

# The Researchers Report 2012

## Country Profile: Germany



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# 1. Key data

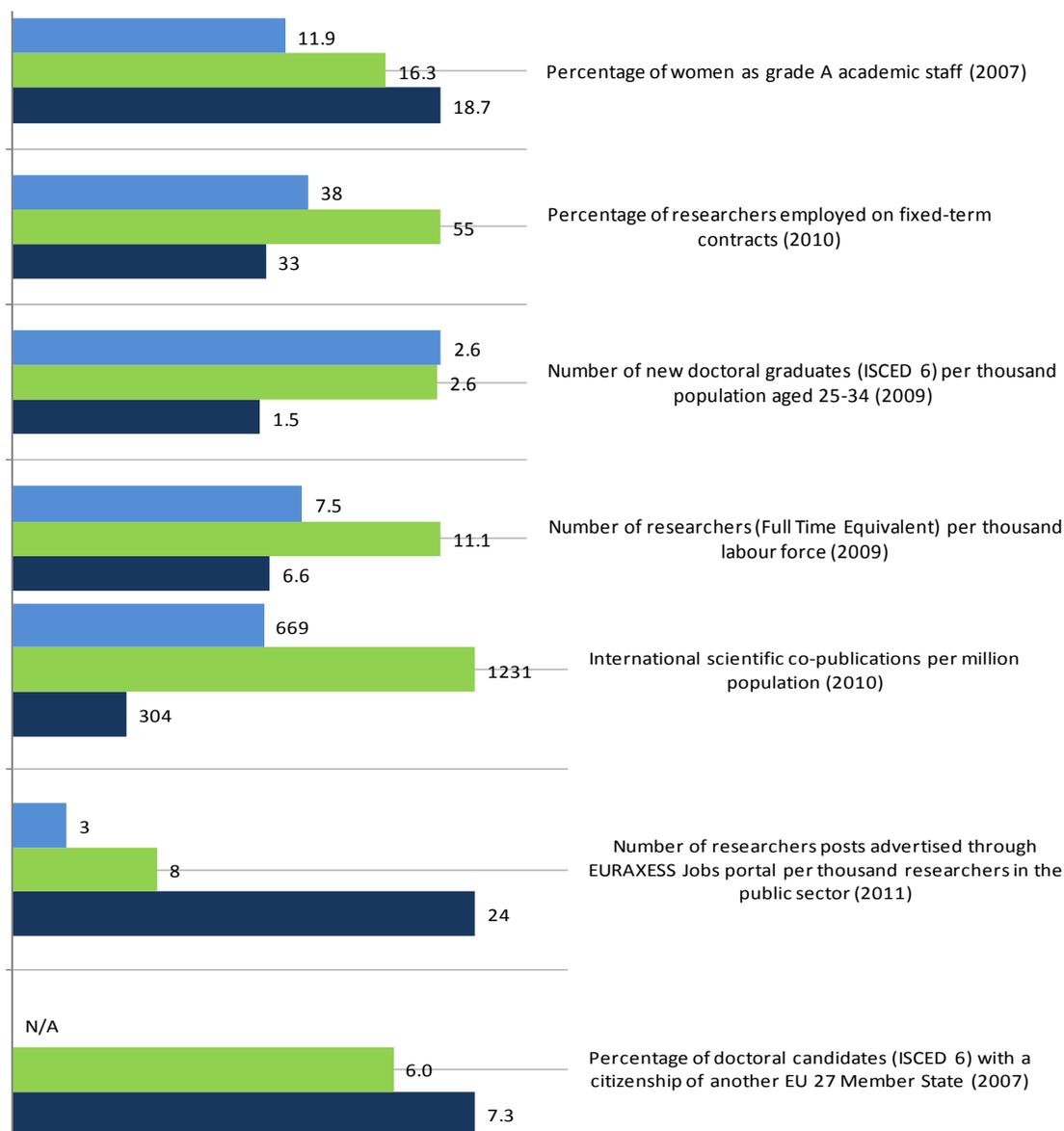
## National R&D intensity target

In the last decade, R&D intensity grew in Germany above the EU average, passing from 2.47% in 2000 to 2.69% in 2008 and 2.82% in 2010. The agreement reached between the Federal Government and the *Länder* in 2009 to increase the public budget for R&D and higher education, as well as the initiative of the Federal Government to increase spending on education and research by EUR 12 billion between 2010 and 2013 are likely to allow Germany to reach the 3% target in the next years.

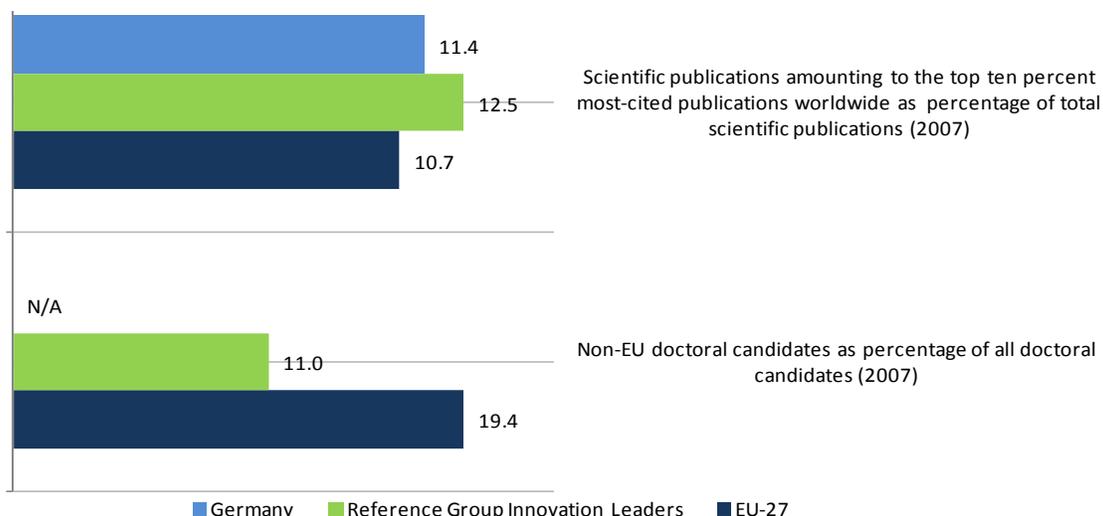
## Key indicators measuring the country's research performance

The figure below presents key indicators measuring Germany's research performance against a reference group and the EU-27 average<sup>1</sup>.

Figure 1: Key indicators – Germany



<sup>1</sup> The values refer to 2011 or the latest year available.



Source: Deloitte

Data: Eurostat, SHE Figures, EURAXESS Jobs Portal, Science Metrix/Scopus (Elsevier), Innovation Union Scoreboard 2010

Notes: Based on their average innovation performance across 24 indicators, Denmark, Finland, Germany and Sweden show a performance above that of the EU-27. These countries are the Innovation leaders<sup>2</sup>.

## Stock of researchers

The table below presents the stock of researchers by Head Count (HC) and Full Time Equivalent (FTE) and in relation to the active labour force.

