

**German Contribution to the
"European Partnership for Researchers: Better Careers and More Mobility"
(Research Partnership) of the Member States and Associated States of the European Union and
the Commission in accordance with the Conclusions of the 2891st Competitiveness Council
in Brussels on 26 September 2008
(FoPaDeutschland)**

The national situation and national projects of the Federal Republic of Germany in the context of existing, extended or new measures to improve the career situation of researchers in Europe and to increase the mobility of researchers

Introduction

The German objectives and measures within the framework of the Research Partnership are based on the priority lines of action formulated by the Competitiveness Council on the basis of the Commission's communication to the European Parliament and the European Council "Better Careers and More Mobility: A European Partnership for Researchers" (Brussels, 23 May 2008; SEC (2008) 1911/1912):

1. systematic open recruitment of researchers
2. meeting the needs of mobile researchers with regard to social insurance and supplementary pensions
3. improving employment and working conditions in order to enhance the attractiveness of scientific careers
4. improving the training, skills and experience of researchers.¹

¹ For ease of reading, this report will as a rule use the male form for professions which are not gender neutral. This is taken to include the female form.

In so far as a need for implementation and optimization is identified in the four central areas at national level, the necessary measures will be introduced to realize the renewed Lisbon Strategy and to establish the European Research Area. Here measures can be taken to link up with the Federal Government's existing initiatives: The Federal Report on the Promotion of Young Researchers (BuWiN) and the Information and Communication Platform for Young Researchers (KISSWIN) provide an important basis for further measures.

The individual projects of the Federal Government are described under the respective main points of the report.

Concrete suggestions for implementation formulated by the EU should therefore have the character of recommendations in order to safeguard national competencies and the principle of subsidiarity. This includes maintaining tried and tested counselling and legal regulatory systems that are aimed at the overall goal.

1. Systematic open recruitment procedures for researchers

Current situation

1.1. Open recruitment procedures for scientists and the public advertisement of vacancies

The large majority of researchers in Germany are employed as civil servants (*Beamte*) or public sector employees (*Angestellte*). The constitutional principle of the selection of the best ensures the openness of recruitment procedures in this sector, aided by the provisions of equality legislation (gender mainstreaming) and the General Anti-Discrimination Act of 2006.

Recruitment procedures for university teachers in Germany are traditionally strongly competition-based. Under current *Länder* law, the *Länder* Ministries are increasingly transferring the right to appoint staff to the respective universities and research institutions.

Furthermore, the openness of advertisement and recruitment procedures in the higher education sector is guaranteed under the *Länder* Higher Education Laws. The most recent *Länder* Higher Education Laws not only stipulate the traditional supra-regional and public advertising of vacancies, but also explicitly demand that vacancies are advertised internationally (depending on the importance of the position or in some cases as a general rule) and only allow exceptions in special cases.

The involvement of external experts along with a comparative evaluation of applications guarantees the transparency and competitiveness of the recruitment of university teachers in Germany. In Germany, it is traditionally not possible to become a professor at the institution of higher education where one received one's academic training. The strictly regulated exceptions under *Länder* legislation were introduced on the basis of the Tenure-Track Model in the interest of ensuring more transparent and faster career paths for upcoming scientists: this model should be applied more widely – also in the field of non-university research. In the meantime, junior professors who have previously held fixed-term contracts and whose work is considered excellent in their specific subject area may be granted a permanent contract. As a rule, however, the researcher must have gained the doctorate required to set out on such a career path outside the institution of higher education which is recruiting him. This is in the interest of ensuring academic openness.

The compulsory international advertising of every fixed-term or permanent vacancy for researchers should be the rule. Exceptions must, however, be allowed in justified cases.

1.2. Granting of scholarships

Scholarship-holders are selected in a procedure involving experts and the applicant's nationality is generally considered irrelevant. Scholarships are increasingly being advertised internationally. For example, the German Research Foundation (DFG) expects that scholarships are advertised internationally within the framework of its scholarship funding for research training groups and graduate schools. This has resulted in an increasing number of applications from abroad.

