

Deutsche  
Forschungsgemeinschaft

# Funding Atlas 2012

Key Indicators  
for Publicly Funded Research  
in Germany



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The Funding Atlas, along with a large number of Excel spreadsheets including analyses as well as printable graphic files containing illustrations, can be viewed at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas).

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# Contents

<b>Foreword</b> .....	<b>8</b>
<b>1 Introduction</b> .....	<b>11</b>
<b>2 Publicly Funded Research in Germany – an Overview</b> .....	<b>15</b>
2.1 International Comparison of Research and Research Funding .....	15
2.2 Structure and Funding of the German Research Landscape .....	17
2.2.1 Structure of the German Research Landscape .....	17
2.2.2 Funding of the German Research Landscape .....	17
2.3 Overview of Research Funding Bodies Involved in the Funding Atlas .....	21
2.3.1 Deutsche Forschungsgemeinschaft (DFG) .....	21
2.3.2 Excellence Initiative of the German Federal and State Governments .....	27
2.3.3 R&D Project Funding by the Federal Republic of Germany (Federal Government) .....	33
2.3.4 EU Framework Programme .....	34
2.3.5 European Research Council (ERC) .....	37
2.3.6 Alexander von Humboldt Foundation (AvH) .....	40
2.3.7 German Academic Exchange Service (DAAD) .....	42
2.3.8 Scientific Disciplines and Countries of Origin of Researchers Receiving Funding from AvH and DAAD .....	42
<b>3 Funding Profiles of Research Institutions and Regions</b> .....	<b>43</b>
3.1 Higher Education Institutions .....	43
3.2 Non-university Research Institutions .....	48
3.3 Regional Research Profile .....	50
<b>4 Research Profiles by Scientific Discipline</b> .....	<b>55</b>
4.1 Humanities and Social Sciences .....	55
4.2 Life Sciences .....	58
4.3 Natural Sciences .....	63
4.4 Engineering Sciences .....	65
<b>5 National and International Cooperation as Reflected by Bibliometric Data and Illustrated by Chemistry</b> .....	<b>71</b>
5.1 Data Basis and Methodology .....	71
5.2 Publication Activity in Chemistry .....	72
5.3 Cooperation in Chemistry as Revealed by Bibliometric Data .....	72
5.3.1 Overall Significance of Cooperation among Institutions .....	72
5.3.2 International Cooperation .....	74
<b>6 Conclusion</b> .....	<b>75</b>
<b>7 Appendix</b> .....	<b>77</b>

## Tables

<b>Table 1:</b>	The DFG funding portfolio: awards in the years 2008 to 2010 . . . . .	25
<b>Table 2:</b>	DFG awards for 2008 to 2010 relative to numbers of full-time scientific personnel employed at universities by research areas . . . . .	26
<b>Table 3:</b>	Funded Graduate Schools and Clusters of Excellence . . . . .	32
<b>Table 4:</b>	Ranking analysis of HEIs by DFG awards for 2008 to 2010 . . . . .	44
<b>Table 5:</b>	DFG awards for 2008 to 2010 in absolute figures and relative to size by HEI in the humanities and social sciences . . . . .	57
<b>Table 6:</b>	DFG awards for 2008 to 2010 in absolute figures and relative to size by HEI in the life sciences . . . . .	61
<b>Table 7:</b>	DFG awards for 2008 to 2010 in absolute figures and relative to size by HEI in the natural sciences . . . . .	64
<b>Table 8:</b>	DFG awards for 2008 to 2010 in absolute figures and relative to size by HEI in the engineering sciences . . . . .	67

## Figures

<b>Figure 1:</b>	DFG (German Research Foundation) representation abroad . . . . .	14
<b>Figure 2:</b>	Expenditure on R&D in Germany and abroad . . . . .	16
<b>Figure 3:</b>	Locations of research institutions in Germany . . . . .	18
<b>Figure 4:</b>	The development of R&D expenditure in Germany by institutional sectors . . . . .	19
<b>Figure 5:</b>	An overview of the funding structures of the German research landscape in 2009 . . . . .	20
<b>Figure 6:</b>	Trends in income from basic and third-party funding sources . . . . .	22
<b>Figure 7:</b>	Trends in HEI income from third-party sources by funding source . . . . .	23
<b>Figure 8:</b>	Countries of origin of international DFG reviewers by scientific discipline . . . . .	24
<b>Figure 9:</b>	Stays by visiting researchers in DFG-funded Collaborative Research Centres by country of origin 2008 to 2010 . . . . .	28
<b>Figure 10:</b>	Stays abroad by researchers in DFG-funded Collaborative Research Centres (2009–2010) and Research Training Groups (2008–2010) by destination country . . . . .	29
<b>Figure 11:</b>	Decisions on the Excellence Initiative reached in the second programme phase . . . . .	31
<b>Figure 12:</b>	Regional distribution of R&D project funding by the federal government 2008 to 2010 by funding areas . . . . .	35
<b>Figure 13:</b>	Regional distribution of R&D funding in the Seventh EU Framework Programme by country . . . . .	38
<b>Figure 14:</b>	ERC-funded researchers by destination country per scientific discipline . . . . .	39
<b>Figure 15:</b>	Research visits funded by the AvH Foundation and DAAD 2006 to 2010 by country of origin per scientific discipline . . . . .	41
<b>Figure 16:</b>	DFG awards for 2008 to 2010 by HEI per research area (in millions of euros) . . . . .	46
<b>Figure 17:</b>	Funding profiles of HEIs: Subject map based on DFG awards (Ranks 1–40) . . . . .	47
<b>Figure 18:</b>	Research profiles of non-university research institutions in comparison: funding by the DFG, federal government and EU by scientific disciplines (in percent) . . . . .	49
<b>Figure 19:</b>	Regional distribution of DFG awards for 2008 to 2010 by funding areas . . . . .	52
<b>Figure 20:</b>	Regional distribution of R&D project funding by the federal government in the industrial and commercial sectors 2008 to 2010 by funding areas . . . . .	53
<b>Figure 21:</b>	Funding profiles of HEIs: Subject map based on DFG awards in the humanities and social sciences . . .	59
<b>Figure 22:</b>	Funding profiles of HEIs: Subject map based on DFG awards in the life sciences . . . . .	62
<b>Figure 23:</b>	Funding profiles of HEIs: Subject map based on DFG awards in the natural sciences . . . . .	66
<b>Figure 24:</b>	Funding profiles of HEIs: Subject map based on DFG awards in the engineering sciences . . . . .	68
<b>Figure 25:</b>	International co-authorships by chemistry researchers at higher education institutions in Germany . . .	73

## Foreword

One characteristic of research is competition – for the best ideas, for the sharpest minds to put those ideas into practice and lastly for the funds that provide a financial framework for those activities. The Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) supports such competition by providing €2.7 billion each year in support of innovative projects and scientific careers as well as infrastructure investments (e.g. major instrumentation, stocking libraries).

In the period from 2008 to 2010, researchers from roughly 200 higher education institutions (HEIs) and more than 400 non-university research institutions in Germany successfully applied for these financial resources. In 2010 alone, more than 30,000 scholarship recipients and project leaders profited from DFG funding – not including those individuals who served as assistants either in a research or non-research capacity, in this way contributing decisively to the success of these projects.

