

National Action Plan for Researchers

The following National Action Plan for Researchers is Austria's response to the Communication issued by the European Commission (EC) entitled "Better Careers and More Mobility: A European Partnership for Researchers"¹ as well as the related conclusion by the European Council².

In essence, the Communication calls for a three-year partnership between the Member States and the EC whose objective is to guarantee a sufficient number of researchers in Europe. Using a focused and coherent approach, this partnership is intended to make measurable progress in the following areas:

1. Open and competitive recruitment of researchers as well as cross-border portability of research grants
2. Social security and supplementary pension needs of researchers
3. Attractive employment and working conditions of researchers
4. Enhancing the training, skills and experiences of researchers

This National Action Plan is divided into the four axes designated by the European Commission (EC) as well as - with reference to the supplementary suggestions made by Ministers Gago (PT) and Biltgen (LUX)³ - an additional area comprising "efforts to raise and retain interest in science and research in pupils and young people", listing Austria's highest-priority **fields of action** in this regard. Those **measures** aimed at supporting the **objectives** envisaged by the action plan within these fields of action are also detailed below. Italicised text refers to relevant passages of the current Government Programme (abbreviated Gov. Prog.).

This document was compiled under the auspices of the Federal Ministry of Science and Research (BMWF) along with the Federal Ministry of Labour, Social Affairs and Consumer Protection (BMAK), the Federal Ministry for Education, Arts and Culture (BMEIA), the Federal Ministry for Transport, Innovation and Technology (BMVIT), the Federal Ministry of Economy, Family and Youth (BMEIA), Universities Austria (UNIKO), the Austrian Association of Universities of Applied Science (FHK), the Austrian Council for Research and Technology Development (RFTE), the Austrian Science Board, the Federation of Austrian Industries, the Austrian Federal Economic Chamber (WKO) and the Austrian Trade Union Federation as well as with the additional involvement of the Austrian Chamber of Labour.

¹ COM/08/317, 23 May 2008

² 13671/08, 30 September 2008

³ Communication of European Council President no. 1003/09, 18 May 2009

Summary

As a response to the European Commission (EC) Communication entitled "**Better Careers and More Mobility: A European Partnership for Researchers**" (COM/08/317, 23 May 2008), Austria has compiled the following "National Action Plan for Researchers". This action plan encompasses the four key areas set out in the EC communication - though these will be weighted differently in the national context - and also takes up the related supplementary suggestions made by Ministers Gago (PT) and Biltgen (LUX)⁴. Given that Austria has taken a leading role within Europe on the portability of research grants, there is not much left to do in this area; however, a greater focus will be put on the creation of better conditions for open and labour market-oriented recruitment of researchers, as well as advertising open research positions internationally. With regard to social security and supplementary pension schemes for researchers, the emphasis will be on improved information and better access to these sources of information. Creating attractive employment and working conditions for researchers will also be a key issue that goes beyond making career paths both more secure and more flexible to include measures aimed at promoting equality and increasing the numbers of women in science and research. Where the improvement of researchers' training and skill sets is concerned, doctoral programmes in particular will come in for qualitative improvement in order to meet the needs of an increasingly global, dynamic and knowledge-based society, also through stronger links between universities and the business sector. As an indication of the need to guarantee a sufficient number of highly qualified people in science and research in Austria over the long term, initiatives aimed at early-stage retention of junior researchers complete this set of measures. Taken together, these efforts will enhance Austria's international standing as a base for research, thereby also making a significant contribution to our country's overall economic competitiveness.

Introduction

In today's knowledge-based societies, innovative scientific discoveries and their application through technology are the key to prosperity.

The positive impact of technological advances, research and innovation on Austria's economic productivity helped to make Austria one of the richest countries in Europe in the past. Research and development, along with technological innovation, represent key economic factors for the future too, especially for a small country like Austria. Austria's highly efficient science and research system has developed rapidly in recent years. Without technological progress, domestic economic growth would have been only a third of its rate over the last 15 years, meaning less than one percent a year. In other words, two thirds of domestic economic growth relies on technological advances, research and innovation. These future growth factors also represent an opportunity for Austria to overcome the current economic crisis more quickly than its competitors, given the right degree of commitment.

While concrete forecasts about the ultimate effects of the financial and economic crisis on the future demand for education and training in science and research cannot yet be made, nothing is likely to change over the long term when it comes to the rising demand for skills in research, technology and development (RTD). To the contrary: Increased investment in education, research and innovation are the need of the hour, especially during difficult economic times, in order to move out of the negative part of the business cycle as quickly as possible. For that reason, education, research and innovation will continue to increase in importance in Europe over the long term - along with educational qualifications in related fields, especially the natural sciences and technology.