1.3. Information and support services

The public and/or international advertising of positions for university teachers usually takes place via national and international newspapers and journals which are known among the international community of scientists and which as a rule also already have an Internet portal. The EURAXESS Jobs Portal makes it possible to advertise every research vacancy internationally. Relative to its size as a science location, Germany tends to make little use of this portal compared with its European partners with regard to the number of vacancies entered into the data bank. Of the 9302 vacancies published in the period from 1 January 2009 to 31 July 2010, 526 were from German organizations. Germany thus took 7th place. The number of links with external sites, particularly third-party job sites, is larger. However, these cannot be searched via the data bank. In addition, the EURAXESS Germany portal offers commented links on the most important job exchanges for researchers and job portals in Germany. Furthermore, EURAXESS Germany also provides information and orientation regarding

visas, working conditions, social insurance and taxation. The homepage of the German Rectors' Conference provides links to the job exchanges of the individual Member States. In addition, the BMBF-funded "Information and Communication Platform for Young Researchers" (KISSWIN) has been operating since 2008. KISSWIN, which is also accessible in English, provides easy-to-access and straightforward information on the general situation and career paths in Germany. Furthermore, it enables interested young researchers from all over the world to look for job vacancies and scholarships in the field of science and research free of charge.

The decision to advertise every vacant research position and every research scholarship on the Internet should, however, be a matter for the respective institutions to decide autonomously so that they can reach the relevant target groups and keep the cost and effort involved in individual recruitment procedures at a calculable level.

The growing international competition for excellent researchers is prompting the increasing internationalization of recruitment efforts in Germany. This is also demonstrated by the internationalization strategies introduced by many institutions of higher education and research organizations. In addition, there are service centres at numerous German institutions of higher education which support mobile researchers by providing counselling and information services. It is therefore to be assumed that the comparatively small number of foreign university teachers, researchers, junior research staff and doctoral students currently working at German higher education institutions and research organizations will increase in the years to come.

1.4. Assessment and recognition of foreign professional qualifications

The German procedure for assessing and recognizing foreign professional and academic qualifications is to be developed further in order to make it easier for foreign skilled workers to access the labour market in future. Following the publication of a principles paper by the Federal Government in December 2009 "on improving the assessment and recognition of vocational qualifications and certificates acquired abroad", the Federal Ministry of Education and Research (BMBF) has now drafted corresponding legislation. This states that in future all foreigners will have the right to have the certificates and vocational qualifications which they have acquired abroad assessed within three months. Their professional experience is also to be taken into account. Should the assessment reveal that it is not possible to fully recognize these qualifications, the applicants will be informed of how they can gain the necessary supplementary qualifications. The draft is currently being coordinated by the divisions responsible and is expected to be approved by the Federal Cabinet before the end of the year. The law will then come into force in 2011.

In addition, there are further projects and initiatives, for example the Otto Benecke Foundation's university graduates' programme "AQUA" which helps unemployed graduates with or without migrant background to gain the qualifications necessary to enter the labour market by providing 30 supplementary courses and other qualification schemes. In addition, various universities, for example Regensburg University or Oldenburg University, offer special, condensed courses of study for migrant university graduates who have acquired qualifications in various disciplines abroad so that their university qualifications can be recognized more quickly.

1.5. Portability of grants

As far as the portability of research grants is concerned, it is essential to differentiate between transnational European, national and regional mobility (*Länder*). Many research funding organizations such as the German Research Foundation (DFG) offer schemes which enable the portability of project grants to a certain extent (e.g. the Money Follows Researcher scheme). These presuppose relevant agreements between the organizations of the European states concerned. Since the funding involved is public funding, a balance must be sought between outgoing and incoming researchers with regard to the portability of funding. However, there are doubts about the benefits of free portability in cases where the original host institution has established special infrastructures or particular resources for the research project. One must also consider the fact that the aim of strengthening a national or regional research priority can be thwarted by the full portability of research grants and that this is not in the interest of public funding organizations. It, however, makes sense to continue to provide scholarships for shorter or longer stays abroad which are necessary for research purposes. This is already being practised by funding organizations such as the Alexander von Humboldt Foundation (AvH) and scientific organizations such as the Max Planck Society (MPG).

Plans

- Optimizing links between German platforms which publish vacancies
- Increasing awareness of the possibility of advertising vacancies via EURAXESS-Jobs
- Expanding the "Information and Communication Platform for Young Researchers "(KISSWIN)
- Studying possible measures to support and improve internal counselling and information services for mobile researchers at higher education institutions

2. Meeting the needs of mobile researchers regarding social insurance and supplementary pensions

Current situation

The profession of researcher or scientist in Germany is characterized by a long phase of training and career selection. Before obtaining a permanent employment contract, a scientist must expect to have to undergo frequent changes in his status (salaried employee, scholarship-holder). Scientists in Germany often make their mark in fixed-term projects, working in different research groups. The profession is also characterized by a high level of mobility in a national and international context. In Germany, this is regarded as a guarantee for assuring the quality of research and is therefore considered an obligatory part of a promising career as a scientist. This desired and necessary mobility means that scientists are involved in different national social insurance and tax systems. Community legislation on job mobility regulates the resulting need for coordination.