**Table 1: Human resources – Stock of researchers**

Indicator	Germany	EU Average
Head Count per 1 000 active labour force population (2008)	10.92	9.45
Head Count (2008)	455 261	-
FTE per 1 000 active labour force population (2009)	7.47	6.63
Full time equivalent (FTE) (2009)	311 500	-

Source: Deloitte

Data: Eurostat

## 2. National strategies

The German federal government and the *Länder* have put in place a range of measures aimed at training enough researchers to meet Germany's R&D targets and at promoting attractive employment conditions in public research institutions. The table below presents key programmes and initiatives intended to implement the above-stated objectives.

**Table 2: National strategies**

Measure	Description
<b>Excellence Initiative (Federal government and the <i>Länder</i>) (ongoing)</b>	The Excellence Initiative provides funds for the advancement of science and research at German universities. Since its launch in 2005/2006, the Initiative has promoted the creation of nearly 4 200 researcher positions at German universities. Approximately 90% of positions were created for young researchers, of whom 25% were not German residents.
<b>Federal Government Report on the Promotion of Young Researchers ('BuWin') (first publication in 2008; ongoing)</b>	This Report provides information on support measures for the promotion of young researchers. It also identifies deficits and formulates possible courses of action in various areas. Since it was first published in 2008, the report has contributed significantly to improving conditions for young researchers in Germany. The follow-up report (BuWin II), to be published in 2013, will focus on the promotion of researchers during their post-doc phase.
<b>Higher Education Pact 2020 (Federal government and the <i>Länder</i>) (2007-2015)</b>	The Higher Education Pact 2020 aims to create additional university places in response to a rising number of students at German universities. Between 2007 and 2010, the Pact led to the creation of 182 193 new university places. In June 2009, the Federal

<sup>2</sup> European Commission (2011), "Innovation Union Scoreboard 2010".

Measure	Description
	government and the <i>Länder</i> decided to extend the Higher Education Pact for the period 2011-15 in support of the continuation of the positive trend.
<b>High-Tech Strategy 2020 (Federal government) (ongoing)</b>	The High-Tech Strategy 2020 (which was extended and rebranded in 2010) aims at creating lead markets, intensifying cooperation between science and industry, and improving the general conditions for innovation. Its priorities in the areas of science and technology are climate/energy, health/nutrition, mobility, security and communication. In addition, the Strategy is oriented on the Europe 2020 Strategy to ensure that national and European research and innovation policies are closely aligned.
<b>Pact for Research and Innovation (Federal government and the <i>Länder</i>) (2005-2015)</b>	In 2005, the Federal Government and the <i>Länder</i> introduced the Pact for Research and Innovation, a research funding initiative for non-university research institutions and the German Research Foundation (DFG). The Pact was renewed in 2009 and is expected to be operational until 2015. As a result of the Pact, funding for the German Research Foundation (DFG), the Fraunhofer Gesellschaft (FhG), the Helmholtz Association (HGF), the Max Planck Society (MPG) and the Leibniz Association (WGL) has increased by 5% yearly.

Source: Deloitte

### 3. Women in the research profession

#### Measures supporting women researchers in top-level positions

In 2007, the percentage of women grade A academic staff was 11.9% in Germany compared with 16.3% among the Innovation Union reference group and an EU average of 18.7%<sup>3</sup>.

The proportion of women in the research profession is taken into account in the target and performance agreements between the *Länder* and the universities as well as in the performance-based allocation of basic budgets in the universities.

In addition, there are a number of incentive programmes to promote the appointment of female researchers. The table below describes key measures to promote the appointment of women researchers to top-level positions.

**Table 3: Measures supporting women researchers in top-level positions**

Measure	Description
<b>Equal Opportunities for Scientists Campaign (German Science Organisations)<sup>4</sup> (ongoing)</b>	The Campaign aims to increase the number of women in leading positions in science over the following next five years (2006-11). Its results were evaluated <sup>5</sup> in 2011.
<b>EURAXESS (AvH) (ongoing)</b>	The AvH <sup>6</sup> provides information and advice for internationally mobile researchers, including in connection with equal opportunities issues. It refers researchers to funding and training programmes as well as to networks and communication platforms. Female researchers can find relevant information in the 'Women in Science' section of the Euraxess portal ( <a href="http://www.euraxess.de/portal/frauen_in_der_wissenschaft.html">http://www.euraxess.de/portal/frauen_in_der_wissenschaft.html</a> ).
<b>Female Professors Programme (BMBF) (ongoing)</b>	The Programme promotes outstanding female researchers. It aims at creating approximately 200 additional positions for female professors at German institutions of higher education over the next five years <sup>7</sup> .
<b>Helmholtz Management</b>	The Helmholtz Management Academy provides support to young leaders in science and

<sup>3</sup> See Figure 1 "Key indicators – Germany".

<sup>4</sup> "Alliance of Scientific Organizations in Germany":

- Alexander von Humboldt-Foundation (AvH);
- German Academic Exchange Service (DAAD);
- German Research Foundation (DFG);
- Fraunhofer Society (FhG);
- Helmholtz Association (HGF);
- German Rectors' Conference (HRK);
- German National Academy of Sciences Leopoldina;
- Max Planck Society (MPG);
- Leibniz Association;
- German Council of Science and Humanities.

<sup>5</sup> The results are available (in German) at: <http://www.wissenschaftsrat.de/index.php?id=433&=>

<sup>6</sup> The Alexander von Humboldt Foundation is the German Bridgehead Organisation in the "EURAXESS" network.

<sup>7</sup> Status November 2011.

Measure	Description
<b>Academy (HGF) (ongoing)</b>	administration (with three to five years of professional experience) and participants from universities and other cooperating research institutions. The Academy aims to increase the number of women and men in positions of responsibility.
<b>SciMento programme (Technical University Darmstadt) (ongoing)</b>	The group mentoring programme SciMento-hessenweit supports female PhD students and postdocs in the natural, engineering and life sciences from all the universities in Hessen and their cooperative institutions with the aim of preparing them for a scientific career path. Interested women can apply year around for admission into the two-year programme.
<b>Taking the Lead Mentoring Programme (HGF) (ongoing)</b>	The mentoring programme is designed for young women working in science following completion of their doctorates and mid-level administration. It aims at preparing motivated candidates to work in high-level (management) positions. Female researchers are encouraged to improve their networking within the Helmholtz Association on a long-term basis.
<b>TANDEMplus programme (RWTH Aachen) (ongoing)</b>	The mentoring programme TANDEMplus is a cooperative project of RWTH Aachen University, Karlsruhe Institute of Technology (KIT) and Forschungszentrum Jülich GmbH. The programme addresses female Ph.D. students at the final stage of their doctoral thesis as well as female post-docs from natural science or engineering who are striving for a leading position in academia or economy. The programme combines the modules mentoring, trainings and networking and runs over a period of a year and a half.
<b>W2/W3 programme for outstanding women researchers (HGF) (ongoing)</b>	As part of the Pact for Research and Innovation, the HGF aims to attract outstanding female researchers to high-level positions. In particular, the initiative aims to attract excellent researchers (back) from abroad. At least five positions on the W2/W3 pay scale are financed every year with the help of the W2/W3 programme for outstanding women researchers. The funding volume is generally a lump sum of up to EUR 1 million for W3 positions and EUR 750 000 for W2 positions over a period of five years to finance the position itself and the necessary resources.