These and other statistics can be found in the Funding Atlas 2012. The Funding Atlas is a reporting system (previously referred to as the Funding Ranking) employed by the DFG to provide information in the form of indicators of key developments in publicly funded research in Germany every three years. The German edition of the Funding Atlas 2012, encompassing 300 pages, is especially intended for the individuals at DFG member institutions who are responsible for research management issues. These individuals can consult the broad catalogue of indicators to obtain information concerning the particular institution's success in acquiring third-party funding from the DFG, while the evaluations additionally take into account data provided by a number of other funding sources as well as bibliometric statistics. A priority concern of the report is the issue of profile development. The focus in this regard is not so much on success in quantitative terms, rather, the figures presented in the Funding Atlas 2012 pro-

vide a picture of the core areas in which the HEIs and the non-university research institutions pursued research.

This English version of the Funding Atlas 2012 presents selected findings from the comprehensive German edition. At the core of the report are indicators that provide information concerning the subject areas, which the HEIs and non-university research institutions emphasise. An important incentive for developing profiles has been provided by the funding lines of the Excellence Initiative, which is highly regarded internationally as well. This has led to profound changes among our universities, which have become more highly differentiated in response to targeted action aimed at reinforcing core research areas. This report consequently includes, as a supplement not found in the German edition, the decisions on the Excellence Initiative, which were taken shortly after the German edition of the Funding Atlas 2012 was published.

Research is increasingly founded on international cooperation. The expansion of DFG offices abroad in recent years is one indication of the greater priority placed by the DFG on cooperation with international partner organisations.

The report addresses the subject of “internationality” in more detail by presenting selected indicators that prove how attractive Germany's HEIs and non-university research institutions are for visiting scientists from abroad who pursue research stays here. This serves as an international reference for each of the locations concerned, while the data presented clearly reveal the unique research profile in each case. The awareness of the “hot places” in Germany for specific disciplines has long since become rooted in the minds of these top international scientists.

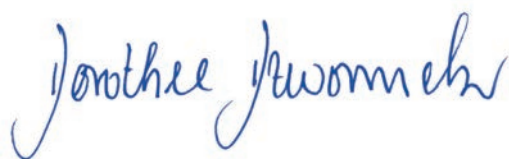
The high priority placed on cooperation, at the national and above all at the international level, is the subject of a separate chapter: the field of chemistry is used as an example to il-



lustrate, by drawing on bibliometric data, how German research chemists are globally networked with their peers.

Finally, data were compiled exclusively for this English edition of the Funding Atlas to provide details concerning the involvement of international experts in peer reviews of funding applications to the DFG. These analyses provide additional impressive evidence for the fact that research and research funding have long since successfully overcome narrow national boundaries.

With its comprehensive presentation of the current research funding scene in Germany, the Funding Atlas 2012 itself contributes towards the international visibility of research in Germany – exhibiting both excellence as well as a broad base. In this way, the Funding Atlas represents a vital basis as an information and planning resource for the management of individual institutions, while also serving other groups of intended recipients in this country and abroad as a source of information on the “centres of research” in Germany.



**Dorothee Dzwonnek**  
Secretary General of the  
Deutsche Forschungsgemeinschaft

## 1 Introduction

*“What research profiles are seen among higher education institutions and non-university research institutions in Germany, and on what subjects do these institutions focus? Who gives grants to whom, how much and in which research fields? And how international is research in Germany?”*

Those are some of the key questions answered by the Funding Atlas 2012, which is published by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation). Encompassing a total of more than 300 pages, the German edition of the report draws on a broad array of indicators to provide detailed information on the diverse focuses of the research pursued by Germany’s higher education institutions (HEIs) and non-university research institutions. For the English version, the statistical material is selected specifically to highlight the international aspects of research and related funding, in order to address in particular individuals involved in international research management who wish to obtain specific information on the “centres of research” in Germany. Alongside the published volume, a vast amount of material is offered on the web to supplement the descriptions provided by the printed edition of the Funding Atlas 2012. This additional material specifically includes more than 120 tables and figures as well as accompanying analyses, available at the DFG homepage ([www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

### The German Science and Research System: Excellence with a Broad Base

The Funding Atlas 2012 provides statistics and descriptions that document the research portfolios at Germany’s HEIs and non-university research institutions, differentiating these portfolios by discipline and research topic. The study focusses on the roughly 80 HEIs particularly successful in applying for third-party funding, while the tables pub-

lished online additionally highlight the core research areas of non-university research institutions. These institutions acquired the largest share of funds from the DFG’s “classic” programmes, from direct project funding by the federal government as well as from EU projects (including the European Research Council ERC). These funding sources consequently represent the main basis for the study. In this context, a strong focus is also placed on the Excellence Initiative, which is highly regarded outside Germany as well. As part of the initiative, the federal government and the federal states have allocated more than €2.7 billion in additional funding to support excellent research in Germany during the period of 2012-2017. A total of 44 HEIs, working closely with non-university research institutions, receive grants from the three funding lines of the Excellence Initiative. A summary of the institutions receiving funding during the second phase is provided in Chapter 2 (Figure 11).

### German Research within the European Research Area

Complex scientific challenges require collaboration of the best minds, superseding national boundaries and funding systems. In line with its remit as well as with the needs of the scientific communities, the DFG through its (funding) activities also supports cross-border collaborative research projects. The frame of reference in such cases is provided by the notion of a European Research Area (ERA), intended to further boost the capability of European countries to contribute in the areas of science and technology. Working with its partner organisations, the DFG supports continued progress towards the ERA through its funding activities, for example in joint projects with Science Europe. Diversity and productivity within a cross-border research area can be ensured especially through a variety of

effective research options, which, tailored to target groups, fill out the European Research Area and make it a framework of opportunity for various paths leading to progress in scientific knowledge. Within this framework, strong and competitive national funding systems continue to form the backbone of the ERA.

Plans for putting in place a European monitoring system for research and research funding are still in the early stages. With the Funding Atlas, the DFG provides input for discussions on further development of a cross-border reporting system that would provide comparable information on the research profiles of institutions and regions as well as the specific emphases and strengths in individual cases. While the DFG Funding Atlas focusses on the German research landscape, the report also highlights the European (and to some extent the global) dimension of research and research funding; examples include statistics describing cross-border cooperation, and figures specifically reflecting how Europe-wide funding programmes are being utilised.

The DFG Funding Atlas furnishes reliable indicators of the effectiveness and competitiveness of (publicly funded) research in Germany. It documents how research locations are developing their profiles and their attractiveness for international scientists, in this way revealing the contribution made by the German science and research system to the ERA and worldwide.

At the statistical level, various perspectives are provided on the topic: in addition to data on the stays of visiting researchers in Germany, who receive funding from the Alexander von Humboldt Foundation (AvH) and the German Academic Exchange Service (DAAD), in the analysis a focus is also placed on participation in international funding programmes (the EU's 7th FP and ERA programmes). The examination of selected DFG programmes is supplemented by figures that provide information on the countries of origin of visiting researchers and, conversely, on the destination countries of German scientists receiving grants from the DFG for their foreign stays. Special attention is given in the report (specifically in the supplementary section of the German edition) to the number and countries of origin of the reviewers recruited by the DFG (Chapter 2).

## A Key Indicator System based on a Survey of Funding Organisations rather than Recipients

The heart of the Funding Atlas is a reporting system based on indicators of the success in acquiring funding for research projects and fellowships (referred to as "third-party" funding) that are awarded on a competitive basis. Whereas previous editions of the report only used DFG funding data, the variety of indicators taken into account has since been consistently expanded over time. The data are based on a very solid foundation: the large majority of the figures on third-party funding and grants to individuals originate from the funding institutions themselves. The resulting statistics are therefore not rooted in highly costly and error-prone surveys of funding recipients; they are based on database queries provided directly by the funding sources. These statistics are supplemented by assessments of official statistics and by indicators resulting from bibliometric studies.