⁴ Communication of European Council President no. 1003/09, 18 May 2009

The Austrian Federal government is accordingly committed to "secure the foundations of our country's future prosperity... through a substantial investment in education, science and research..." (Programme of the Austrian Federal Government 2008 -2013 - Gov. Prog., Preamble). "The Federal Government considers the development and harnessing of new knowledge to be a core mission which will benefit our future prospects. Research carried out in the country's universities, institutes of applied sciences, research centres outside universities, in small and medium-sized businesses (SMEs) and in industry makes an important contribution toward solving social challenges while ensuring competitiveness, economic growth and jobs. The Government's innovation-driven research policy will strive for networked access that is based on the cooperation of all players and takes into account the diverse interactions between the generation of knowledge and its use both within and outside the research world. The Federal Government is aware that a successful research policy can only continue to succeed if the various measures of the different players complement one another and are directed towards a common goal. In the field of research, Austria has been through an unprecedented catch-up process. The Federal Government proposes to set itself the goal of increasing the country's research ratio to 3% of GDP by 2010 and to 4% by 2020. It would like to see Austria promoted from the "followers" league to the league of "innovation leaders", thus making the Republic one of the most innovative countries in the EU. (Gov. Prog., p. 42) "The international attractiveness of Austria as a business location must be further reinforced by high availability of qualified workers, modern infrastructure, security, a comprehensive social security system and attractive fiscal conditions." (Gov. Prog., p. 14)

The Austrian Research Dialogue held in 2007-2008 on the central challenges for Austria as a science and research base outlined those areas of concern that would be decisive in driving Austria's evolution into a hub for research, technology and innovation. The most important factors were considered to be: recruiting people to Austria as a locus of research and bringing research careers, basic research and infrastructure up to world-class levels, as well as improving Austria's position in the global knowledge landscape through transparency, internationalisation and a better-defined country profile.

In this context, the current National Action Plan for Researchers is aimed at enhancing Austria's international attractiveness and competitiveness, as well as strengthening the European Research and Economic Area more broadly.

Axis 1: Open Recruitment and Portability of Research Grants

The international aspect of research and development plays an important role in the creation and diffusion of knowledge. Researchers' experiences in international research institutes form the basis for successful cooperative efforts in international research, which in turn support the Austrian national economy. In order to enhance scientific-technological competency as well as Austrian research capabilities to the fullest extent, Austrian researchers must work more closely in future with the most innovative top researchers internationally. To this end, cooperative relationships with the best research facilities in the world must be strengthened while Austria itself is made more attractive to the most innovative researchers.

"Research thrives in particular on researchers and their expertise, training, skills and innovations. If Austria is to be able to stake a claim to be a leader in the area of research, the best people in the field of R&D must be headhunted and brought to the country." (Gov. Prog. p. 46) "It shall further increase mobility from and to Austria, as well as across sectors." (Gov. Prog., p. 49) "The objective is optimum integration of immigrants. Measures: Examination of a criteria-led immigration system which allows labour market access and integration support to qualified people wishing to immigrate to Austria on the basis of clear and transparent criteria. Expansion of employment options for students and graduates. Improvements in residence regulations for top managers, scientists and artists." (Gov. Prog., p. 31) The latter measures in particular represent the larger context which will foster international recruitment on the basis of public, international and transparent advertisement of research positions.

Given the right conditions, it will be easier not only to attract highly mobile, globally sought-after talent in research and science to Austria, but also to weight their decision in favour of taking up a position in Austria. Austria must enhance its appeal - as a place to work for the most qualified people internationally, especially researchers - in order to come out ahead in the global competition for talent.

A key **objective** in this regard is to promote mobility, cooperation and an open labour market for researchers through international, transparent advertisement of research jobs, and to position Austria accordingly in the European Research Area and its networks.

Given the importance of the Government's aim to *"make it possible to actively recruit world-class research staff not least in the university system"* (Gov. Prog., p. 50), another **objective** consists in bringing accomplished researchers to Austrian universities through a selection and appointment procedure backed by quality assurance, while preserving the autonomy of the universities. Implementation of non-discriminatory application procedures is also a goal over the long term.

Similarly, one other high-priority **objective** in this area is to improve, expand and design information services for mobile researchers to be more user-friendly.