The consequences of international mobility for researchers in Germany with regard to pension entitlements in their various jobs will be described below. In this context, it is particularly important to take into account periods of employment which are subject to social insurance contributions (including periods of training) as well as private investments in supplementary pension schemes.

2.1. Researchers with salaried employee status (*Angestellte*) (in employment relationships which are governed by collective agreements or private law/non-collective agreements)

In Germany, researchers who are salaried employees must be insured under the statutory pension insurance scheme (German Pension Insurance; DRV; first pillar of provision for retirement). In the event that the researcher moves abroad, the new “Regulation (EC) No. 883/2004 of the European Parliament and of the Council on the coordination of social security systems” and the pertinent implementing regulation (EC) No. 987/2009 contain a mechanism governing the safeguarding of claims and the coordinated payment of benefits by the national pension funds for mobility within the EU. Furthermore, Germany has concluded a wide network of bilateral social insurance agreements with a large number of third countries which regulate the safeguarding of entitlements. This network, which now includes 16 social insurance agreements (a seventeenth is expected to come into effect at the end of the year), is exemplary within the EU and is being extended.

The situation with regard to supplementary insurance for salaried researchers is more difficult. There is no mechanism in the field of occupational pensions in the European Union which guarantees the right to a combination of entitlements or to their portability. Mobile researchers in Europe must therefore carefully study the regulations of the individual national supplementary insurance schemes

and, for instance, pay attention to the different rulings concerning accrued pension rights and non-forfeiture periods. Multiple mobility, for example, offers young researchers lots of experience and is particularly beneficial for their careers. However, it also involves the serious risk of researchers having to forfeit claims to benefits or losing accrued rights, often involving a very bureaucratic and time-consuming procedure to secure claims.

In Germany, supplementary occupational insurance for scientists employed in the public sector or non-university research institutions is provided in the form of compulsory insurance through the Pension Institution of the Federal Republic and the *Länder* (VBL) or in the *Länder* of Hamburg and Saarland through their own supplementary insurance institutions. The VBL imposes a statutory qualifying period of 60 contribution months before benefits can be claimed.

In order to do justice to the special situation of scientists with fixed-term employment contracts, the public-sector collective bargaining partners in 2002 introduced the possibility of exempting employees working in research at universities or research institutions from VBL compulsory insurance contributions. This exemption from compulsory insurance is only possible if the qualifying period of 60 contribution months cannot be fulfilled due to the duration of the fixed-term contract, the employee has not previously been liable to pay compulsory insurance contributions under a supplementary insurance scheme, and he submits an application for exemption from compulsory insurance to his employer (within 2 months of starting his contract). He can then register instead with the voluntary (capital-funded) insurance scheme. The employer contributes towards the cost of voluntary insurance. Voluntary insurance excludes certain social components which are featured in compulsory insurance (e.g. crediting parental leave), but offers the insured person flexibility and the immediate, contractually agreed non-forfeiture of claims.

In cases where the employment relationship continues beyond a total period of 5 years, the employee is registered with the compulsory insurance scheme from this time onwards. The qualifying period of 60 contribution months in the compulsory insurance scheme does not have to be completed. It is considered to have been fulfilled if the uninterrupted employment relationship with one and the same employer ends after the employee reaches the age of 30 (25 in the case of persons insured from 2009 on) and the whole of the entitlements are thus legally vested.

With this instrument the VBL has established a gateway for young scientists on fixed-term contracts from Germany and abroad to preserve their entitlements. According to the VBL, approximately 61,000 active science employees with fixed-term contracts are currently registered in the voluntary insurance scheme – and the trend is rising. The figure at the end of 2008 was 45,000.

However, the international portability of claims for supplementary insurance entitlements is currently only admissible in exceptional cases (transfer to an EU authority). The VBL has taken the initiative here and has introduced exploratory measures in order, in the short term, to establish more transparency for insured persons through its contacts and coordinated cooperation with its European partner organizations and, in the longer term, to sound out forms of cooperation along the lines of the Statutory Pension Insurance scheme. The social partners are responsible for questions of supplementary insurance and thus the VBL.