In this way, the Funding Atlas provides a service that reduces the workload borne by the administrative staff of DFG member institutions as well as in particular the researchers active at these institutions. New data do not need to be consistently collected from the faculties, no surveys have to be completed and there is no need for quality assurance of data by administrative staff. By making use of available sources, the DFG Funding Atlas takes some of the burden off staff resources in administration and at research institutions, freeing up these staff members to take care of their true core responsibilities.

## Funding Sources and Recipients

The Funding Atlas responds to the question of "*who provides funding?*" with an analysis of third-party funding sources (Chapter 2). In addition to data on DFG funding, data are also considered that cover other major research funding sources such as the federal government (specifically the Federal Ministry of Education and Research and the Federal Ministry of Economics and Technology), as part of direct project funding, and the EU, in the context of the Seventh Framework Programme (including the European Research Council ERC).

Among the other funding sources presented in the Funding Atlas are the Alexander von Humboldt Foundation (AvH) and the

German Academic Exchange Service (DAAD), whose research profile is clearly aligned with international exchange and consequently with the financial support of visiting researchers during their stays in Germany.

Answers to the question of *“who receives grants from the funding sources?”* are provided by a comprehensive study of funding recipients in Germany (Chapter 3). Distinctions are made between the three main groups of funding recipients: HEIs, non-university research institutions, and industry and business. A focus in this context is on the funding statements of universities as well as on the research profiles of regions in Germany that are particularly active in research.

### Research Profile Comparisons

*“In which research fields is funding being awarded and research taking place?”* This is the question discussed in Chapter 4 of the Funding Atlas. The question is examined based on the four scientific disciplines distinguished by the DFG: the humanities and social sciences, the life sciences, the natural sciences and the engineering sciences. By applying a method of visualisation developed by the Max Planck Institute for Social Research in Cologne, the HEIs’ speciality profiles for each of the four scientific disciplines are sorted and plotted on axes, in a way similar to a map, with the profiles grouped so as to position institutions with similar research focuses in proximity to one another. This allows HEIs with similar profiles to be identified at a glance and supports meaningful comparisons.

A separate chapter in conclusion examines the subject of international cooperative projects based on bibliometric data (Chapter 5). Referring to chemistry by way of example and drawing on an analysis of co-authorship relationships, the priority given to international cooperation is examined and the preferred countries selected as partners in such cases are identified.

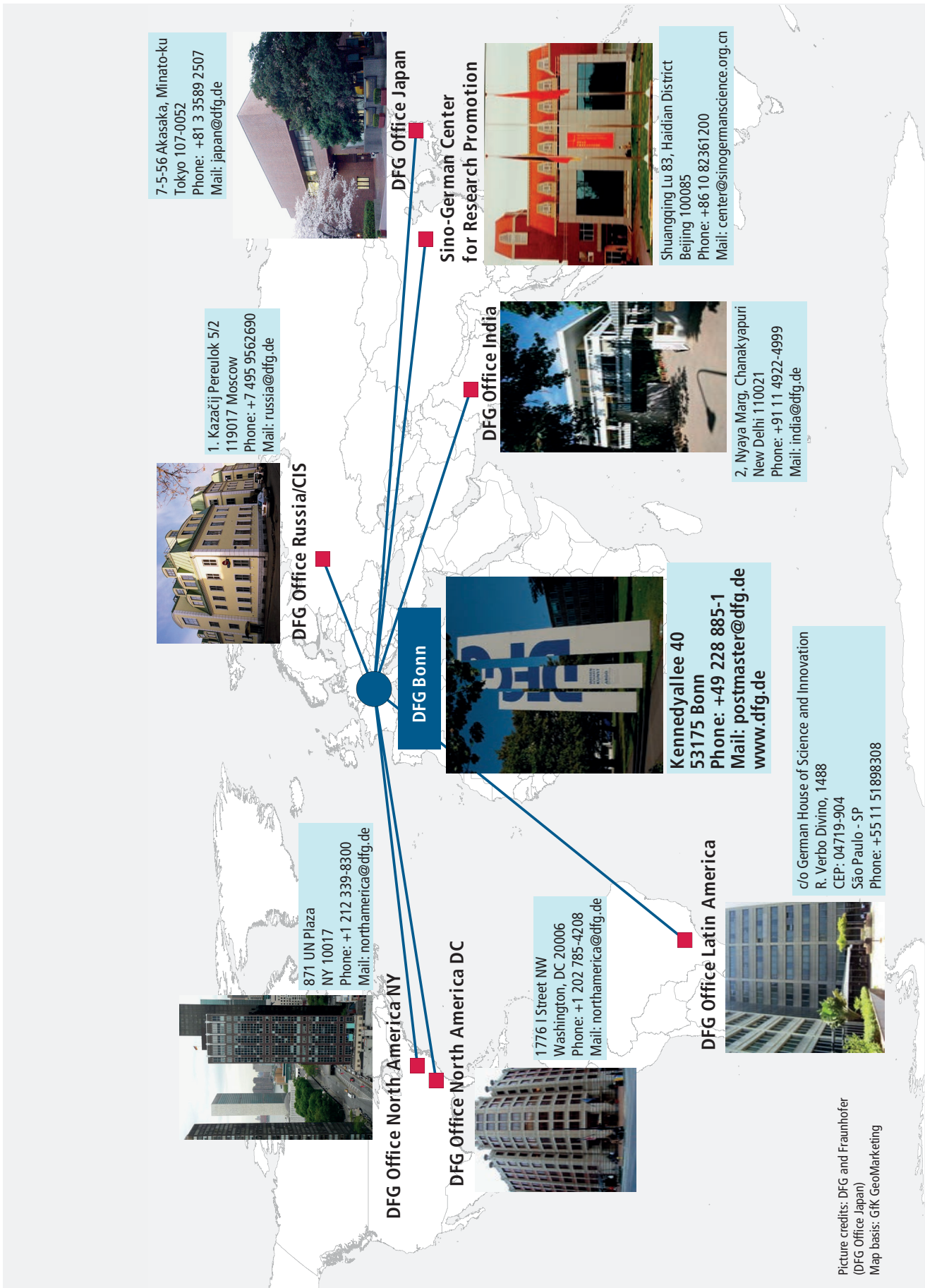
### Materials offered in addition to the Printed Edition of the Funding Atlas

Alongside the printed edition of the Funding Atlas 2012, materials are offered at the DFG homepage, including, for further processing, the figures and tables (in XLS format) cited in the report, in addition to the electronic version of the study. The figures and tables list supplementary statistics that are not included in the printed book but referred to in the particular context ([www.dfg.de/funding-atlas](http://www.dfg.de/funding-atlas)).

### Support of the Funding Atlas

Since the third edition of the Funding Ranking, the DFG has been actively supported by the Stifterverband für die deutsche Wissenschaft. For the first time, the Federal Ministry of Education and Research (BMBF) also participated in the Funding Atlas by providing funding. This support as well as the close cooperation of various funding institutions has enabled us to continually expand the scope of the report.

Figure 1:  
DFG (German Research Foundation) representation abroad



Picture credits: DFG and Fraunhofer (DFG Office Japan)  
Map basis: GfK GeoMarketing

## 2 Publicly Funded Research in Germany – an Overview

This chapter below presents data and facts relating to publicly funded research in Germany. Beginning with an overview comparing Germany with other countries, the chapter first provides information on the human and financial resources available for Research and Development (R&D) in Germany. In this regard attention is also given to the special contribution made by the private sector, both in terms of Germany as a whole and when compared with other countries. Details are also presented on those particular structural features of the German science and research system, which are relevant for understanding and interpreting the topics discussed and the statistics evaluated in the Funding Atlas.