Source: Deloitte

### Quotas to ensure a representative gender balance

Germany has not introduced a statutory quota in the research system. However, the science organisations and universities apply DFG equal opportunities standards and the so-called cascade model. Stakeholders take gender mainstreaming into account when filling positions of responsibility. In addition, three German science organisations (FhG, MPG, and WGL) have agreed<sup>8</sup> to capitalise better on women's scientific potential (including in positions of responsibility). The Federal Government and the *Länder* as funding providers expect organisations to make active recruitment efforts and define self-imposed targets.

### Maternity leave

Six weeks before giving birth and eight weeks after giving birth are legally defined as the maternity protection period. Moreover, parents have the right to parental leave until the child reaches the age of three. Parental leave can be taken by one parent or shared between both parents. It is limited to three years (including the maternity protection period) for each child.

The table below provides information on maternity leave conditions in individual funding organisations.

**Table 4: Examples of individual science organisations - Maternity leave**

Measure	Description
<b>Alexander von Humboldt Foundation (AvH)</b>	AvH fellows can extend their funding period for up to three months, based on the statutory period of protection set out in the Maternity Protection Act. This option also applies if the fellowship is scheduled to end during the statutory period of protection (generally six weeks before and eight weeks after giving birth). The fellowship can be interrupted for up to 18 months if the birth falls within the funding period or if a child under the age of 12 needs to be cared for. Special extension rules apply for German AvH fellows who go abroad for a research period: research fellows from Germany who are accompanied abroad by children below the age of 12 can choose between extending their fellowships by up to 12 months or receiving a grant towards child care costs. This also applies if the child is born during the funding period.
<b>German Research Foundation (DFG)</b>	Grants provided by the DFG are extended for three months if the grant recipient gives birth, based on the three-month statutory period of maternity protection. Fellowship

<sup>8</sup> Pact for Research and Innovation (Federal government and the *Länder*) (2005-2015).

Measure	Description
	recipients (male and female) with children can extend their fellowships for up to 12 months. Alternatively, any unused months of this extension can be converted into financing to cover substantiated child care costs (money instead of time). A monthly flat-rate child allowance is paid for children of fellowship holders under the age of 18 (EUR 400 per month for the first child and an additional EUR 100 for each additional child).
<b>German National Academy of Sciences Leopoldina</b>	Leopoldina grants are automatically extended by one year if the grant recipient gives birth during the grant period. Funding for child care can be provided instead of this extension if the grant recipient produces evidence of the costs incurred. These two options can also be combined pro rata over a period of one year.
<b>Max Planck Society (MPG)</b>	Grants and funding contracts offered by the MPG can be interrupted. No financial support is provided beyond the state benefits. However, there are far-reaching measures to support young women researchers and enable them to return to their research as quickly as possible (part-time work, child care facilities, or a family component in the grant themselves – either an increased grant to cover child care costs or grant extensions, 'part-time' grants).

Source: Deloitte

## 4. Open, transparent and merit-based recruitment

### Recruitment system<sup>9</sup>

The majority of researchers in Germany are employed as civil servants (*Beamte*) or public sector employees (*Angestellte*). The openness of appointment procedures for civil servants and public sector employees is guaranteed by the constitutional principle of selecting the best applicants (competition-based procedure). The principle is supported by gender mainstreaming legislation to promote the position of women ("Bundesgleichstellungsgesetz" of 2001 and additional Länder laws) and the General Anti-Discrimination Act of 2006.

Recruitment procedures for university teachers (mainly professors) in Germany are traditionally strongly competition-based. In addition, 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 contain stipulations on the traditional supra-regional and public advertising of vacancies, but also explicitly require that vacancies be advertised internationally (depending on the importance of the position or in some cases as a general rule). Exceptions are permitted only in special cases.

The involvement of external experts (in general from outside the institution), along with a comparative evaluation of applications, aims to ensure transparent and competitive recruitment of university teachers. In Germany, it is traditionally not possible to become a professor at the institution of higher education where the person received his/her academic training. The strictly regulated exceptions under *Länder* legislation were introduced on the basis of tenure-track models<sup>10</sup> in order to ensure more transparent and faster career paths for upcoming scientists. Junior professors<sup>11</sup> who have previously held fixed-term contracts and whose work is considered excellent in their specific subject area, may<sup>12</sup> 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 or her. This is in the interest of ensuring academic openness. Compulsory international advertising of every fixed-term or permanent vacancy for researchers is the rule. Exceptions may, however, be allowed in justified cases.

### Open recruitment in institutions

The table below presents information on open recruitment in higher education and public research institutions.

<sup>9</sup> The most-used private Internet portal for job advertisements is [www.academics.de](http://www.academics.de).

<sup>10</sup> Not all Länder or universities have tenure track models and their structure differs from university to university.

<sup>11</sup> Junior professors are civil servants and they are appointed temporarily for up to 6 years.

<sup>12</sup> Their performance has to be evaluated as excellent and a professorial position has to be available, if there is no tenure track model in place.

Table 5: Open recruitment in higher education and public research institutions

Do institutions in the country currently have policies to ...?	Yes/No	Description
– publish job vacancies on relevant national online platforms	Yes	There is no legal obligation to publish job vacancies on national online platforms, but most organisations do so. The platform <a href="http://www.academics.de/www.academics.com">www.academics.de/www.academics.com</a> is a central, fee-charging commercial site for job vacancies in academia. In Germany, Austria and Switzerland “Academics” is a joint venture of the leading German weekly “Die Zeit” and the academic journal “Forschung und Lehre” and achieves a high visibility. It also provides additional services. It is important for universities and research institutions to publish their job vacancies on academics.de. Personnel departments at universities then have to consider whether it is worthwhile for them to publish job vacancies on EURAXESS as well. A simple transfer of job adverts from academics.de to the EURAXESS JOBS portal would sidestep this problem and significantly increase the number of German jobs published on EURAXESS Jobs. However, the commercial interests of academics.de need to be taken into account. Certain costs are to be expected if job advertisements are transferred from academics.de to EURAXESS.
– publish job vacancies on relevant Europe-wide online platforms (e.g. EURAXESS)		See above.
– publish job vacancies in English	Partly	
– systematically establish selection panels	Yes	
– establish clear rules for the composition of selection panels (e.g. number and role of members, inclusion of foreign experts, gender balance, etc.)	Yes	For professorial positions
– publish the composition of a selection panel (obliging the recruiting institution)	Yes	
– publish the selection criteria together with the job advert	Partly	
– regulate a minimum time period between vacancy publication and the deadline for applying	Yes	For all positions
– place the burden of proof on the employer to prove that the recruitment procedure was open and transparent		According to paragraph 22 of the General Equal Treatment Act (AGG), the burden of proof that there has been no discrimination based on race, ethnic origin, gender, religion, world view, disability, age or sexual identity passes to the employer if the applicant can produce evidence to suggest that such discrimination has taken place.
– offer applicants the right to receive adequate feedback		As a result of the shifting of the burden of proof arising from paragraph 22 of the AGG, most institutions decline to give applicants a reason for their rejection, as they feel that they would be in danger of exposing themselves to legal proceedings if they provide information that is overly specific.
– offer applicants the right to appeal		Applicants can take legal action against decisions arising from application procedures: competition complaints (for civil servants) and the General Equal Treatment Act (AGG).