Information events at German institutions of higher education have shown that many foreign scientists in particular have virtually no knowledge of the pension systems and their effects. The VBL and the scientific organizations therefore see a need to intensify and professionalize the provision of information on supplementary pension schemes, including for example the above-mentioned alternatives for both German and foreign scientists.

It is therefore important that those people concerned should have easy-to-access, easily understandable and reliable information on the effects of their mobility on their future pension entitlements. For this purpose, the VBL has introduced various measures to improve the range of information available to researchers. On the one hand, steps have been taken to increase the number of training courses for staff members in personnel sections concerned with insurance for researchers. Furthermore, the VBL offers counselling days at universities and has also designed a new flyer with information especially for researchers which can be distributed by university personnel sections and welcome centres and is available in several languages. In addition, the VBL, in close cooperation with EURAXESS Germany, plans to provide a pensions calculator for researchers on the website of the Alexander von Humboldt Foundation.

2.2. Researchers with civil servant status (*Beamte*)

The majority of German professors as well as other groups of scientific staff at institutions of higher education have the status of civil servants (*Beamte*). This represents a special situation in the European context. The principle of employment and alimentation for life characterizes the special form of pension benefits granted to civil servants, who are bound to their employers through a special relationship of loyalty. They do not receive a statutory pension but are instead paid a pension from the budget of their respective public-sector employer. The legal basis for this is the Federal Civil Servants' Pensions Act, which will be replaced in the individual *Länder* by the respective *Land* Civil Servants' Pensions Acts following the Federalism Reform. Alternatively researchers may be employed as salaried (public-sector) employees (*Angestellte*).

Senior researchers at a number of non-university research institutions (particularly Helmholtz Association, Max Planck Society and Fraunhofer Society) may be employed on contracts similar to those of civil servants. Their contracts thus place them in a similar position to civil servants with regard to remuneration and retirement cover, although they continue to be subject to compulsory membership of the statutory unemployment and social insurance schemes.

A subsequent change from civil servant status to the status of a salaried public-sector employee requires a formal discharge. Retroactive insurance contributions must be paid by the former employer for the future salaried employee transferring to the statutory pension insurance scheme. However, retroactive insurance in the supplementary pension scheme, for example the VBL is not possible. As a salaried public sector employee, the person concerned is subject to compulsory membership of the statutory social insurance scheme, from which civil servants in Germany are exempt. All this makes the shift from civil servant status to salaried employee status unattractive and may contribute to the low level of international and inter-sectoral mobility (science – industry). Germany is, however, considering introducing reforms in this area. For example, the reform of the civil service law in Baden-Württemberg will come into effect on 1 January 2011. It provides that civil servants who change from *Beamte* status to *Angestellte* status can, as an alternative to retroactive insurance under the statutory pension fund, receive an “old-age benefit” (*Altersgeld*). This separation of the old-age provision system is intended to make it easier for civil servants to move to private-sector jobs.

2.3. Researchers with scholarships

Scholarship-funded research activities are widespread in Germany, particularly during the doctoral phase but also in the post-doc phase because they offer sponsors as well as scholarship-holders a high level of flexibility and freedom. For example, scholarship-holders are free to choose where to conduct their research, their research topic and their host institution, and this freedom is highly valued by researchers. Furthermore, these types of research activities enable scholarship-holders to concentrate on their research activities without having to perform additional administrative tasks or being bound by instructions.

A long-term scholarship-holder status is increasingly regarded as problematic in view of the fact that education and study periods only count partly towards a pension and the resulting limited entitlement to benefits under both the pension insurance scheme and the unemployment insurance system. This already applies in part to the PhD phase, which lasts several years, but it is particularly important in the post-doc phase. The later the researcher takes up employment which is liable to social insurance, the lower his pension entitlement. The lack of entitlements is less serious during the PhD phase due to the reduction in the number of school years and the anticipated shorter periods of study in Germany. In

the post-doc phase at the latest, scholarship-holders in the post-doc phase should be informed of the possibility of paying voluntary contributions into the statutory pension insurance fund in proportion to their income.

Organizations which promote mobility are therefore increasingly considering providing additional grants for scholarship-holders in the post-doc phase which are intended for contributions to private pension insurance schemes.