The following section provides a succinct overview of the main sources of public funding in Germany (the federal government, the DFG and the EU/ERC) and of the two major organisations offering international exchange programmes for researchers, the German Academic Exchange Service (DAAD) and the Alexander von Humboldt Foundation (AvH). All of these organisations have supported the Funding Atlas by making their funding data available.

### 2.1 International Comparison of Research and Research Funding

Research and Development (R&D) is a policy area that enjoys a priority standing in most industrial nations. The high priority given to R&D at the international level was expressed by the EU Member States at the Lisbon Summit in 2000, when it was agreed to spend 3% of the gross domestic product (GDP) on R&D by 2010.

Information on R&D activities is compiled at the international level in standardised form, based on the Frascati Manual, according to the sectors: business enterprise, higher educa-

tion, government and private non-profit organisations. In Germany, the government sector is equivalent to the non-university research institutions.

Figure 2 presents a comparison of Germany with selected countries in terms of the economic priority given to R&D during 2009, the most recent year reported on, showing the proportion according to sector.

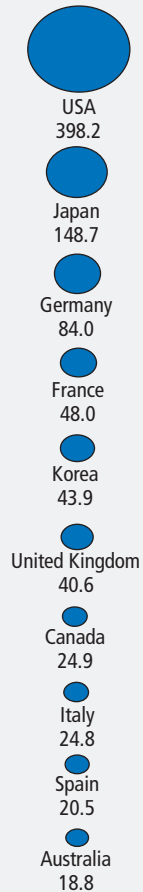
Compared with other countries, Germany ranks very high in terms of the financial resources spent on R&D. The absolute figures for gross domestic expenditure on R&D (at the left of Figure 2) reveal that, at \$84 billion (US) in 2009, Germany was able to provide the greatest amount of R&D funding among all countries within the European Union. France, at a total of \$48 billion, and the UK, with an expenditure of just below \$41 billion, ranked behind Germany. In other words, Germany provides 28% of the total R&D expenditure of all 27 EU Member States, while the group including Germany, France and the UK provides 60%. When Germany is compared with other OECD countries, only the United States and Japan invest more money in R&D.

A comparison across nations in terms of absolute expenditure fails to take into account differences in size and economic power among the various countries. Thus, Figure 2 displays a comparison of selected OECD countries in terms of R&D expenditure as a percentage of gross domestic product (at the right of Figure 2).

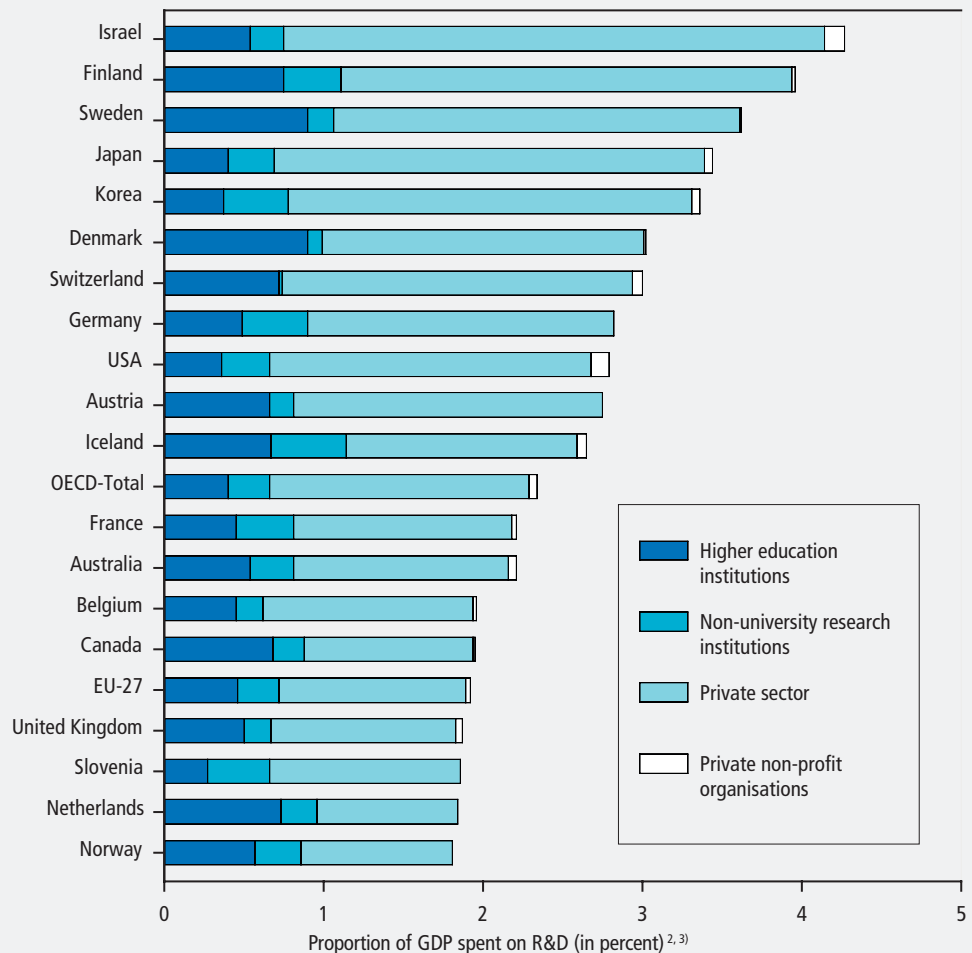
Israel ranks first in this case at 4.3%. Among EU countries, the Scandinavian countries of Sweden, Finland and Denmark lead when measured based on R&D expenditure relative to GDP, with Switzerland ranking high as well. Yet, at 2.8% of gross domestic expenditure for R&D, Germany comes in only just behind the European countries mentioned above, and still before the US, while ranking considerably higher than the OECD average (2.3%) and the average for the EU-27 (1.9%).

**Figure 2:**  
Expenditure on R&D in Germany and abroad

R&D expenditure (in absolute figures)  
2009 by countries (in billions of \$US)<sup>1)</sup>



Relative proportion of GDP allocated to R&D in 2009  
by country and sector



<sup>1)</sup> Nominal expenditure, converted to US\$ purchasing power parities.

<sup>2)</sup> Includes provisional data and OECD estimates.

<sup>3)</sup> This reporting sample is restricted to countries whose expenditure on R&D was equivalent to or greater than 1.8 percent of their gross domestic product in 2009.

**Note:**

Corresponds to Figure 2-1 of the DFG Förderatlas 2012.

**Data basis and source:**

Organisation for Economic Co-operation and Development (OECD): Main Science and Technology Indicators 2010/2.

Calculations by the DFG.

### HEIs, Non-university Research Institutions and Business: Varying Levels of Participation in Research among Countries

Figure 2 additionally provides a picture of the share of the various sectors in R&D expenditure for each country. Clear differences among funding structures can be recognised here. In Germany, for example, the business enterprise sector can be seen to account for a large share. Specifically, German businesses

are responsible for almost 70% of the costs of R&D. The comparable rates for Israel, Japan and Korea are in fact above 75%. In contrast, universities and government research institutions account for a much greater share in countries such as France, Spain and Iceland. Whereas the structure of research in the UK is dominated by universities, in Germany higher education institutions (HEIs) and publicly funded research organisations such as the Max Planck Society and the Fraunhofer-Gesellschaft (regarded as belonging to the gov-

ernment sector in the OECD context) account for almost equal shares. The Centre national de la recherche scientifique (CNRS) of France is a large research and funding organisation based outside the universities but is actually classified by the OECD as belonging to the HEI sector. If, in departure from the OECD, the CNRS is assigned to the government sector, a clear preponderance of non-university research institutions can be seen for France. The varying structures of the science and research systems are also reflected in participation in the EU's Seventh Framework Programme (refer to sections 2.3.4 and 2.3.5).