Measures under Axis 1: Open recruitment

With the overarching goal of transparent, public and international advertisement of research jobs, renewed efforts are being made to increase the number of publicly financed research positions advertised on the Internet, particularly on the "EURAXESS Researchers in Motion" Internet platform (<http://ec.europa.eu/euraxess>). Additional lobbying efforts are being undertaken at those **universities** which gained autonomy in the areas of human resource management, organisation and finances with the University Act of 2002, and at a broad range of interest groups and research funding organisations. Using selection and appointment procedures backed by quality assurance, universities will be able to actively recruit outstanding international scientists and offer new hires additional support in settling into the Austrian environment at their discretion. The performance agreements between the Ministry of Science and Research (BMWF) and the universities negotiated in 2009 for the 2010-2012 period are to include plans put forward by the universities to improve general conditions for mobility and an open European labour market for researchers.

Since it is equally important for the universities of applied science to ensure the international advertisement of job vacancies for publicly funded R&D staff, the Austrian Association of Universities of Applied Science (FHK) will lobby its members to promote the advertisement of jobs by universities of applied sciences on the EURAXESS job portal.

In terms of an open, transparent and independent advertisement and application procedure for researchers, the FHK will support and increase awareness among its members for the principles of the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers.

The **EURAXESS job portal** is already valued by leading international firms as a tool for cross-regional talent scouting. To further bolster its use in the private sector, the BMWF is partnering with the Federation of Austrian Industries to prepare an overview of EURAXESS that will be made available to all innovative industrial enterprises in Austria.

Measures under Axis 1: Services for Mobile Researchers

In order to ensure appropriate information and advisory services are provided to mobile researchers, the national EURAXESS portal (www.euraxess.at) must be overhauled and improved. Apart from enhancing content, this would include making the site more user-friendly and updating its layout.

The effectiveness of the national EURAXESS network must be improved, and the participating institutions linked together more closely. Finally, there must be a review at the national level on the feasibility of greater coordination between EURAXESS (Researchers in Motion) and EURES (European Job Mobility Portal) in order to guarantee that optimised services are provided to mobile researchers.

Measures under Axis 1: Portability of Grants

For researchers, being able to take grants with them from one institution to another would greatly enhance their own mobility. In Austria, grants have not only been largely made portable as part of Austrian Science Fund (FWF) projects carried out through the EUROHORCS (European Heads of Research Councils) initiative called "Money follows researcher", but this policy has been actively practised for a number of years through the umbrella agreement "DACH" between the FWF, the German Research Foundation (DFG) and the Swiss National Science Foundation (NSF). A simplified method of applying for and carrying out joint research projects with partners abroad is essential to having an effective network in the international scientific system. As part of the DACH agreement, there is a limited option for financing participation in international projects through national funding ("Money follows cooperation line"). The "Lead Agency Process" offers a wider range of options. Predicated on mutual trust among the research funding agencies involved in evaluating and approving project proposals, this process allows transnational projects - with Austrian, German and Swiss components - to be submitted to a single research funding agency, namely the lead agency. The partner organisations agree to accept the evaluation and decision of the lead agency, funding the segment of the project to be conducted in their country. The three initiatives described above are key elements of the "European Grants Union", which in turn is part of EUROHORCS's "Vision for a globally competitive ERA and road map for actions". Moreover, research fellowships and programmes administered by the Austrian Academy of Sciences may be used either domestically or abroad.

Axis 2: Social Security and Supplementary Pension Needs for Mobile Researchers

As highly mobile workers, researchers are often faced with a range of different national social security schemes in the course of their careers. EEC Regulation no. 1408/71 along with other coordination rules at the EU level is intended to prevent the application of varying national laws from having a negative impact on mobile workers. However, information regarding national legislation on points of social security must be further improved.

The **objective** is to expand information about social security for researchers and make it more easily accessible in order to keep researchers on the move optimally informed and up to date about these issues. In addition, the current government programme envisages "*special rules for scientists coming from abroad (residence status, social insurance, pension insurance) to make Austria more attractive as a research base*" (Gov. Prog., pp. 49-50).

Measures under Axis 2: Access to Information about Social Security

The information about international social security on the homepage of the Federal Ministry of Labour, Social Affairs and Consumer Protection (www.bmask.gv.at) that is currently available only in German will be translated into English.

Austrian social insurance companies and agencies are making efforts to continuously improve their information, as well as assure the quality of their responses to enquiries and requests for advice.

The advisory obligations of social insurance companies often go beyond general enquiries, extending to the legal status of workers moving across borders.

According to article 80 of EEC Regulation 1408/71, the Administrative Commission on Social Security for Migrant Workers is concerned with improving the flow of information between Member States and the insured. Austria will also make a constructive contribution toward continual improvement of this practice.

The Federal Ministry of Labour, Social Affairs and Consumer Protection (BMASK) is planning to improve its own informational activities with regard to occupational pensions, with improvements to the information available on the Internet a current priority.