Source: Deloitte

## EURAXESS Services Network

In 2011, the number of researcher posts advertised through the EURAXESS Jobs portal per thousand researchers in the public sector was three in Germany compared with eight among the innovation reference group and an EU average of 24<sup>13</sup>. The EURAXESS Germany website ([www.euraxess.de](http://www.euraxess.de)) contains regularly updated information on entry conditions, social security, accommodation and administrative assistance.

## 5. Education and training

### Measures to attract and train young people to become researchers

The *Länder* have put in place a set of measures aimed at raising young peoples' interest in science, particularly in MINT subjects (mathematics, informatics, natural sciences and technology). Moreover, universities offer events for pupils or have special partnerships with schools to raise young peoples' interest in science. The table below summarises practical measures implemented by individual science organisations aiming to attract and train young people to become researchers.

Table 6: Human Resources – Key programmes and initiatives

Measure	Description
<b>Fraunhofer Pilot Project (Fraunhofer Society and "MINT-EC" association) (ongoing)</b>	Together with the "MINT-EC" association, the Fraunhofer Society organises workshops for pupils between 10 and 12 years aimed at teaching knowledge, methods and interpersonal skills. The workshops (between three and four days) take place every year for a period of three years with a focus on chemistry, technology/physics, IT/mathematics and biology. The programme accompanies participants closely for a significant period of time.
<b>Fraunhofer Talent Schools Initiative (Fraunhofer Society) (ongoing)</b>	The Fraunhofer Talent Schools initiative takes place at numerous different institutes. The workshops (lasting several days) feature Fraunhofer researchers and give young people between the age of 15 and 18 an opportunity to get to know the Fraunhofer research landscape.
<b>KidsKreativ! Initiative (Fraunhofer Society) (ongoing)</b>	Long-term programmes for children and young people are an integral part of the Fraunhofer Society's efforts to encourage and train young people to become researchers. The Fraunhofer Society regularly organises the "KidsKreativ!" competition for the children up to six years old). The most creative crafts projects receive an award.
<b>School Labs Initiative (Helmholtz Association) (ongoing)</b>	The 24 school labs at the Helmholtz Centres aim at addressing the impending shortage of researchers in Germany. More than 50 000 pupils visit the school labs together with their teachers every year to conduct experiments and to learn about interdisciplinary scientific thinking and work.
<b>Strascheg Center for Entrepreneurship and the TheoPrax Programme (Fraunhofer Society) (ongoing)</b>	The "Strascheg Center for Entrepreneurship" and the long-established "TheoPrax" programmes aim at promoting young peoples' entrepreneurship skills. Pupils from different schools (secondary general schools, intermediate schools, vocational schools and academic secondary schools) work on business and science-related topics.
<b>Student Universities ("Schülerunis") (ongoing)</b>	A number of German universities offer excellent students from grammar schools the opportunity to attend lectures and courses and earn credit points while still at school. So-called "Schülerunis" are supposed to help students decide on the right course of study before receiving their "Abitur". Furthermore, the students can acquire first credit points that will reduce the duration of study later on. The students are nominated by the cooperating schools and selected by the universities. "Schülerunis" exist at numerous universities e.g. the Ruhr-University Bochum, the RWTH Aachen or the University of Cologne.
<b>Summer (Fraunhofer) (ongoing) Academy (Fraunhofer Society)</b>	The Fraunhofer Society organises two-week summer academies during the school holidays to raise young peoples' interest in science and technology. The Junior Academy in Erlangen and the European Talent Academy in Lindau (featuring the participation of young people from Germany, Italy, Liechtenstein, Austria and Switzerland) are two examples of summer academies organised by the Fraunhofer Society.
<b>Talent Take Off programme (Fraunhofer Society) (ongoing)</b>	The Talent Take Off programme offers different forms of support to young people embarking on a university degree.
<b>Tiny Tots Science Corner (Haus der kleinen Forscher - HdKF) Initiative (Helmholtz)</b>	The initiative aims at increasing the interest of young people (three to six years old) in science and technology by giving them an opportunity to conduct experiments and solve problems on their own. The Foundation also develops workshops and teaching material

<sup>13</sup> See Figure 1 "Key indicators – Germany".

Measure	Description
<b>Association) (ongoing)</b>	for nursery school teachers, organises annual campaign days and provides comprehensive background information and experiments online. More than 25 400 nursery school teachers have already taken part in the training activities. The initiative has reached more than 12 700 nurseries and over 760 000 children. An additional 5 000 nurseries are to be included in the science education programme in 2011. Following the initiative's success, the Helmholtz Association has decided to provide additional funding of about EUR 16 million until 2014. The new target group will include six-to-ten-year-old children starting in January 2011. The Federal Ministry of Education and Research (BMBF) will provide an additional EUR 2 million for this purpose until 2014.

Source: Deloitte

### Doctoral graduates by gender

The table below shows doctoral graduates in Germany by gender as a ratio of the total population cohort.

**Table 7: Doctoral graduates by gender**

Indicator	Germany	EU Average
<b>New doctoral graduates (ISCED 6) per 1 000 population aged 25-34 (total) (2009)</b>	2.6	1.5
<b>Graduates (ISCED 6) per 1 000 of the female population aged 25-34 (2009)</b>	2.4	1.4
<b>Graduates (ISCED 6) per 1 000 of the male population aged 25-34 (2009)</b>	2.9	1.6

Source: Deloitte

Data: Eurostat

### Funding of doctoral candidates

The German Research Foundation (DFG) provides funding to about 20 000 doctoral candidates by offering them paid positions in DFG-funded projects at universities. Approximately 3 000 of the doctoral candidates funded by the DFG are fellows (or members) of Research Training Groups (RTGs). In June 2009, the DFG introduced the option for to apply for PhD positions totalling more than half time<sup>14</sup> in RTGs in all subjects (this was previously only possible in engineering, physics and some other subjects in which there is strong competition for young researchers).

### Measures to increase the number of students taking science to an advanced level

Students are exposed to research-related topics at an early stage of their academic career. For example, top-performing students have the option of pursuing a "fast track doctorate" directly after completing their bachelor's degree (e.g. the Neuroscience Programme at the University of Göttingen).

In 2010, the percentage of female doctoral students at non-university research institutions amounted to 43% at the FhG, 45% at the HGF, 41% at the MPG, and 49% at the WGL. Given the relatively high numbers of female doctoral students, the German government has not taken any particular action to improve gender equality at doctoral level, despite great differences between subjects. For information on measures aimed at attracting young people to become researchers, see chapter 5 "Education and training". For more information on measures promoting gender equality in the research profession, see chapter 3 "Women in the research profession".

Numerous German universities cooperate with companies in the area of doctoral training. For example, the Robert Bosch Centre for Power Electronics (RBZ), a research and teaching association formed by the Bosch Group, the University of Stuttgart and the Reutlingen University of Applied Sciences, offer Bachelor's and Master's degrees for students specialising in power electronics and microelectronics. Students can also pursue PhDs at the RBZ. The Centre's close cooperation with Robert Bosch GmbH ensures that students receive industry-relevant training.