## 2.2 Structure and Funding of the German Research Landscape

### 2.2.1 Structure of the German Research Landscape

Apart from the universities, the German research landscape features a strong component outside the universities that is publicly funded. As mentioned above in the international comparison, the sector is mostly made up of four major research organisations, specifically **the Fraunhofer-Gesellschaft (FhG), the Helmholtz Association (HGF), the Leibniz Association (WGL) and the Max Planck Society (MPG)**. Other sector members include federal and state research institutions, libraries, archives and collections, and the Academies of Sciences and Humanities.

Figure 3 conveys an impression of the diversity within this "research market". The figure presents the locations of the more than 400 HEIs (105 universities, 234 universities of applied science, 74 universities and colleges of theology, music and art) as well as of the institutes belonging to the four research organisations listed above.

These organisations have institutes at about 250 locations in Germany. Research is also conducted at some 60 federal research institutions, which are also shown on the map. A number of other publicly funded research institutions have been omitted from the map for the sake of readability. Among the institutions to be mentioned in this regard are the more than 200 state research institutions as well as libraries, archives and collections, and the Academies of Sciences and Humanities.

Of itself, the cartographic representation allows ready identification of the regions

where the existing foundation for (publicly funded) R&D infrastructure and for cooperation between universities and non-university research institutions is particularly well developed. This topic will be treated in more detail in Chapters 3 and 4. For more information on Germany's "centres of research", refer to the Research Explorer information system, developed jointly by the DAAD and the DFG ([www.research-explorer.de](http://www.research-explorer.de)).

### 2.2.2 Funding of the German Research Landscape

Figures 4 and 5 provide an overview of funding within the German research landscape for the time horizon encompassing the last twelve years.

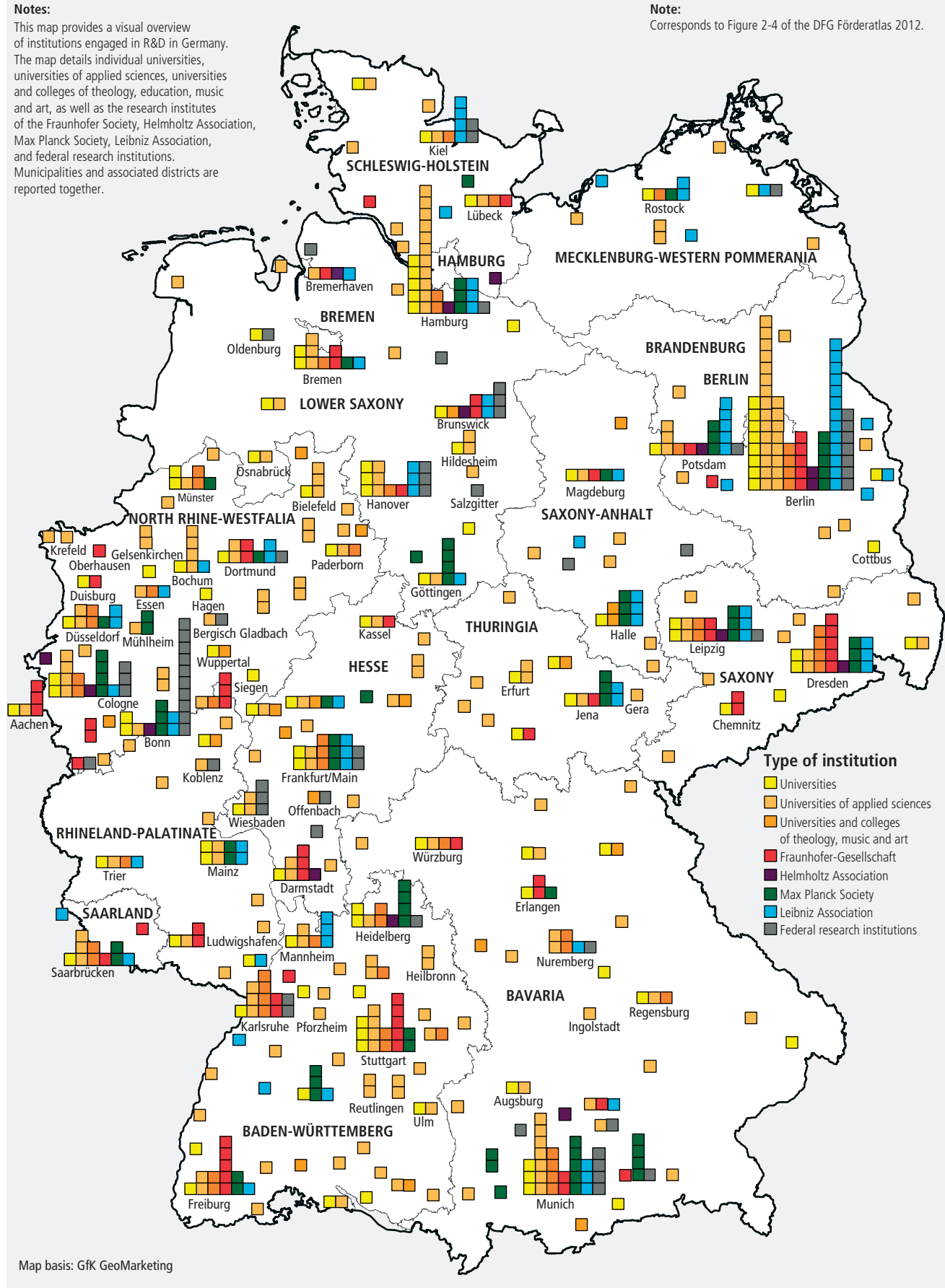
In terms of the development over time, at the outset of the period in 1998 expenditure amounted to €44.6 billion, and went on to increase by €22.4 billion and finally reached a total level of €67 billion by 2009. The proportion relative to the gross domestic product grew by 0.5 percentage points during the period under review. A comparison of sectors reveals that R&D expenditure by the private sector increased most strongly. Of expenditures in 2009, a total of 0.4 percentage points were attributed to publicly funded non-university research institutions, 0.5 percentage points to HEIs and 1.9 percentage points to the private sector. The shares attributed to the two sectors that mostly receive public funding, i.e. higher education and non-university research institutions, are thus roughly equal.

Figure 5 supplements the picture by revealing the funding for the three sectors in relation to one another. Of the €67 billion spent on R&D in 2009, the private sector contributed €45 billion and the government sector about €19 billion. Private non-profit institutions provided €0.2 billion in funding. Other countries contributed an additional €2.7 billion towards funding.