Where information on social security has been updated or expanded, it must also be made available in the national EURAXESS portal. Accordingly, the portal will be updated to reflect the most current developments on social security. The feasibility of holding training courses for the employees of the national EURAXESS network on social security should also be reviewed in order to guarantee that mobile researchers are receiving the most accurate information on questions about social security.

Measures under Axis 2: Exceptions under Regulation 1408/71

According to Article 17 of Regulation 1408/71, two or more Member States may, by common agreement, provide for exceptions to the provisions of Articles 13 to 16 in the interest of certain workers or categories of workers. By the terms of these exceptions, the legal regulations of a worker's country of origin apply for a longer period than the 24 month limit usual for a posting to another country. The purpose of Article 17 agreements is to facilitate mobility through continued application of the laws which previously applied to a worker in the area of social benefits, ensuring that insurance coverage is maintained and that a change in responsibility does not create additional paperwork.

As the responsible government authority for Article 17 agreements, the BMASK has always been open to approving these arrangements when they have been in the interest of the individual, and will continue with an even more careful, case-by-case approach when it comes to researchers.

Measures under Axis 2: Bilateral and Multilateral Agreements with Third Countries

The bilateral and multilateral agreements concluded between Austria and third countries generally allow for the option of a posting to another country as well as exception agreements. BMASK makes use of these instruments on the basis of the same principles as in EU matters; i.e., being essentially open to such arrangements when they are in the interest of the insured person. Here too, special consideration will be given to the situation of researchers.

Axis 3: Attractive Employment and Working Conditions

Investments in human potential play a key role in the future of research and innovation. Having a sufficient number of well-qualified researchers, favourable career and work opportunities and conditions that facilitate mobility are all important factors in establishing Europe as a leading area for research and ensuring that Austria takes on an appropriate role in the European Research Area.

In order to keep the best minds in Austria - avoiding a so-called "brain drain" - renewed efforts are needed to improve the employment and working conditions of researchers, particularly those in the early stages of their careers.

A number of institutions which are active internationally have taken up the issues surrounding researcher needs and have already begun to implement strategic concepts aimed at retaining junior researchers, particularly in the natural sciences and technology. Given the global competition for the best minds in science, it is essential for Europe as well as for Austria to place the retention of junior scientific talent at the heart of research, educational and innovation policy efforts.

Accordingly, a key **objective** of this Action Plan consists in retaining junior scientific talent at the national level to the fullest extent possible. In addition to training a sufficient number of highly skilled graduates fully prepared to meet the needs of the labour market, this effort is aimed primarily at fostering the development of young scientists while also improving their working conditions and career prospects. Concrete examples of supporting researchers in this way include awarding appropriate recognition to their experiences abroad and giving positive weight to periods of mobility in their careers.

An additional **objective** encompasses efforts to promote equality between men and women. Additional efforts must be made to improve opportunities for women as well as to better utilise their talents: *"More women in top positions, on boards, panels and committees, and in supervisory positions at universities, in research institutes outside university, and in research support institutions. [The government] shall take more account of gender budgeting in research support and improve the compatibility of childcare and a scientific career. It shall target support for new and young scientists in scientific-technical fields."* (Gov. Prog., p. 49) *"Existing measures to further the careers of women researchers shall be further consolidated."* (Gov. Prog. p. 46)

Measures under Axis 3: Attractive Careers and Working Conditions for Researchers

As research institutions, universities are important players in qualitative as well as quantitative terms. About a quarter of the people working in research and development in Austria are employed by universities. As a means of improving their working conditions and career prospects, a new, more flexible set of employment rules under the collective bargaining agreement that has been negotiated is envisaged within the broader framework of the 2002 Universities Act. The collective bargaining agreement covering university employees is now the foundation for private-law employment contracts at the autonomous universities. There are provisions of the collective bargaining agreement which stipulate improvements in the career options and working conditions for both young and established researchers, such as a career model with performance evaluations, an increase in the starting salaries of junior researchers, taking into consideration periods of maternity or paternity leave for temporary contracts, and the option of taking a period of leave to be used for teaching or research either abroad or in the business sector. The universities will implement this collective bargaining agreement over the next several years using additional funds from the BMWF.

Together with the universities, the BMWF also aims to incorporate specific plans and goals by individual universities to implement the primary principles of the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers (Charter & Codex) into the 2010-2012 performance agreements as part of putting the collective bargaining agreement into action. In specific terms, this involves career development and the implementation of career models which would allow junior researchers - who have the appropriate qualifications and also satisfy periodic performance reviews - to be offered permanent positions. Toward the goal of creating conditions that foster mobility as well as an open European labour market for researchers, universities must award positive recognition to or even proactively encourage periods of mobility in the careers of young researchers.