The Helmholtz Centres closely collaborate with universities in their respective regions. The Helmholtz Association provides structured doctoral training in the form of research schools and graduate schools and grants universities access to the Helmholtz Association's laboratories and research infrastructures. The Helmholtz Research Schools are joint programmes established on the basis of cooperation agreements

<sup>14</sup> Employment contracts as PhD candidate are usually granted on a half-time basis. The option for PhD candidates to apply for positions totalling more than half time aims to attract more people to pursue a PhD in engineering, physics and some other subjects in which there is strong competition for young researchers.

between Helmholtz Centres and universities with the aim of supporting young researchers. The Research Schools provide structured doctoral training over a period of three years in areas of mutual scientific interest and scientific excellence. The Graduate Schools offer PhD students an interdisciplinary education that teaches them important skills for a career in science or the private sector. For more information on government measures aimed at attracting young people to become researchers, see chapter 5 “Education and training”.

### Measures to increase the quality of doctoral training

The table below provides information on measures aimed at increasing the quality of doctoral training.

**Table 8: Measures supporting the quality of doctoral training**

Measure	Description
<b>Graduate Academies and Research Schools of universities</b>	In Germany, only universities are legally entitled to grant doctoral degrees. Many universities have recently established so-called Graduate Academies or Research Schools which encompass university-wide structures for the training of doctoral candidates (sometimes in close cooperation with research organisations), sometimes including offers for MA-students and/or Post-docs). They function as one-stop information and support centres for doctoral candidates. They offer and coordinate various programmes for this target group, provide networking possibilities and ensure good standards in training and supervision. One example is the Graduate Academy at the University of Jena. It prepares early-stage researchers for their professional career in science, business and society. Its study programmes combine disciplinary and interdisciplinary topics as well as specially tailored courses in transferable skills and an intensive individual supervision by a team of internationally recognised faculty members.
<b>Helmholtz Association (HGF) (ongoing)</b>	Eleven Helmholtz graduate schools <sup>15</sup> and 15 Helmholtz research schools have been funded since 2006. Their aim is to enhance existing training programmes both quantitatively and qualitatively. Graduate schools are designed to improve the structuring of the doctoral phase and give doctoral students stable supervision conditions and an individually agreed qualification programme consisting of scientific and interdisciplinary elements.
<b>Max Planck Society (MPG) (ongoing)</b>	There are currently more than 60 International Max Planck Research Schools (IMPRS), about 45% of them in the areas of chemistry, physics and technology, 30% in biology and medicine, and the rest in the humanities and social sciences. Each Research School is established by one or more Max Planck Institutes. They work together closely with universities and other research institutions, some of them from abroad. The completion of the doctoral thesis is a focus of the three-year PhD period.

Source: Deloitte

### Skills agenda for researchers

The table below provides information on programmes aimed at boosting researchers’ skills.

**Table 9: Measures supporting researchers’ skills**

Measure	Description
<b>Max Planck Research Programmes (MPG) (ongoing)</b>	The MPG offers special training programmes or events for all career levels. These are either organised centrally by the general administration, by each individual institute, or by PhD students themselves (PhD-Net). In the case of the International Max Planck Research Schools (IMPRS), such training activities form part of the curriculum.
<b>Taking the Lead (HGF) (ongoing)</b>	The HGF has developed a talent management concept for the continuous scientific and interdisciplinary education of researchers at all levels of their careers. Various mentoring programmes for young researchers offer researchers the opportunity to develop and expand their interdisciplinary skills. The programme not only includes mentoring, but also training activities (personal presentation, public speaking, individual coaching and networking).

Source: Deloitte

<sup>15</sup> Graduate schools are subject-related or interdisciplinary research training groups bringing together a limited number of PhD-candidates. They serve as a hub for research related debates and skills training and help to establish an intellectually creative exchange of opinions and of research results. They are not hybrid university structures like in the US encompassing the whole university (MA and PhD-students).

## 6. Working conditions

### Measures to improve researchers' funding opportunities

The German government has continuously increased funding for education and research in recent years and aims at raising expenditure in these areas to 10% GDP by 2015. The BMBF increased funding of education and research by 35% between 2005 and 2011. The *Länder*, which are directly responsible for schools and higher education in Germany, have all maintained or increased their basic funding for public higher education institutions.

### Remuneration

In Germany, researchers' remuneration is subject to laws and collective agreements. Higher education institutions and non-university research institutions enjoy a high degree of autonomy. As a result, universities can grant professors variable performance-related payments and bonuses in addition to their basic salary, provided that funds allow it.

In order to recruit or retain scientists the TVöD (*Tarifvertrag für den öffentlichen Dienst*) and the TV-L (*Tarifvertrag der Länder*) public sector pay scale, allow for additional bonuses to be paid which are covered in the special terms and conditions of the collective agreement. Employees at German universities have the right to secondary employment (up to a certain level if they are civil servants).

Based on special authorisation from the BMBF, the Fraunhofer Society can provide research allowances and bonuses for outstanding scientific achievements or significant contributions to such achievements. These performance-related bonuses are allocated using transparent (quantitative and qualitative) criteria and can only be provided for limited periods of time, up to a maximum of three years.

The Academic Freedom Initiative (*Wissenschaftsfreiheitsinitiative*) (started in 2006) resulted in the adoption of (mostly non-legislative) measures for defining remuneration conditions for tariff and non-tariff employees at non-university research institutions. The initiative aimed at offering competitive salaries in view of the fierce national and international competition for the best researchers. There are currently<sup>16</sup> discussions on extending the initiative so as to be able to offer internationally attractive conditions on a long-term basis and to keep the necessary staff in the German science system. The measures adopted resulted in more attractive working conditions, making it possible to recruit and retain leading scientists who had previously worked abroad or in the private sector. Moreover, the freedom to provide signing<sup>17</sup>, retention and performance bonuses to scientific personnel, which was initially only granted on a temporary basis, was extended. This enables research organisations to pay competitive salaries and reward outstanding achievements.

### Researchers' Statute

Academic freedom is explicitly protected under the German constitution (Basic Law of the Federal Republic of Germany)<sup>18</sup>. Other conditions for institutions of higher education and publicly funded non-university research establishments are regulated by law, or through collective agreements. This applies to salaries and the scope for negotiation of the independent institutions, the rights and obligations associated with researcher positions, participation in research and freedom of research, and participation rights of researchers in institutions.

### 'European Charter for Researchers' & 'Code of Conduct for the Recruitment of Researchers'

The German government supports the objectives of the 'Charter & Code'. To date<sup>19</sup>, three science organisations (the German Rectors' Conference (HRK), the German Academic Exchange Service (DAAD), and the Alexander von Humboldt Foundation (AvH)) have signed the 'Charter & Code'. The University Freiburg and the University Erlangen-Nürnberg have individually endorsed the 'Charter & Code'. In practice, however, the 'Charter & Code' is not much used as a document.