Some research funding organizations favour replacing scholarships with full or part-time jobs which are subject to compulsory social insurance within the framework of coordinated or structured PhD programmes. However, the majority of German science and research funding organizations as well as public and private sponsors do not want to abolish the possibility of granting scholarships, particularly in the doctoral phase. Instead, they are making a concerted effort to provide additional pension insurance and further social insurance cover in order to maintain the attractiveness of this form of funding and to reduce the risk of old-age poverty for young scientists who only find their way into employment which is subject to compulsory social insurance or into a position as a civil servant relatively late.

Plans

- Improving the provision of information in cooperation with the insurance carriers, the institutions of higher education and other research organizations and EURAXESS Germany at the Alexander von Humboldt Foundation (AvH)
- Organizing further training events in order to improve the ability of the science institutions to provide counselling
- Strengthening cooperation between the national supplementary insurance funds responsible for researchers with the aim of improving the dissemination of information to mobile scientists in the European framework. The VBL has already introduced measures along these lines via its European umbrella organization.
- Considering the provision of private pension insurance for scholarship-holders in the post-doc phase through the research funding organizations
- Extending bilateral social insurance agreements to include further states where this is politically and economically possible

The German Rectors' Conference and the Alexander von Humboldt Foundation jointly launched the information network "Internationally mobile scientists and old age insurance (IMWAS)" in October

2009. The organizations taking part include science organizations and universities, the BMBF, the *Länder* ministries as well as unions and insurance and pension providers. Concrete proposals for further action at the political level and for improving the range of information available to researchers who are internationally mobile were drafted at the kick-off event and at a further event in July 2010. Further IMWAS meetings are planned for the future.

3. Improving employment and working conditions to make scientific careers more attractive

3.1. Performance-related and market-oriented payment

Attractive employment and working conditions are the precondition for recruiting young talent and for the competitiveness of the publicly funded science sector. The necessary framework conditions are established by the legislation of the Federal Government and *Länder* and by the parties to a wage agreement as well as by measures below legislation level. As a result of the increasing autonomy of the institutions of higher education and non-university research institutions, the institutions themselves are assuming more and more responsibility for shaping attractive employment and working conditions. Statutory amendments and new wage agreements in recent years mean that performance is more highly recognized in Germany than used to be the case in the past. The federal and *Länder* remuneration laws make it possible to grant professors variable performance-related payments and bonuses in addition to their basic salary. These payments may be granted within the framework of negotiations to recruit a professor or to encourage him to stay on in a position, for special achievements in the field of science and teaching, art, further training and promoting young talent, as well as for performing functions or special tasks within the framework of the management or self-administration of the institution of higher education, and for conducting privately funded research projects.

The federal remuneration law and the laws of most of the *Länder* are "capping" performance-related pay with the so-called "payment framework" (*Vergaberahmen*). The Federal Government and *Länder* have introduced more flexibility in this context for the field of non-university research. The approach of the "academic freedom initiative" is to shift away from micro-management towards a mainly output-oriented control model in order to give research institutions the opportunity to increase their efficiency and effectiveness. The measures for increased flexibility that have already been approved have been successful. The Federalism Reform has provided the *Länder* with the opportunity to lift the restrictions of the "payment framework" and to thus give the institutions of higher education and science institutions greater flexibility when granting performance-related and market-oriented pay within the overall budget. Some *Länder* are making use of this opportunity.

As the universities are granted increasing autonomy, individual universities such as the TU Darmstadt and the Goethe University Frankfurt have negotiated their own tariff agreements for their staff. These specific agreements include more flexible working hours and improvements in income as well as the improved recognition of relevant professional experience in the case of researchers.

3.2. Improving career prospects for young researchers

The 2006 Collective Agreement of the Public Services of the *Länder* (TV-L), which was signed by 14 of the 16 *Länder*, takes into account the special needs of scientists through "Special regulations for employees at institutions of higher education and research institutions". *Inter alia* it includes more flexible regulations on working hours as well as special payments, for example for particular achievements in the field of third-party funding. Non-university research institutions, which apply the pay legislation of the Federal Government and thus the TVöD (Public Sector Collective Agreement), have been given budgetary powers by the funding agencies enabling them to grant scientists and scientific staff bonuses and supplements.

As already stated, the principle of selecting the best, the ban on internal recruitment and the professional development of scientists which is characterized by strong competition in different fixed-term projects and research groups are factors which make it impossible to appoint all scientists involved in the development process on a permanent basis. Fixed-term contracts are essential.