Career opportunities in research and development, along with information about recent developments concerning Austria as an innovation hub, are to be publicised through the BMVIT's programme called "brainpower austria" (<http://www.brainpower-austria.at/webfiles/home.asp>). Apart from the website, this programme includes services aimed at exchange and growth in the scientific community such as an online job portal, interview and relocation grants for job hunters and new hires, as well as travel and speaking grants. *"If Austria is to be able to stake a claim to be a leader in the area of research, the best people in the field of R&D must be headhunted and brought to the country."* (Gov. Prog. p. 46) Facilitating communication between scientists abroad and those in the Austrian scientific community is an important first step toward this goal.

Measures under Axis 3: Measures to Promote Gender Equality

Austria will continue to actively promote the role of women in research and technology both as a goal in itself, as well as with a view to supporting the overall aim of equality. At the heart of these efforts are measures to improve equality of opportunity between men and women in research, technology and innovation (RTI) over the long term. Since 2004, a programme called "FEMtech - Women in Research and Technology" (www.femtech.at) has employed activities such as networking events, cooperative schemes between universities and the business sector to recruit junior female researchers for RTI companies, and even establishing new, gender-related fields of research, all with the larger goal of promoting equality of opportunity. The first call for grant proposals to two new programme lines came in 2008 - FEMtech Career Paths and RTI-Projects - along with the inauguration of the FEMtech competence centre, which has taken over responsibility for execution. An expansion of these activities, as well as additional calls for proposals and other measures, are planned for the period going into 2010.

In 2009, the first "national prize for equal opportunities in and woman in R&D" was inaugurated, with 10 awards of €10,000 each.

The "fForte Coaching" programme offered by the Federal Ministry for Transport, Innovation and Technology (BMWF) is a 2-semester course aimed at helping women put together successful grant proposals. It also provides information on various sources of funding as well as personality development, among other things, in order to increase the proportion of women in a range of research funding programmes.

The BMWF is planning additional measures to increase the number of women in top positions in science and research as well as to expand upon the actions prescribed in gender equality legislation. The 2009 Act amending the 2002 Universities Act contains a number of new rules concerning the promotion of women's interests and gender equality at universities, in particular the mandatory application of § 11 section 2 Z 3 of the Federal Equal Treatment Act (B-GIBG) relating to collegial boards, which allows the seats on all collegial boards designated under the 2002 Universities Act to be filled through gender-specific nominations. The extent to which these same rules apply to other science and research institutions will have to be determined over the next several years.

The "excellencia" programme has boosted the proportion of women holding professorships from 13% to 16% since 2005. As part of their 2010-2012 performance agreements, the BMWF and the universities have as a joint goal the sustainable increase in the number of women among scientific and artistic staff at every stage of their training and career paths, particularly in those areas where the ratio of women is significantly below 40%, as well as in executive positions at the universities. Special emphasis will be placed on measures to award more Ph.D. degrees to women. Leading indicators of gender equality, along with other developments at the universities, will be monitored on an ongoing basis. Use of the gender monitoring tool will be expanded to include the planning and administration of equity policies at the universities as well as research funding.

Gender equality programs will be designed to support the desired outcomes outlined by the universities.

As part of their performance agreements, the universities' plans to develop and promote career models and working conditions that foster a better balance between work and private life (such as flexible working models for women returning to the workforce, institutionalised contact between universities and researchers during parental or educational leave, flexible childcare and other need-based expansion of childcare facilities) will be launched.

In order to achieve equality of opportunity between women and men in resource distribution over the long term, the BMWF will include support of junior researchers and mobility in its gender budgeting pilot projects.

In addition, there will be a broader attempt to ensure that, in the case of funding measures targeted at both women and men, the women's share of awarded grants is not lower than the women's share of the submissions - assuming that the quality of all the submissions is equal, and that there is no fixed percentage of funding designated for female researchers. Otherwise, there will continue to be grants designated exclusively for female researchers (such as programmes to promote women's careers).

Through the "Laura Bassi Centres of Expertise", the BMWFJ supports a forum in which highly skilled female and male researchers from academia and the private sector work together (also see the measures under Axis 4 entitled "Stronger Links Between Academia and the Business Sector"). To address the shortage of women in executive roles, female scientists were encouraged to apply for the top positions within the Laura Bassi Centres of Expertise, much as the team itself was put together with the aim of a desirable gender balance for research. The Laura Bassi Centres of Expertise were inaugurated in autumn 2009.

Axis 4: Enhancing the Training, Skills and Experiences of Researchers

Milestones for a career in research are set early; usually no later than by the time of a doctoral training. The doctoral training is the turning point for research-oriented careers, whether within universities or outside the academic world.