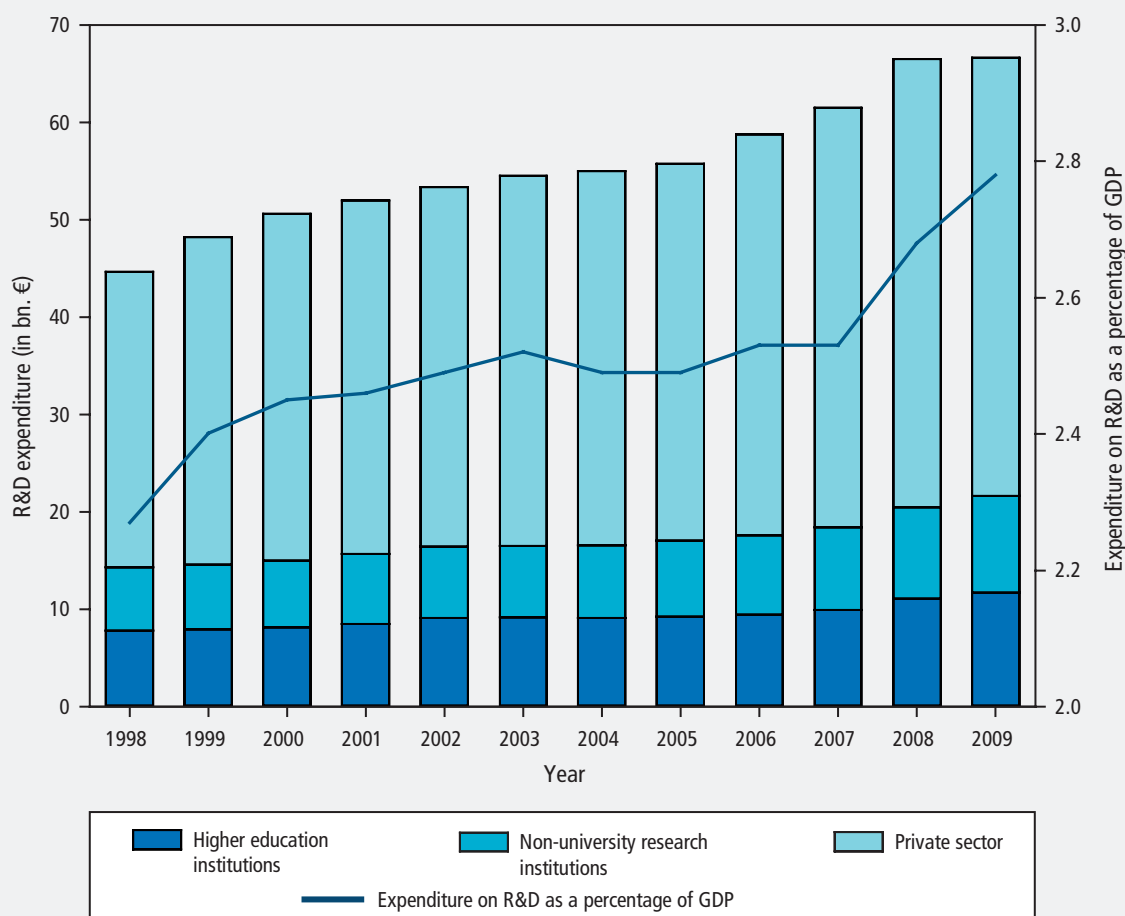
When the perspective is changed, differentiating funding distribution based on the sector performing the research, the figures presented at the centre of the diagram result. The private sector not only provided the most funding, at €45 billion this sector also had the largest budget of any sector for carrying out R&D activities. Of the R&D projects within this sector, 92% were funded by the private sector itself. Government contributed €2 billion towards research projects in this sector,



**Figure 3:**  
Locations of research institutions in Germany



**Figure 4:**  
The development of R&D expenditure in Germany by institutional sectors<sup>1)</sup>



<sup>1)</sup> Includes provisional data and OECD estimates.

**Note:**

Corresponds to Figure 2-2 of the DFG Förderatlas 2012.

**Data basis and source:**

Federal Statistical Office of Germany (DESTATIS): Finances and taxation 2009. Expenditure, incomes, and personnel of public and publicly-funded science, research and development institutions. Subject-matter Series 14, Series 3.6. Calculations by the DFG.

which is equal to a 4% share. An additional €1.7 billion came from abroad (representing about 4% as well).

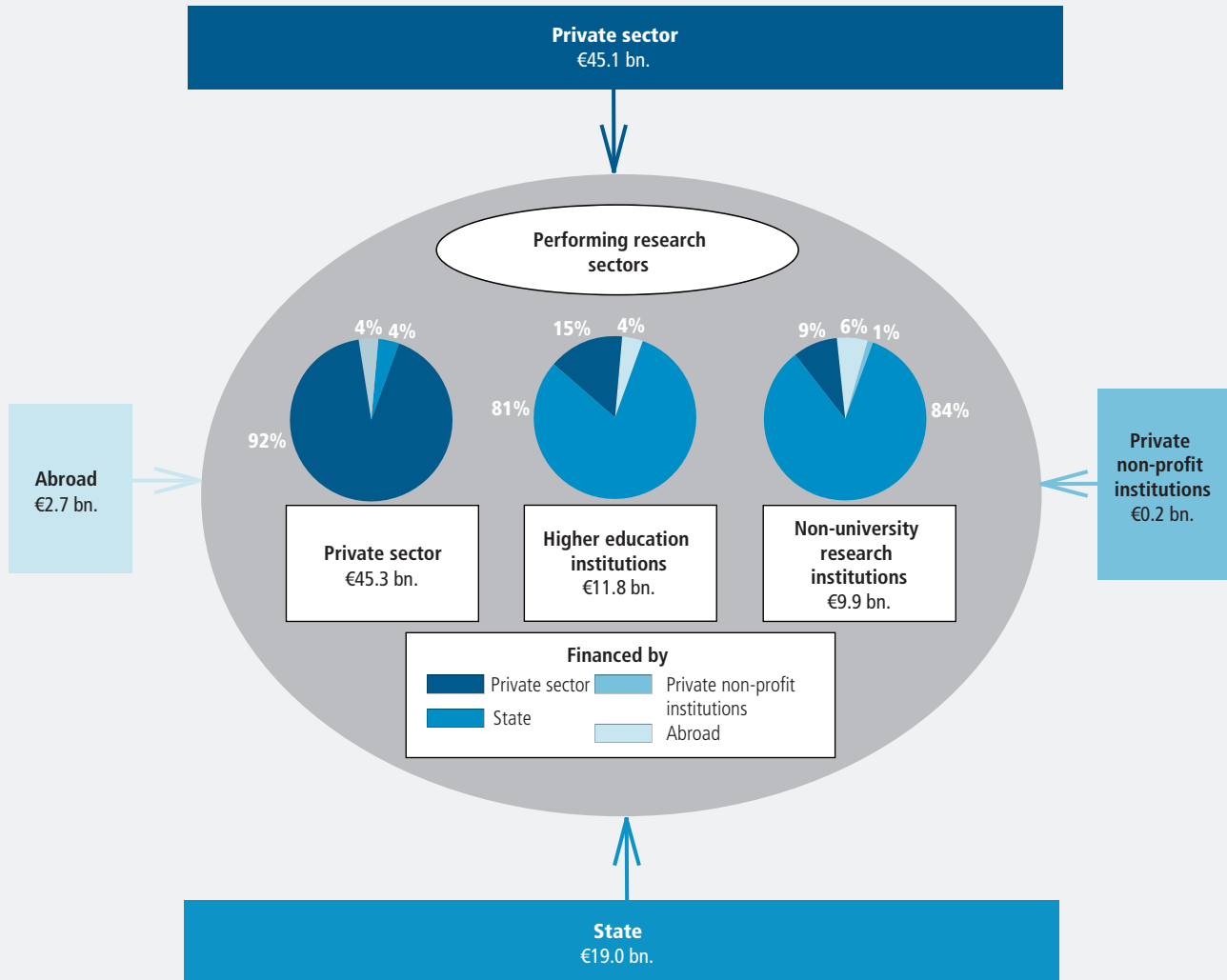
In contrast, the largest share of budget-funding for HEIs and non-university research institutions came from sources in the government sector, which contributed more than 80% of the funding for each of these two sectors. The private sector provided €1.8 billion to support R&D activities at HEIs (or 15% of total funding; it should be noted that the OECD includes revenue from student fees and other revenue in the figure for the private sector). Non-university research institutions received €0.9 billion (9%) from the private sector. The proportion of funds originat-

ing from other countries was roughly equal for all three sectors (between 4% and 6%). R&D contracts are also awarded across sectors, which results in close intertwining of the sectors and in collaboration among research groups in the public and private sectors as well as those in experimental development.