### Autonomy of institutions

The autonomy of institutions to define different profiles of academic staff is regulated by *Länder* laws on higher education. There is a structural difference in Germany between universities and universities of applied

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<sup>16</sup> Status November 2011.

<sup>17</sup> A bonus granted when the contract is signed.

<sup>18</sup> The Basic Law of the Federal Republic of Germany, Article 5, Paragraph 3.

<sup>19</sup> Status November 2011.

sciences. The former are committed to scientific research, training of young researchers and teaching while the latter primarily engage in applied research and teaching. Under the current legislation, institutions of higher education can relieve staff of certain tasks or reduce their workload, sometimes on a temporary basis (reduction of teaching duties in favour of research or self-administration, sabbaticals, etc).

Germany would like to maintain the close, tried and tested ties between teaching and research. Approximately 600 researchers in leading positions at non-university institutes teach and conduct research at universities at the same time. Non-university institutions – and their staff – are not obliged to teach. However, they can reach an agreement with universities to do so (for example in the form of joint appointments, honorary professorships, extraordinary professorships or as associate professors).

### Career development

Career development depends strongly on the individual subject culture. The terms of appointment are regulated by law. However, appointment practices are the responsibility of the individual institutions. The BMBF can include career development provisions in the evaluation criteria if the support of young researchers is an objective of a specific funding measure, or if it is a prerequisite for funding. The criteria are published in the funding regulations. The table below provides examples of measures put in place aimed at supporting researchers' career development.

**Table 10: Measures supporting researchers' career development**

Measure	Description
<b>Fraunhofer Attract Funding Programme (FhG)</b>	The programme was designed to give outstanding external researchers an opportunity and incentive to further develop their ideas into practical applications in a market-oriented environment within the FhG. After the first three years, an evaluation of the researcher is carried out with the involvement of Fraunhofer's central human resources management and the Institute management. The evaluation aims at assessing the researcher's development prospects at the Fraunhofer Society or the individual institute following the end of the Attract Programme period.
<b>German Research Foundation Coordinated Programmes (DFG) (ongoing)</b>	In order to receive funding for Research Training Groups (and for research training group modules integrated in collaborative research centres), career development provisions have to be described in the application; they are used as a criterion in the evaluation process. The Graduate Schools which were (and still are) introduced as part of the Excellence Initiative of the Federal Government and the <i>Länder</i> also include career development provisions. Start-up support is available under the DFG's coordinated programmes (Research Training Groups, collaborative research centres, and research groups, priority programmes) to help young researchers in the phase immediately following their PhD.
<b>Helmholtz Young Investigator Groups (HGF) (ongoing)</b>	The HGF, supported by the Initiative and Networking Fund ( <i>Impuls- und Vernetzungsfonds</i> ), has developed a strategy to promote young researchers. The Helmholtz Young Investigators Groups is a key element in promoting talent. It targets researchers who have received their PhD in the past two to six years. Successful applicants are given the opportunity of leading their own research group and gaining the necessary skills for pursuing a university career. The HGF offers young researchers an opportunity to gain academic independence at an early stage and the option of tenure following a successful evaluation. To date <sup>20</sup> , 131 Helmholtz young investigators groups have been or are funded with a total funding volume of more than EUR 80 million. This figure is expected to increase in coming years, as calls for applications will be issued on an annual basis.
<b>Otto Hahn Groups and Max Planck Research Groups (MPG) (ongoing)</b>	Otto Hahn Groups (three to four new groups every year) and the Max Planck Research Groups (currently 122 in total) offer young researchers an opportunity to head a research team at an early stage of their career for a limited period of time. Researchers gain research and management experience.

Source: Deloitte

### Shift from core to project-based funding

The basic financing of universities in Germany has remained stable over the last few years. The Pact for Research and Innovation guarantees an annual increase in institutional funding for non-university research establishments. Various other programmes have provided additional opportunities to raise third-party

<sup>20</sup> Status November 2011.

funding. Contracts for staff at universities and research institutions financed by third-party funding are also subject to the relevant legal provisions. This also applies to fixed-term contracts.

### **Social security benefits (sickness, unemployment, old-age)**

Unlike employment contracts, which are subject to social insurance contributions, scholarships from German science organisations are flexible funding instruments - to a certain extent, they can be adapted by the scholarship provider and used to provide unbureaucratic support in unexpected (emergency) situations or in specific circumstances. Scholarship recipients come to Germany from all over the world, often for a short period of time. In many cases, they have employment contracts in their own countries. Consequently, there is a large range of individual circumstances. Structurally, therefore, the scholarship providers are in the best position to find a suitable solution for each individual case.

Grants (scholarships/stipends) offered by the AvH are not considered as earned income and are therefore not subject to social insurance contributions in Germany. Social benefits are provided in the form of ancillary benefits. Fellows and accompanying family members have to be covered by a health insurer providing sufficient coverage in Germany from the first day onwards and for the entire duration of their stay in Germany. The AvH can provide a grant of EUR 50 per month for the duration of the funding period towards the costs of health and personal liability insurance for fellows, and their spouses and dependent children (up to the age of 18) who accompany them to Germany for a period of at least three months. Fellows are responsible for making sure that they have sufficient health coverage. No health insurance grants are provided under the Feodor Lynen Research Fellowship Programme for German post-docs and experienced researchers going abroad to conduct research. Health insurance has to be paid for from the fellowship grant.

DFG fellowship holders are responsible for their own health insurance; it has to be financed from the fellowship provided. Should the recipient fall seriously ill, and should a fellowship interruption or a part-time solution not be possible, the fellowship can – in individual cases and subject to the provision of medical proof – continue to be paid. In addition, the fellowship period can be extended so that the recipient can complete his or her work and remain in the science system.

Grants offered by the MPG continue to be paid for six weeks if the recipient falls ill. Beyond this period, the Max Planck Institute in question decides whether and to what extent payments will continue. The livelihood of doctoral students should be guaranteed while they are ill. Funding is extended beyond the maximum funding period in case of illness. Grants also continue to be paid during maternity leave; any state benefits received are taken into account when calculating the grant payments. Funds offered by the German Academy of Sciences Leopoldina are provided in the form of full personal scholarships covering living expenses in the place of residence. Leopoldina does not provide contributions to (social) insurance.

Unemployment insurance is not provided under scholarship programmes. The AvH aims to balance out the existing social security disadvantages for research fellows by providing a suitable grant enabling recipients to make provisions for the future (particularly in the form of pensions, care insurance and occupational disability insurance).

In principle, grant recipients are free to make voluntary payments into the statutory pension insurance scheme (DRV), foregoing the employer contribution (and taking into account the minimum limits). The German science organisations and funding agencies as well as the public and private funding providers offer additional pension insurance and other social benefits in order to maintain the attractiveness of funding instruments and reduce the risk of old-age poverty among researchers who start paying social security contributions at a later stage in life. Organisations promoting mobility are increasingly considering the provision of additional grants for post-docs to enable them to set up private pension schemes.