In Austria, autonomous universities are the providers of qualified doctoral training. An amendment to the 2002 Universities Act⁵ increased the length of a doctoral training from two years to a minimum of three years in accordance with current European standards. Starting in the 2009/2010 academic year, two-year doctoral training will no longer be offered. The **objective** of the universities⁶ and the BMWF in making this change is to implement qualitative improvements in doctoral training as well as to accelerate the growth of PhD courses and structured doctoral programmes. The Austrian Science Fund (FWF) plays a special role in fostering doctoral training with a focus on excellence. As part of the FWF's support for innovative structures, focuses of research and networks, doctoral programmes will also be established on a wider basis in line with the international model, thereby contributing to a higher level of competitiveness both in the main and at the very top (also see Gov. Prog. p. 48). This initiative will be supplemented by setting up a doctoral programme at the highest level at the Institute of Science and Technology (IST) Austria.

Traditional demarcations are not only becoming more fluid between academic disciplines, but also between the business sector and academia. Given that a great deal of knowledge is generated on the borders and edges of established subject areas, the transfer of this type of knowledge through activities related to research and science can be encouraged through targeted training and employment opportunities for young researchers. Accordingly, an additional **objective** consists in "*further increasing mobility... between sectors*" (Gov. Prog. p. 49) and in "*setting new priorities in support for... knowledge transfers from our universities*" (Gov. Prog. p. 48). Both the speed and quality of innovation processes depend on the synergies between academic and industrial research as well as the level of cooperation between these two realms.

A range of support programmes (such as COMET, the Christian Doppler Laboratories, Laura Bassi Centers, Young Experts) is aimed at stimulating cooperation between the Austrian business sector and top researchers at universities or non-academic research institutions, thereby creating attractive employment and research opportunities for junior scientists. Because many firms, particularly small and medium-sized enterprises (SMEs), are not in a position to expand their research capabilities internally, a separate programme on "Human Resources for the Business Sector" is intended to complement the existing palette of support programmes with the **objective** of making innovation know-how available to Austrian companies (also see Gov. Prog. p. 45).

⁵ 2006 Amendment to the Universities Act, Federal Law Gazette I No. 74/2006

⁶ Also see the (new) recommendations of Universities Austria on doctoral programmes (resolution by plenary council on 3 December 2007).

Measures under Axis 4: Enhancing the Training and Skills of Researchers

Because the qualifications and competencies of doctoral graduates are to be integrated into the European Qualifications Framework (EQF) and the National Qualifications Framework (NWF), compiling a National Skills Agenda for (young) researchers is not currently a priority. The Dublin descriptors define requirements for graduates of doctoral courses, and can be used in this regard to outline both the broad skill sets and specific competencies expected of doctoral graduates.

It is the responsibility of the autonomous universities to create a curriculum and set up a qualified doctoral training. As part of the change from four-semester to six-semester minimum doctoral training (2006 amendment to 2002 Universities Act), the universities are also required to implement qualitative improvements in the organisation and support of these programmes.

As part of their 2010-2012 performance agreements, the universities and BMWF jointly plan to accelerate the pace of improvements at the universities, particularly in the area of support, acquisition of extended capabilities and transferable skills, as well as the inclusion of interdisciplinary and international aspects.

The FWF will continue to support and expand the establishment of doctoral programmes with the aim of developing highly skilled junior scientific personnel who can be part of outstanding teams.

The Institute of Science and Technology Austria (IST Austria) is a new cutting-edge research institution which will carry out basic research in the natural sciences at the highest level. The IST Austria will set up its own graduate school and PhD programmes, drawing on links with universities at home and abroad.

Besides, cooperation between universities of applied science with national and international universities for the doctoral training is also crucial. This effective cooperative model will continue to be pursued, not least because it also provides alumni of universities of applied sciences with enhanced career prospects.

Measures under Axis 4: Stronger Links between Academia and the Business Sector

Successful R&D funding programmes aimed at fostering cooperation between science and business will be continued and/or expanded, making available to them the appropriate resources (see Gov. Prog. p. 45).

This includes the Christian Doppler Research Association (CDG), which aims to foster links between academia and the business sector as well as strengthen application-oriented basic research, along with continuous improvement in the areas overseen by the BMWFJ.

Within individual Christian Doppler laboratories (CD Labs), small groups of researchers work together with industry partners on new, application-oriented basic research. One of the guiding principles behind the funding programme is the improvement of education and career options for young scientists, whether in terms of an academic career or a job in the business sector. Academic papers, dissertations on practical issues and "Habilitation" (postdoctoral promotion) undertaken within the CD Labs, together with industry contacts, are all intended to have a positive impact on university teaching practices. An additional goal is to establish international research partnerships, particularly in the European Research Area. The positive effects arising from these forms of academic-industry partnerships increase with the number of CD Labs. Based on budgetary

resources and projected future demand for this type of academic-industry cooperation, the 59 CD Labs (as of April 2009) are expected to increase to 72 to 84 by 2012.