The Fixed-Term Contracts in Science Act, which entered into force in April 2007, takes into account the specific interests of scientists with regard to specific fixed-term periods of employment. It states the possibilities for fixed-term contracts during the qualifying phase which were previously covered by the Framework Act for Higher Education, the so-called 12 or 15-year ruling. A new family policy component makes it easier for young scientists to combine family and career during the qualifying phase than used to be the case in the past. In addition, the Fixed-Term Contracts in Science Act specifically regulates the fixed-term employment of young scientists in third party funded projects and thus provides a secure legal basis for fixed-term employment relationships which follow on from the qualifying phase.

The expansion of the tenure track model, the introduction of junior professorships in the higher education legislation of the *Länder*, special career paths for junior team leaders in the research institutions (e. g. junior research groups of the Helmholtz Association) and programmes organized by the research funding organizations are some of the measures which have been introduced to meet the

needs of young scientists for independent team leadership, a transparent and reliable career choices and regular employment in the field of science.

For these reasons, it is generally intended to adhere to the system of scholarships, particularly as a means of funding doctoral students and scientists who are mobile in the short term.

3.3. Flexibility in contracts, administrative regulations and relevant national legal provisions for experienced researchers and retired and end-of-career researchers

Consideration is being given to the idea of permitting able and willing researchers to continue to work after reaching the age of retirement. In principle, it is already possible for a retired professor or a professor emeritus to continue to obtain third-party funding at German research funding institutions.

With effect from 2009, German federal civil service legislation has made it possible for professors to defer their retirement until the age of 75 in individual cases due to their special scientific work and providing this is in the interest of the employer. The non-university research institutions, which apply the budget law of the Federal Government (particularly the Helmholtz Association, Max-Planck Society and Fraunhofer Society), may apply the same conditions to their senior scientists. The Helmholtz Association has introduced Helmholtz Professorships which are financed by the Impulse and Networking Fund in order to give excellent researchers who are due to retire soon the opportunity to continue their research.

The *Länder* also offer various options that allow researchers to work beyond the age of 65. For example, the reform of civil service law in Baden-Württemberg, which has already been mentioned above, not only raises the pension age limit to 67, but also allows for continued employment beyond this age by providing a number of incentives. A further example is the “Research 65 plus” professorship scheme in Lower Saxony, which gives outstanding researchers an opportunity to continue conducting research at universities beyond the retirement age while their positions can be advertised and filled with younger researchers. Since the programme started in 2008, a total of 13 applications from universities have been approved. The total funding volume in the *Land* of Lower Saxony is three million euros.

The “Johann Gottfried Herder Foundations Initiative” for emeritus and retired faculty has been promoting the activities of retired German university teachers at institutions of higher education abroad since 1999. In the meantime, this initiative, which was introduced by German foundations, has provided funding for 250 visiting lecturers in 31 countries worldwide. These have taught a total of over 600 semesters and received support from the HRK (German Rectors' Conference) and the

German Academic Exchange Service (DAAD). The DAAD is now continuing the Herder Programme together with three foundations and is expanding it with regard to both regions and content.

3.4. Promoting women, dual-career couples and work-life balance

Over the last year, the share of women professors has risen from 16.2 % to 17.4 % and that of women in leadership positions at non-university research institutions from 8.4 % to 11.4 %. Nevertheless, women are still under-represented in leadership positions in science in Germany. All stakeholders in the government and science sector are aware of this deficit. A variety of measures have been introduced to remedy this situation. For example, in recent years the technical universities in particular, in cooperation with research institutions and companies in private industry, have developed *Land*-sponsored coaching and mentoring programmes to support highly qualified young female researchers. These include the TANDEMplus programme at the RWTH Aachen or the SciMento programme at the Technical University Darmstadt. The Robert Bosch Foundation also offers intensive training under its “Fast Track” programme for outstanding young female academics. This two-year programme provides the highly qualified candidates with training and mentoring to help them build a career in science and research.

At the Helmholtz Management Academy, the percentage of women across the three year groups is 48 %. The Helmholtz Mentoring Programme “In Führung gehen” (“Taking the lead”) helps young women to acquire the tools they need to actively plan their careers and take on leadership roles. The target groups of this programme are women researchers with doctorates who already have experience as group or project managers and young women working in administration or management who want to take on leadership positions. The Impulse and Networking Fund provides funding for five W2/W3-level positions every year for outstanding women researchers working at Helmholtz centres.