## **7. Collaboration between academia and industry**

Universities, non-university research institutions (particularly FhG) and the private sector in Germany are closely interlinked, particularly in the field of engineering. For example, the Fraunhofer Society supports application-based research in cooperation with the private sector. Students are offered the possibility of pursuing a PhD in applied research in close collaboration with industry<sup>21</sup>. The number of PhD degrees

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<sup>21</sup> As a general rule PhD degrees are awarded by Universities (and not by science organisations).

supported by the Fraunhofer Society was 941 in 2005 and doubled by 2010. Since mid-2009, the Fraunhofer Society has been organising “PhD camps” at different locations in Germany. Organised as workshops, PhD camps offer PhD students information and support on “science-based start-ups” and “careers for PhDs”.

In addition, in order to be appointed to a professorship in engineering at a university or a professorship in any subject at a university of applied sciences, applicants need to have gained<sup>22</sup> professional experience outside of academia. A high level of third-party funding raised by universities from the private sector<sup>23</sup> is another indicator for a strong link between business and academic research in Germany.

## 8. Mobility and international attractiveness

### Measures aimed at attracting and retaining ‘leading’ national, EU and third country researchers

Universities and research establishments are free to recruit their own personnel. They are generally in a good position to attract foreign researchers thanks to their scope for salary negotiations, the international job advertisements that are prescribed by law in many *Länder*, and the various funding programmes available.

The table below presents examples of how German science organisations attract and retain ‘leading’ national, EU, and third country researchers to Germany.

**Table 11: Measures attracting and retaining ‘leading’ national, EU and third country researchers**

Measure	Description
<b>Academic Freedom Initiative (HGF) (ongoing)</b>	The Academic Freedom Act granted German universities and research institutions more flexibility in the area of recruitment. The introduction of the Salary Regulation W and the further development of the basic principles of this Salary Regulation gave the Helmholtz Association and other German research organisations more freedom when concluding contracts with leading (international) researchers.
<b>Emmy Noether Programme (DFG) (ongoing)</b>	In order to be eligible to apply for the Emmy Noether Programme, an excellence programme for outstanding researchers 2 to 4 years after gaining a PhD to gain early scientific independence, the researcher has to have spent at least one year abroad.
<b>Fraunhofer Attract Programme (FHG) (ongoing)<sup>24</sup></b>	The Programme offers outstanding external researchers attractive working conditions that enable them to build up their own groups at Fraunhofer institutes. Each group receives an amount of EUR 500 000 for a period of five years, half of which is financed via central funds and half via basic institute funding.
<b>German Academic International Network (GAIN) (joint initiative) (ongoing)</b>	The Alexander von Humboldt Foundation, the German Academic Exchange Service and the German Research Foundation founded the German Academic International Network (GAIN) as a joint initiative in 2003. The Associated Members include the Fraunhofer Society, the Helmholtz Association, the Max Planck Society, the Leibniz Association, the German Rectors' Conference, and German Cancer Aid. GAIN promotes the return of German researchers to attractive positions in Germany as well as cooperation between researchers in Germany and the US. GAIN has more than 3 800 members and has established itself as a network platform and a transatlantic discussion forum for German researchers. GAIN also organises events and issues publications aimed at improving the transatlantic flow of information in both directions. The German Scholars Organization e.V. (GSO) promotes the same aims. GAIN and the GSO jointly organise an annual network conference in the USA. Researchers from Germany who currently work in the US and Canada as well as numerous representatives of the German science landscape, politics, research and business are invited to this event. A talent fair is held in connection with the conference.
<b>Humboldt Professorship (AvH) (ongoing)</b>	Alexander von Humboldt Professorships are awarded to internationally leading researchers in all subjects, enabling them to carry out pioneering research at universities and research institutions in Germany. Researchers enjoy freedom in shaping their own working conditions, with very few administrative obligations. The award is financed by the BMBF as part of its international research fund for Germany. As a rule, the award is worth EUR 5 million for scientists conducting experimental research and EUR 3.5 million for those working in theoretical disciplines. The funding is provided over a period of five

<sup>22</sup> This applies to Universities of Applied Sciences but is not (as a general rule) strictly applied at Universities.

<sup>23</sup> In 2008, 24.8% of third-party funds raised by German universities came from the private sector (source: Federal Statistical Office: “Bildung und Kultur. Monetäre hochschulstatistische Kennzahlen” (Education and Culture. Monetary higher education statistics) (24.09.2010))

<sup>24</sup> For more information, see table 10 “Measures supporting researchers’ career development”.

Measure	Description
	years. It provides internationally competitive general conditions which form a basis for the award holders to build a long-term scientific future in Germany. The Humboldt Professorship is long-term in nature – in other words, the host institution has to ensure from the very beginning that the winner can be offered a permanent senior position after the end of the five-year funding period.
<b>Vintage Class Programme (FHG) (ongoing)</b>	The human resources development programme "Vintage Class" aims at supporting, training, and retaining potential candidates for senior institute management positions. Its members are nominated by heads of Fraunhofer institutes and selected by a body composed of representatives of the central administration and the institutes. The members are nominated for a term of five years and act as a "think tank" within the Fraunhofer Society.

Source: Deloitte

### Inward mobility (funding)

The table below presents information on measures supporting researchers' inward mobility.

**Table 12: Measures supporting researchers' inward mobility**

Measure	Description
<b>German National Academy of Sciences Leopoldina</b>	The German National Academy of Sciences Leopoldina offers bridging grants (for up to 12 months) to returning researchers.
<b>German Research Foundation (DFG) (ongoing)</b>	DFG programmes are open to applicants of all nationalities. The project must be carried out at a German institution. Some programmes <sup>25</sup> aim at attracting young researchers (back) to Germany. People who have spent a longer period (at least 18 months) conducting research abroad can receive travel allowances enabling them to participate actively in conferences, lecture series or presentation trips to Germany and to maintain their scientific contacts in Germany. The DFG also provides relocation allowances and, in some cases, return fellowships to facilitate the re-integration of returning researchers into the German science system.
<b>Helmholtz Young Investigators Groups Programme (HGF) (ongoing)</b>	This aims to encourage German researchers to return to Germany.
<b>International Cooperation (AvH) (ongoing)</b>	The AvH promotes international cooperation by promoting researchers' mobility and reducing obstacles to mobility. In its capacity as the German national contact point for mobility, the AvH also helps research establishments and individuals in putting together promising applications under the Specific "People" Programme of the 7 <sup>th</sup> EU Research Framework Programme and the Marie Curie Actions within it.
<b>Science Cooperation (AvH) (ongoing)</b>	The AvH supports science cooperation between outstanding researchers from Germany and abroad. It provides research fellowships and research awards enabling researchers from other countries to come to Germany to carry out a research project in cooperation with a host and research partner. There are also special programmes for post-docs and doctoral students, junior research group leaders, experienced researchers and top international researchers. German nationals and non-nationals who have completed their school education in Germany can also apply for these programmes provided they have spent some time abroad <sup>26</sup> . German post-docs and experienced researchers can apply for AvH fellowships for international research visits. Fellows can receive return fellowships for a period of one to twelve months upon their return to Germany.
<b>Welcome Centres Competition (AvH) (ongoing)</b>	This aims at improving German research institutions' professional service structures which support visiting researchers and their families in administrative matters. The competition has had a positive impact on structures and profiles of German universities. Within five years, the service landscape for foreign researchers has improved noticeably.