An additional programme aimed at supporting human potential at the interface between science and industry is COMET, the competence centre programme. The explicit goals of the COMET programme include the recruitment of highly skilled researchers, the creation of attractive opportunities to develop and use the skills of researchers in science and industry as well as the transfer of know-how across the interface between science and business. As part of putting this form of cooperative research into practice, the competence centres are also developing a qualification programme aimed at human resources and career development for their scientific-technical staff, alongside measures aimed at gender mainstreaming. Following an initial call for proposals, the first new competence centres opened at the beginning of 2008. As the programme continued, the second call for proposals for the establishment of additional competence centres was initiated at the end of 2008, with the result that approximately 500 additional researchers will be employed in the new competence centres starting in 2010.

To promote cooperation and communication between science and industry at a different level, the "Young Experts" programme (<http://www.ffg.at/content.php>) was launched in 2008. By providing funding to junior researchers and post-docs alongside bachelor's and master's candidates, the programme - which runs until 2010 - is intended to enhance cross-sector mobility as well as knowledge transfer between research and business. Funding for post-docs in particular will generate a high degree of added value for small and medium-sized enterprises (SMEs) in their internal efforts to carry out R&D, resulting in greater cross-sector mobility and stronger links between academia and the business sector.

The "Laura Bassi Centres of Expertise"⁷ are research centres supported by the BMWFJ which promote excellence in application-oriented basic research where highly skilled researchers from academia and private industry work together. Their projects have an interdisciplinary focus, with the goal of making new discoveries in research and creating new products and processes for industry. Apart from the scientific calibre of their applications, researchers were selected on the basis of their descriptions of the centre's management, career and team development among individual employees, along with their concrete vision of working with industry partners (also see measures under Axis 3, "Measures to Promote Equality"). In autumn 2009, eight centres began operation.

In order to utilise research capabilities at universities of applied sciences and support long-term cooperative relationships with industry as well as the universities, the BMWFJ commissioned the Josef Ressel Centres - Research Laboratory for Universities of Applied Sciences as a pilot programme. With an emphasis on SMEs as well as a strong regional focus, the Josef Ressel Centres are intended to support universities of applied sciences with a background in research to achieve high standards in R&D. An additional aim of the Centres - with reference to the objectives outlined in the Universities of Applied Sciences Studies Act - is to further improve the quality of education available through the universities of applied sciences, in terms of sound vocational training with an emphasis on practical skills. Both the programme and the centres will be evaluated in 2010. Assuming the evaluation results are positive, the three currently active Josef Ressel Centres may continue operation for up to another three years in a second phase, under the auspices of the COIN programme.

⁷ These research centres receive 60% of their funding from the BMWFJ and 35% from private companies, while the remaining 5% comes from their own financial sources.

The **COIN programme** (Cooperation & Innovation <http://www.bmwfj.gv.at/coin>) was founded as a joint initiative of the BMWFJ and the BMVIT to promote cooperation between science and industry, and is projected to run until 2013. One of its key aims is to strengthen ties between private companies (especially SMEs) and universities of applied sciences, as well as non-university research institutions. The human potential responsible for not only generating knowledge but putting it into practice in the form of innovative products, processes and services is at the heart of this effort, with the goal of stimulating innovation by small and medium-sized companies.

Axis 5: Efforts to raise and retain interest in science and research in pupils and young people

In a knowledge-based economy, having a highly skilled workforce is a key factor in the future development of Austria as a science and research hub. Efforts to position Austria over the long term in the group of front runners in research and technology implies a rising demand for highly skilled workers as well as timely measures to ensure there is an appropriate supply of such workers in place.

The most effective way of retaining junior talent in research is to direct appropriate early-stage efforts at children and young people, with an emphasis on increasing their interest in research, technology, innovation and creativity at the start, followed up by advice and information on choosing a course of study and career. Demonstrating the real-life application of such work while also fostering personal contact with today's researchers and innovators will pique young peoples' interest early on and help maintain it over the long term.

"To ensure that the Austrian research system will also be able to have sufficient researchers and capable innovation specialists in the future, the Federal Government will particularly turn its attention to the next generation of R&D researchers. A broad campaign at schools, research institutions and companies shall seek to get young people interested in R&D. It should build on existing best practice models ("Young People Innovate," "Sparkling Sciences," "Research Goes to School"). (Gov. Prog. p. 46)

Accordingly, a central **objective** of the National Action Plan for Researchers consists in stimulating interest in research and development along with the natural sciences and technology among children and young people at an early age, thereby encouraging their later decisions to pursue studies and a career in these fields. In order to bring about such a sustained interest in research-related fields, these projects must reach children at the earliest age possible. This will help ensure that there is a sufficient number of highly skilled people working in research and science in future.