### Financial Resources of Research Institutions

After examining the distribution of R&D funding among the three main sectors of business, non-university research and HEIs as depicted in Figure 5, in the following atten-

Figure 5:

An overview of the funding structures of the German research landscape in 2009<sup>1, 2)</sup>

<sup>1)</sup> Includes provisional data and OECD estimates.

<sup>2)</sup> Data for the financing sectors is based on distribution figures for 2008.

**Note:**

Corresponds to Figure 2-3 of the DFG Förderatlas 2012.

**Data basis and source:**

Organisation for Economic Co-operation and Development (OECD): Main Science and Technology Indicators 2010/2. Calculations by the DFG.

tion will be given to the allocation of funds to research institutions. Among the sources of public funding for these institutions in Germany are the Federal Republic of Germany, which is represented by the various federal ministries, as well as the states belonging to the republic. To simplify usage, the terms “federal government” and “states” will be found in the report below.

Differentiating the institutions according to their sources of funding enables to visualise

their various funding profiles. Higher education institutions in Germany received €38.9 billion in funding in 2009, 50% of which was contributed by the states. The federal government’s share, at €1.1 billion, was rather minor. All other third-party sources of funding contributed €4.1 billion, which accounts for about 10% of the total revenues (refer also to Table 2-1 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

## Substantial Non-university Research Sector

In terms of size and significance, the non-university sector plays a major role within Germany's science and research system, a fact that becomes apparent when financial resources are examined (refer also to Figure 4). In detail, non-university research institutions in Germany budgeted €12.8 billion in revenues in 2009, which corresponded to roughly one quarter of all funding for the research landscape in the public sector (refer to Table 2-1 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)). With almost 50,000 researchers, the staff numbers employed by non-university research institutions are highly significant for the German research landscape. A total of about one quarter of a million people are employed at publicly funded research institutions, 34% of them women (refer to Table 2-2 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

## Third-party Research Funding Continues to Gain Importance

"Third-party funding", as the term is used in the DFG Funding Atlas 2012, refers to the funds for financing research projects that are not paid from the research institution's budget (which are referred to as "basic funds"). Such third-party funding is normally acquired through a competition procedure in which individual researchers or research institutions as a whole take part. Research funded by third parties plays a significant role in the context of revenues taken in by HEIs, and the importance of such research has continued to increase in recent years. As can be seen from Figure 6, the volume of third-party funding acquired by HEIs through competition increased by more than 100% between 1998 and 2009, from €2.5 billion to over €5.3 billion. Thus, the proportion of third-party funding relative to basic funding increased in just over a decade from 16% to 26%.

Of the €5.3 billion in total third-party funds granted in 2009, the year currently under review, the largest share (35%) was contributed by the DFG (refer to Figure 7). While the federal government contributed a share of 21%, industry and business supported HEI research projects by providing a 23% share of funding. Over time, only little shifting can be seen between the relative proportions accounted for by the various funding sources. The largest increase was recorded for the EU: accounting

for only 6% in 1998, the EU almost doubled its share by 2009 (just under 10%). The increase that has been seen in the DFG's share since 2007 is to be explained in particular by the launch of the Excellence Initiative, described in detail in section 2.3.2, and by the introduction of programme allowances for indirect project costs (refer to [www.dfg.de/en/research\\_funding/proposal\\_process/overhead\\_funding/](http://www.dfg.de/en/research_funding/proposal_process/overhead_funding/)). For HEIs that received more than €5 million in third-party funding in 2009, the income from activities funded by third parties as broken down by research area and funding source is presented in the form of tables, available at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas) (Tables A-1 and A-2).

## 2.3 Overview of Research Funding Bodies Involved in the Funding Atlas

### 2.3.1 Deutsche Forschungsgemeinschaft (DFG)

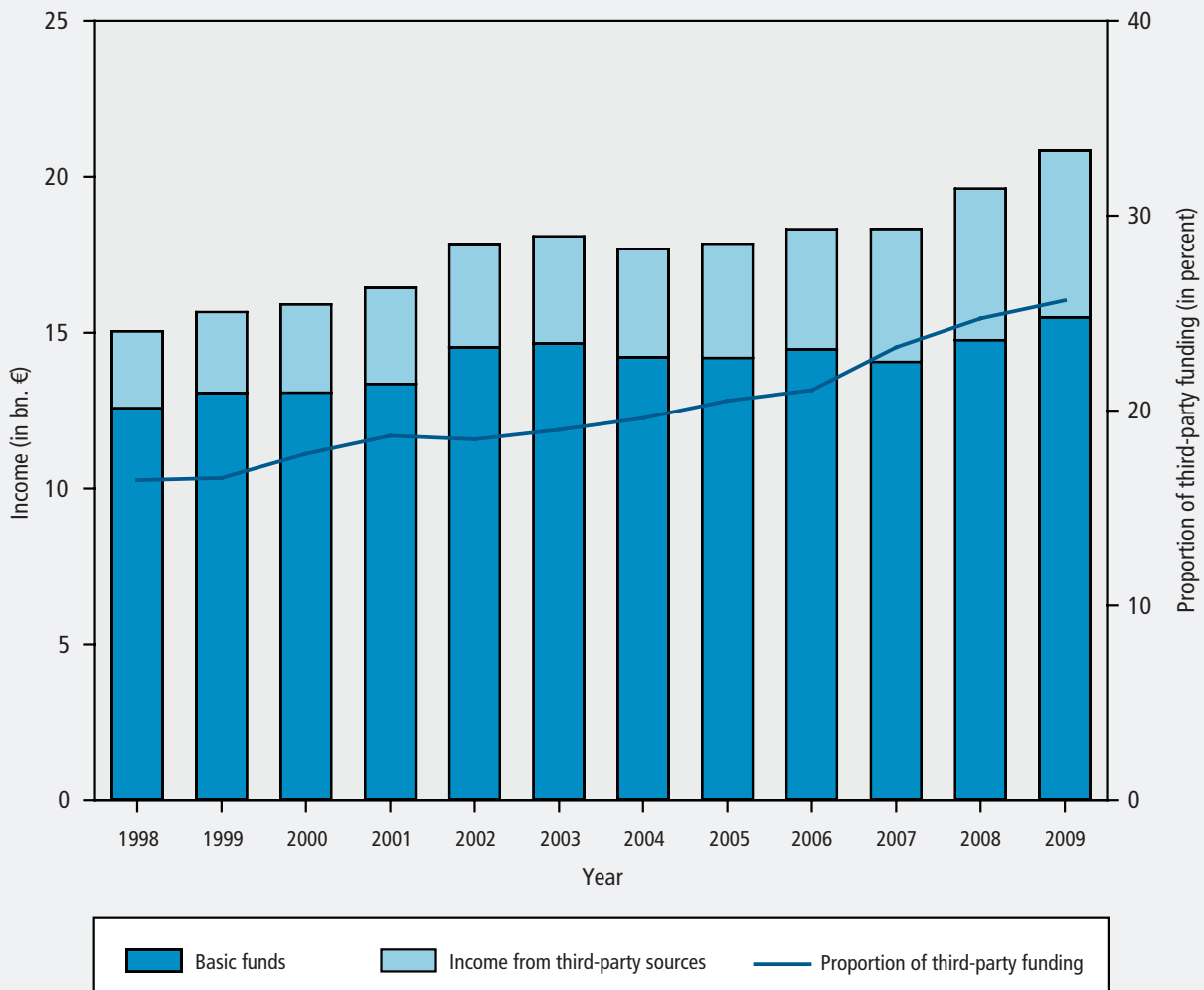
The Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) is the main funding organisation for research in Germany. Its main task is to provide funding for projects with a basic research orientation, carried out by scientists and researchers working at universities or non-university research institutions. As the self-governing organisation for science and research in Germany, the DFG carries out its mandate to serve all branches of science and the humanities. Legally it is structured as an association under private law. Its member organisations include most German universities, non-university research institutions, scientific associations and the Academies of Sciences and Humanities.