The low number of women in this sector means, however, that adequate representation can only be achieved in the long term. Developments in recent years have shown steady progress, but the process of change is slower than desired. For example, women account for approximately 33.5 % of junior professorships, whereas the overall share of women professors only amounts to 17.4 %. A raft of measures is to be introduced to increase the pace of change.

In the “Equal Opportunities for Researchers” campaign, the large German science organizations agreed in 2006 to increase the share of women in top positions in science over the next five years. The document, which was signed by the Presidents of the science organizations, stipulates the instruments and measures which will be used to achieve this common goal. The results will be evaluated in 2011.

The Programme for Women Professors, which was developed by the Federal Ministry of Education and Research and introduced in November 2007, is an instrument for promoting top women scientists which will enable the Federal Government and the *Länder* to create at least 200 new positions for women professors at German higher education institutions over the next five years. The German Research Foundation's (DFG) "Research-oriented standards on gender equality ", which were approved by a majority of the member organizations on 2 July 2008 and which will now be introduced on a voluntary basis, will contribute towards a further increase in the percentage of women in science and research.

Since 2008, it has been possible to apply for funds for equal opportunities measures in all collaborative projects of the German Research Association (DFG). This ring-fenced funding can be used to increase the number of women researchers at project manager level, support young women researchers involved in the research collaboration in pursuing their research careers, or making researchers' workplaces more family-friendly. In addition, funds to compensate for the loss of working hours resulting from maternity leave, parental leave or nursing care leave can be applied for in all DFG research projects. The DFG addresses the efforts of universities with regard to equal opportunities measures and the compatibility of work and family life when evaluating collaborative projects, particularly within the Initiative for Excellence. Individual circumstances (such as longer qualification phases or periods of time without publications as a result of time spent caring for children) are also taken into account when assessing researchers' performance.

In the meantime, a number of higher education and research institutions have introduced Dual-Career programmes and service agencies which advise and support the spouses or partners of their scientific staff, particularly when they too are scientists. All kinds of support are feasible providing that the possible employment of spouses or partners at a scientific institution does not run counter to the principle of selecting the best. Heidelberg University began the gradual introduction of a Dual Career Service for spouses and partners of new scientific staff in 2006. There are currently more than 30 Dual Career Services nationwide. A national network of these service agencies is currently being set up.

The question of childcare, particularly for under-three-year-olds, and the provision of full-day care facilities has been a problem in Germany for a long time, making it very difficult for women to pursue a career in the science sector. The Federal and *Länder* governments have made improvements in this field a declared political goal and have provided additional funding. The institutions of higher education and other non-university research institutions are expanding their own nursery and day-care facilities. The Child Support Act (KiföG), which entered into force on 16 December 2008, is an important step in the right direction. It sets out to provide an average of one childcare place for every

three under-three-year-olds nationwide by 2013. Approximately a third of the new places will take the form of day-care.

In addition, there are other initiatives, for example the Hertie Foundation's "family-friendly university" audit, which presents awards to universities and universities of applied sciences for family-friendly conditions for work and study. More than 100 institutions of higher education had already been audited by 30 August 2010. Non-university research institutions such as the German Research Association (DFG) and the Max Planck Society (MPG) have passed the "family and career" audit.

The "Family at the University" programme, which is sponsored by Robert Bosch Foundation, the Federal Government Commissioner for the New Federal States and the Centre for University Development (CHE) also pursues the aim of promoting family-friendly universities and making this a feature of German universities. The programme, which currently includes 8 universities, is not only intended to make it easier to balance family and a career in science but also to secure sufficient skilled staff by offering attractive framework conditions.

Plans

There are a number of good examples and exemplary procedures aimed at making working conditions for scientists more attractive under the given legislative and institutional conditions in Germany. These measures will be studied with regard to their consequences, shortcomings identified and further future activities initiated.

- Efforts to encourage the continued employment of older or retired researchers
- Improving the career prospects of young researchers by encouraging opportunities for further training and structured programmes for upcoming researchers (Initiative for Excellence)
- The further removal of institutional barriers to achieving a work-life balance
- Comparison and analysis of the success of current dual-career models at German higher education and science institutions

4. Improving the training, competencies and experience of researchers

Current situation

4.1. Imparting key competencies during studies

In addition to providing upcoming scientists with experience in their field of research and specialist training, Germany also sees a need to teach them key competencies based in the broadest sense on the current demands and findings on the labour market for research.