Measures under Axis 5: Efforts to raise and retain interest in science and research in pupils and young people

The tried and tested programme "Young People Innovate" sponsored by the BMUKK and the BMWFJ is aimed at inspiring young people to explore technology and innovation, with the eventual goal of embarking on a science or technology-related course of study. The contest, held at schools throughout the country, allows students aged 15-20 to put their innovative or creative ideas into practice in the form of projects either related to business, design, engineering and science or IT, media technologies and climate protection. The juried evaluation rewards interdisciplinarity in terms of project selection, along with the social components of teamwork needed in the working world. The success of Austrian winners in international competitions such as the "European Contest for European Scientists," INTEL-ISEF, and the annual award of patents, all indicate the efficacy of this measure.

The IMST project⁸ is a flexible support system intended to strengthen innovation in the teaching of mathematics, information technology, the natural sciences and German (MIND is the German acronym for these subjects) in Austria. The goal of this programme is to enhance the appeal of school instruction while improving its quality over the long term. IMST provides financial and subject-matter support to initiatives (teaching, school projects and networks) in the areas of mathematics, natural sciences, information technology, German language and related subjects. IMST is characterised by a high level of cooperation between practical teaching, science, school administration and educational agencies, as well as the application of specialised - but also cross-disciplinary - teaching, as pupils experience it on an everyday basis and ideally help shape as well. Gender sensitivity and gender mainstreaming are guiding principles in all these measures. The primary activities of IMST include quality development and quality assurance through the support and diffusion of innovation for schools. Targeted at the level of teachers and pupils as well as on a regional and cross-regional basis, these measures are intended to raise the level of pupils' performance along with their interest in MIND subjects.

To enhance the appeal of natural sciences and technology in general and the attractiveness of research, innovation and technology to children and young people in particular, the "generation innovation" programme (www.generation-innovation.at) was established as a joint initiative of the BMVIT and the BMUKK, taking as its point of departure the "Innovation Goes to School" pilot programme (started in 2007). From 2009 onward, educational institutions, research institutes and private companies are partnering to implement projects in research, technology and innovation (RTI). By 2010, a quantitative and qualitative improvement in these pilot region projects should be apparent. In 2009, a mentoring program for schoolchildren interested in RTI was inaugurated with the goal of having 100 participants by the end of the year. An additional increase in participants and stronger links between the RTI sector and the educational system was planned for 2010.

As part of the Sparkling Science programme (<http://www.sparklingscience.at/>), the BMWF is supporting research proposals in which young people are involved in scientific project teams engaged in research and communicate their joint research findings to the public as well as to the educational sector.

In the initial programme phase of Sparkling Science - ongoing until 2010 - research proposals with a broad subject matter and institutional basis were encouraged in order to test various models of cooperation for their impact and efficiency. As the programme continues, the focus will shift to changing the structural basis of partnerships between research institutions and schools in order to foster changes in the system as a whole. By the end of the programme, long-term cooperative partnerships should be a fixed element of the Austrian research and educational system.

In addition, successful initiatives such as "kid's universities" are to be continued, together with a range of events hosted by researchers for children between 7 and 12. The role of non-university institutions and media publicity will be given priority in these efforts.

⁸ IMST is a German acronym for "Innovation **M**akes **S**chools **T**op-Class". The original name was "Innovations in Mathematics, Science and Technology Teaching". With a view toward extending the programme to German language instruction, the name was changed to "Innovation Makes Schools Top-Class" in 2010.

One initiative aimed specifically at fostering the interest of girls in technology is FIT (a German acronym for Women in Technology), a project sponsored by the BMUKK which is part of the cross-ministry initiative called fForte (a German acronym for Women in Research and Technology, www.fforte.at) that provides girls from school year 9 onward information about pursuing a course of studies at a technical institute of higher education in Austria (universities, universities of applied sciences, colleges) as part of information days and visits to schools by female instructors. FIT is meant not only to stimulate interest in technology among girls, but also to demonstrate that technology can be an exciting career option for young women, primarily by highlighting women who work in technical fields, as well as creating personal contacts and occupational role models for among them.

Closing Remarks

Under the auspices of the BMWF, a focus group has been set up as an advisory panel for the National Action Plan for Researchers. The primary responsibilities of the panel are to pursue the objectives of the National Action Plan for Researchers as well as to monitor the implementation of the Action Plan on the national level.