Source: Deloitte

<sup>25</sup> For example, the Emmy Noether Programme for Young Research Group Leaders.

<sup>26</sup> German citizens and educational residents can apply if their uninterrupted, permanent place of residence has been abroad 1) for more than 10 years or 2) for more than 5 years, and their strong connections to their current country of residence can be deduced indubitably from one of the following criteria: a. they have a tenured position in their current country of residence abroad; b. they are in possession of a permanent residence permit issued by their current country of residence, as long as a permanent residence permit is not held due to German citizenship (e.g. EU-States); c. they and/or their marital partner are a national of their current country of residence.

## Outbound mobility

There are no binding, standardised rules for research periods abroad, but such periods are becoming the norm in the German research system. International (work) experience is becoming increasingly valuable on the job market. The table below presents key measures aimed at supporting researchers' outbound mobility.

**Table 13: Measures supporting outbound mobility**

Measure	Description
<b>Alexander von Humboldt Foundation Grants (AvH) (ongoing)</b>	AvH research fellows coming to Germany can conduct research at institutions in other European countries (with the exception of their country of origin) if this is necessary for their research project. The total duration of the research period in a European country is usually not allowed to exceed 25% of the total planned funding period. Additional funding is provided for these research periods.
<b>DAAD Postdoctoral Programme (ongoing)</b>	The DAAD Postdoctoral Programme supports German researchers who carry out independent research projects at host institutions abroad. Funding is provided for research stays from 3 to 24 months, including a research fellowship, travel allowance, family allowance and a re-integration grant.
<b>Feodor Lynen Research Fellowships (AvH) (ongoing)</b>	Feodor Lynen Research Fellowships are awarded to well-qualified German researchers in support of their stay abroad. Researchers from all disciplines can apply to receive a fellowship for all target countries up to four years after completing their doctorates (as post-docs) or 12 years after completing their doctorates (as experienced researchers). The scientific host has to be a researcher based abroad who is already receiving funding from the Humboldt Foundation.
<b>German Research Foundation Programmes (DFG) (ongoing)</b>	The German Research Foundation Programmes promote international cooperation, including stays at research institutions abroad. This includes Research Training Groups and in particular international Research Training Groups and research fellowships. The DFG provides about 700 research grants enabling post-docs to conduct research abroad. In the research training groups, doctoral students complete their doctorates in an international environment. This includes research periods at partner institutions and participation in international conferences. The DFG provides about 700 research fellowships enabling post-docs to conduct research abroad for up to 2 years (in order to be eligible a researcher needs to be integrated into the German research system; nationality, however, is irrelevant). Under the "Money follows Researcher" principle, project grants can be taken abroad under certain circumstances if the applicant takes on a new position in a different country.
<b>Helmholtz Association Research Grants (HGF) (ongoing)</b>	The HGF provides grants for joint research projects carried out by German and Russian researchers (Helmholtz Russia Joint Research Groups) and by German and Chinese researchers (Helmholtz-CAS Joint Research Groups). The involvement of young researchers (doctoral students and young post-docs) is considered to be particularly important.
<b>Max Planck Research Grants (MPG) (ongoing)</b>	The Max Planck Society supports international cooperation of young researchers. All doctoral students and post-docs who receive grants have the opportunity to spend a certain amount of time conducting research abroad.
<b>Prof.x<sup>2</sup> Programme (FGH) (ongoing)</b>	The Prof.x <sup>2</sup> Programme supports the exchange of research staff for several months with Fraunhofer institutes in North America.
<b>Sabbatical Programme (FHG) (ongoing)</b>	The Fraunhofer Sabbatical Programme supports researchers in spending up to six months teaching and conducting research at institutions abroad.

Source: Deloitte

## Promotion of 'dual careers'<sup>27</sup>

German universities, non-university research institutions and companies have developed dual career networks and have set up their own dual career service centres. Currently, there are 42 dual career services at universities and institutions of higher education and about 11 regional networks in the metropolitan regions. The networks mainly provide support for finding jobs and building up networks. They also offer information, advice, and support to help top scientists integrate in the region.

The Dual Career Network Germany aims to raise the profile of dual career services at individual universities and across the country. The Network not only aims at promoting the exchange of best practices on working and organisational practices between the service providers, but also increases the (inter)national visibility of support programmes for dual career couples in Germany.

<sup>27</sup> Researchers face a 'two-body problem' when moving. The challenge is to find positions for both members of a couple.

### Portability of national grants

The "Money follows researcher" instrument introduced by the DFG supports the portability of grants to a number of European countries. The table below presents examples of grants which are portable within the German science system.

**Table 14: Measures supporting the portability of grants**

Measure	Description
<b>Max Planck Society Grants (MPG) (ongoing)</b>	The funding regulations of the MPG make it possible for young researchers to use their grants abroad if this is in beneficial for achieving the objective of the grant and the research project.

Source: Deloitte

### Cross-border access to grants

National and *Länder* programmes are not tied to nationality or place of residence. However, most programmes require applicants to have a connection to a German institution. The table below describes measures aimed at supporting the openness of grants to non-residents.

**Table 15: Measures supporting the openness of grants to non-residents**

Measure	Description
<b>Alexander von Humboldt Foundation Grants (AvH) (ongoing)</b>	AvH funding programmes support international scientific cooperation between outstanding German and foreign researchers and are specifically for non-residents, though they have to come to Germany to take up the funding. Generally, applications from Germany are only possible if the applicant has been living abroad for some time.
<b>German Research Foundation Grants (DFG) (ongoing)</b>	In principle, all researchers based in the Federal Republic of Germany or at a German research institution abroad who have completed their scientific training are eligible to apply, irrespective of their nationality. Those applying for a DFG research fellowship to go abroad have to be integrated in the German science system at the time of submitting their application. The project management is responsible for allocating grants and research positions in DFG-funded Research Training Groups, Collaborative Research Centres (CRCs) and projects. Qualified non-Germans are welcome to apply.

Source: Deloitte

### Measures encouraging inter-sectoral mobility

Professors at universities of applied sciences are generally expected to have at least five years of professional experience, three of them outside the university system. The links between universities and the private sector are reinforced by the joint research culture in externally-funded research and the right of university employees to pursue secondary employment. The table below describes measures aimed at encouraging researchers' inter-sectoral mobility.

**Table 16: Measures encouraging inter-sectoral mobility**

Measure	Description
<b>Fraunhofer Society (FhG)</b>	In accordance with the Fraunhofer Society's mission, the majority of its staff are integrated in projects and work on finding innovative solutions, often in direct contact with businesses. Following several years at Fraunhofer institutes (working on various projects, including international ones; completing a PhD; management experience, etc.), Fraunhofer staff often move to positions of responsibility in business or the science system (about 5% per year).
<b>Max Planck Innovation (MPG) (ongoing)</b>	Max Planck Innovation advises and supports researchers from the Max Planck institutes in evaluating inventions and filing patents. It presents inventions from the Max Planck Institutes to the private sector and supports researchers in setting up companies. In doing so, it fosters the transfer of results from basic research into commercially and socially useful projects.

Source: Deloitte

For more information on partnerships between industry and academia, see chapter 7 "Collaboration between academia and industry".