The communication of key competences has already made its mark on the curricula at bachelor and master's degree level in the course of the Bologna reforms and the discussions on the level of "employability". The key competences which are to be attained are defined in the Qualifications Framework for German Higher Education Qualifications. Germany has also introduced measures to ensure the involvement of industry in evaluating curricula as all study courses are reviewed by independent accreditation agencies whose commissions and groups of experts must always include an employers' representative. Industry is in a position to influence training to meet the requirements of the labour market by encouraging its representatives to play an active role in the accreditation process. Industry can also update the institutions of higher education on its needs through the university councils which have been established almost everywhere in the meantime and where senior representatives of industry can contribute their experience.

4.2. Key competencies for upcoming scientists

As far as training young scientists during their doctoral phase is concerned, Germany like the rest of Europe concentrates on the performance of independent research work as the key aim of training (cf. Salzburg II recommendations of the European University Association (EUA) on the reform of doctoral education of 21 October 2010). The doctoral phase is thus recognized as the first phase of a research activity and the beginning of a scientific career or as the transition from study to independent research activities. In recent years, the doctoral phase has been undergoing changes in Germany, from the work of an individual that is supervised by individual professors to a more structured doctoral phase in which considerable importance is attached to organizing interdisciplinary dialogues and interdisciplinary exchanges between doctoral students and to more intensive subject-specific mentoring. Furthermore, there are also plans to offer doctoral students courses in further key and ancillary competencies which should increase their ability to compete on the labour market for both scientific and non-scientific staff. A wide range of courses are already being offered by inter-

university or subject-specific graduate centres at universities and by research centres which cooperate with the universities, for example the Max Planck Society (MPG).

In this context, it does not seem wise to settle on a standardized national competence programme, particularly since the individual disciplines cover very different vocational fields. For example, additional information in the field of commercial property rights may be very important for a doctoral student in mechanical engineering, but will be less useful for someone studying in the humanities. In this context, there is also reason to doubt whether the doctoral student actually benefits from intensive training involving multi-tasking abilities in the context of setting up a business, dealing with scientific bureaucracy, project leadership, the management of commercial property rights or corporate communication, to name just a few examples. Such packages of competencies have to be at the expense of the necessary concentration on independent research work, which is the central element of the doctoral phase. There is broad consensus in Germany that all universities and research institutions should provide courses to enable upcoming scientists to acquire additional competencies at subject and institutional level or in institutional cooperation. They should be able to choose from this range of courses according to their aptitude and interests and the potential benefits.

Germany therefore opposes the introduction of standardized national skills agendas for upcoming scientists. Furthermore, the term "curriculum for doctoral programmes" is not compatible with the nature of the doctoral phase in Germany, which is research-based.

4.3. Key competencies for experienced scientists

It is a matter for the science institutions to decide whether these competence centres for upcoming scientists also offer further training opportunities for experienced scientists or whether they set up further establishments to deal with the individual requirements of experienced scientists, for example in the field of the professionalization of teaching. Many universities and universities of applied sciences already offer their scientists individual further training opportunities which also relate to the competencies stated in the European Researchers' Partnership and refer to cooperation between higher education and research institutions and industry.

4.4. Cooperation between institutions of higher education and industry

Cooperation between institutions of higher education and industry is traditionally close in Germany in areas such as engineering and chemistry. The OECD's figures confirm this, according to which 53 % of all German companies which cooperate with external partners in developing their innovation processes cooperate with universities. Many doctoral theses are completed in close cooperation with

industry and often within industry, and commercial companies can also become partners in research training groups and graduate schools. For example, industry very often funds doctoral students or provides grants for these. Special programmes are often funded by the Economics Ministries at federal or *Länder* level and explicitly encourage mobility and exchanges of scientists between research institutions and SMEs.

Technology transfer networks have been established in many *Länder*. Transfer and patent agencies have been set up at the research institutions or at *Länder* level. Furthermore, all the *Länder* and many institutions also have facilities which advise people intending to set up in business or assist them on the road to entrepreneurship.

Germany does not therefore see any real need for a fundamental change in the ties between institutions of higher education and non-university research institutions and companies. It does, however, see a need to expand cooperation between higher education institutions, research institutions and companies in the interest of enhancing innovativeness and optimizing existing approaches on the basis of the experience gained to date.

Plans:

- Optimizing the existing forms of cooperation between higher education and research institutions and companies by consolidating current cooperation and pooling existing measures as well as through the mutual exchange of tried and tested procedures
- Continuing the reform of the doctoral phase with a view to increasing the number of structured doctoral programmes and further enhancing the mentoring of doctoral students