisions and the offering of education institutions, as well as legal specifications, scientifically-based approval procedures and future standards and regulations.

The Austrian Council for Research and Technology Development has therefore commissioned the Austrian Research Foundation for International Development with a study to discuss possible positive and negative consequences. Key issues of the study include: What effects does TTIP have on the Austrian education sector? And what effects does TTIP have

on research and technology policies?

On November 27th 2015, a workshop was then held with appropriate experts. The study authors presented an intermediate report on the negotiations between Europe and the USA. The relationships between the future contractual partners, and in particular the effects on Austria, were also illustrated and discussed at education and research sector level. The workshop should in particular also enable an information exchange between institutions and study authors – to also enable and initiate a more direct cooperation.

On the basis of the available documents on the ongoing negotiations on TTIP, the topics of “Education services”, “Research services”, “Mobility of sciences and researchers”, the “Protection of intellectual property rights” and negotiation points, which are worked out in “regulatory cooperation”, were analysed and an estimate of the possible effects was prepared. The study was concluded in March 2016.

Forum Invent 2015: Focus on Patents – Multi-Part Series of Events

The “Patent” topic is the centre of focus of “Forum Invent”, a multi-part series of events by the Bohmann publishing house in cooperation with the Austrian Council for Research and Technology Development. The events, which are held at different locations right across Austria (Vienna, Graz, Linz, Eisenstadt, Klagenfurt), will in particular provide entrepreneurs with answers on the topic of patent and brand protection. Experts give presentations with examples from hands-on practice.

Patent strategies were the general topic for 2015. The following questions, among others,

were discussed and treated: What patent protection do I need for my product to succeed? What patents are there and how can I protect my intellectual property? And: What does my patent strategy for the future look like?

In addition to presenters from the Austrian Council’s offices, renowned experts from the patent law area, the funding institutions and representatives of interested parties and the European Commission were also represented. Entrepreneurs reporting on their experiences in practice also had a chance to speak.



Review 2015

The 2015 review is defined by the structural and content-related realignment of the Council Board. The third period of the Austrian Council came to an end in September 2015. During this period, the Council initiated or supported important milestones of the research and innovation policy with its recommendations. The report on Austria's scientific and technological capability, which has accompanied the implementation of the RTI Strategy of the Federal Government since 2012, emphasises goals already achieved, and also illustrates issues still open to be tackled with appropriate measures, merits special mention here. Since 2014 the performance report also includes the Global Innovation Monitor, which expands the national orientation of the report to a classification in the European and

international framework with a selection of indicators. The global consideration in particular shows how Austria and other economies in the central European culture area must also tackle increasing competitiveness from other regions of the globe. Various studies and analyses were used here to show how our socialisation only insufficiently drives forward the implementation of the knowledge richly available on the markets. The result is that we do actually improve ourselves continuously, but others do this quicker, and year-for-year some countries therefore pass Austria by in competitiveness. This consequently explains Austria's gradual but continuous deterioration in the applicable rankings. This competition cannot be won without the use of content-related, structural and political energy to expand our understanding of innovation. Which brings us to our outlook:



Ludovit Garzik
Head of the Secretariat

The members of
the Austrian Council
2010-2015
(from left to right):

Markus Hengstschläger,
Karin Schaupp,
Gi-Eun Kim,
Renée Schroeder,
Marianne Hilf,
Peter Skalicky,
Gabriele Ambros,
Hannes Androsch





Outlook for 2016

As with the review, we once again begin with the basis on which the Austrian Council can count in the coming years. Firstly, this is the Council members of the Council Board to be re-appointed in autumn 2015. In addition to the re-appointed Council members, who guarantee continuity and also form the chair team, people with the extensive skills of the most diverse research and innovation systems have also been won over for this position, who in turn also form the perfect basis for the work of the next few years. The internationalism, the content-related diversity, the institutional anchoring: all these aspects have been extended in compiling the new Council Board, and now provide the foundation for sound and solid recommendation work and the resulting policy discussion and implementation.

The goal will be to question and analyse the fine tuning points of the national research and innovation system with a focused work program, and to develop far-sighted strategic concepts, which, however, must also be feasible in implementation. The detachment of this strategic discussion from the requirements of daily operative business is a necessity to also be able to truly get the essential system elements moving. There will be winners here – but here must also be losers. The Council Board will endeavour to involve all stakeholders in the discussion in order to find progressive and beneficial solutions for all of our challenges. This will also be especially visible immediately in 2016.

the austrian council

The Members of the Austrian Council

Advisory Members

Mag. Gerald Klug Minister of Transport, Innovation and Technology

Dr. Reinhold Mitterlehner Vice Chancellor and Federal Minister
of Science, Research and Economic Affairs

Dr. Hans Jörg Schelling Minister of Finance

the austrian council



Dkfm. Dr. Hannes Androsch Chairman of the Austrian Council is an industrialist and former minister of finance who also served as a consultant to the World Bank. He is a member of the Senate of the Austrian Academy of Sciences (ÖAW) and head of the Supervisory Board of the Austrian Institute of Technology (AIT)



Univ.-Prof. Dr. Markus Hengstschlager Head of the Institute of Medical Genetics at the Medical University in Vienna, Vice Chairman of the Bioethics Commission at the Federal Chancellery (since 2009)



Univ.-Prof. Dr. Jakob Edler
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Dr. Hermann Hauser
Company founder, computer and risk capital
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Fen ("British Silicon Valley")



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(VINNOVA)



Dr. Klara Sekanina
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Technology and Innovation (CTI)

The Secretariat

The Secretariat supports the Austrian Council both in terms of organization and content, in particular with regard to preparing and organising the meetings of the Austrian Council and work groups, and in respect of communication both within the Council and externally. The operations of the

Austrian Council are financed by the Ministry of Transport, Innovation and Technology. The head of the secretariat, deputy head of the secretariat and members of staff (in alphabetical order):



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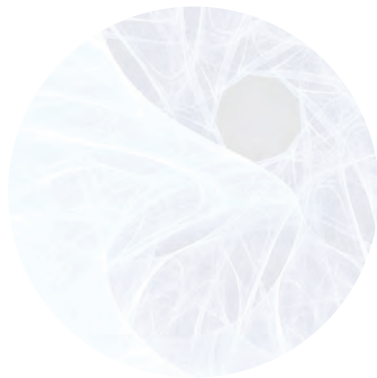
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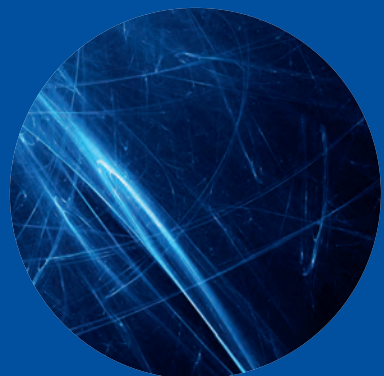
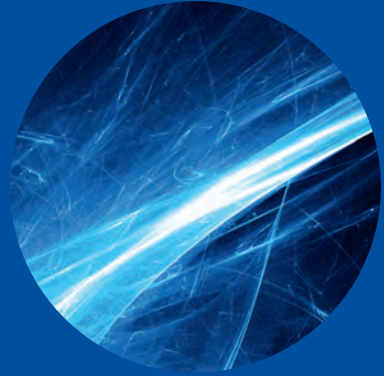


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