As a research funding body with an annual budget of about €2.3 billion in 2010, the DFG supports all scientific disciplines and areas of research, facilitates cooperation among researchers, advances early career researchers, and promotes equal opportunity in science and the humanities (for further information, visit [www.dfg.de](http://www.dfg.de)).

### Review and Selection of Competing Research Projects

When reaching funding decisions, the DFG relies on the judgement of a voluntary panel

**Figure 6:**  
Trends in income from basic and third-party funding sources



**Note:**  
Corresponds to Figure 2-6 of the DFG Förderatlas 2012.

**Data basis and source:**  
Federal Statistical Office of Germany (DESTATIS): Education and culture. HEI finances, 2009. Special analysis of Subject-Matter Series 11, Series 4.5.  
Calculations by the DFG.

of experts from the relevant field (peer review process) and awards project funding by way of a competition. Between 2008 and 2010, the DFG's bodies drew on the expertise of more than 23,000 reviewers. Reviewers, who are selected by the Head Office of the DFG, are chosen mainly based on scientific qualifications and recognition as well as specialist knowledge of the field that the proposal concerns, while at the same time avoiding conflicts of interest.

More than half of the 23,000 reviewers work at HEIs in Germany (refer to Figure 2-8 and Tables A-22 and A-32 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)). Researchers at non-university

research institutions are also extensively involved in the review process, accounting for 11% of all reviewers. The international orientation of the review process is illustrated by the fact that 33% of the reviewers participating in the review processes between 2008 and 2010 were from abroad. For the natural sciences this share was actually more than 40% (refer to Table A-32 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)). Figure 8 shows the reviewers' countries of origin. Reviewers from the US represent an 8.8% share, while about 5% each come from Switzerland and the UK. The group also includes reviewers from Austria and the Netherlands.

### The Review Boards: a “Parliament of Science”

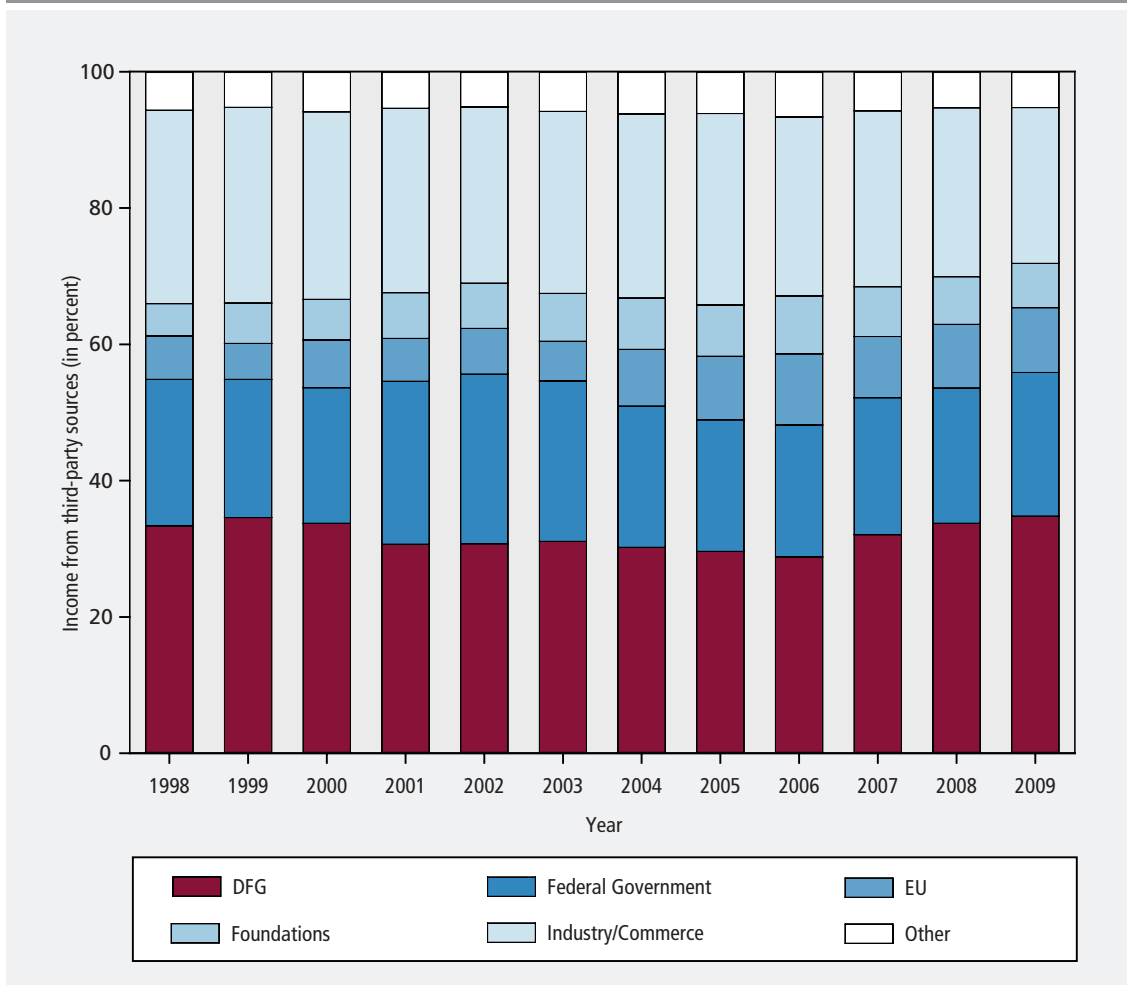
Within the scope of the DFG’s funding activities, the review boards represent the scientific disciplines. They are responsible for quality assurance and for evaluating the requested reviews as well as the review process as a whole. By voting as experts on each of the funding proposals, the review board members additionally provide a preliminary basis for the final decision to be taken by the appropriate bodies. They also ensure that the Head Office applies comparable standards when selecting reviewers. In this way the review boards not least ensure that consistent evaluation criteria and transparency are maintained throughout

the peer review and decision-making process.

The review board members, who are elected for a four-year term, represent a key element of the DFG’s self-governing structure. The most recent election of review board members, for the 2012–2015 term of office, was held in late 2011. On the 48 review boards, which cover the entire spectrum of research funded by the DFG, a total of 606 seats were filled.

At the time of their election to the review boards, the 480 men and 126 women were active at a total of 73 HEIs in Germany and one abroad and at 58 non-university research institutions (refer to Tables A-33 and A-34 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)). An important indicator of the scientific expertise of research

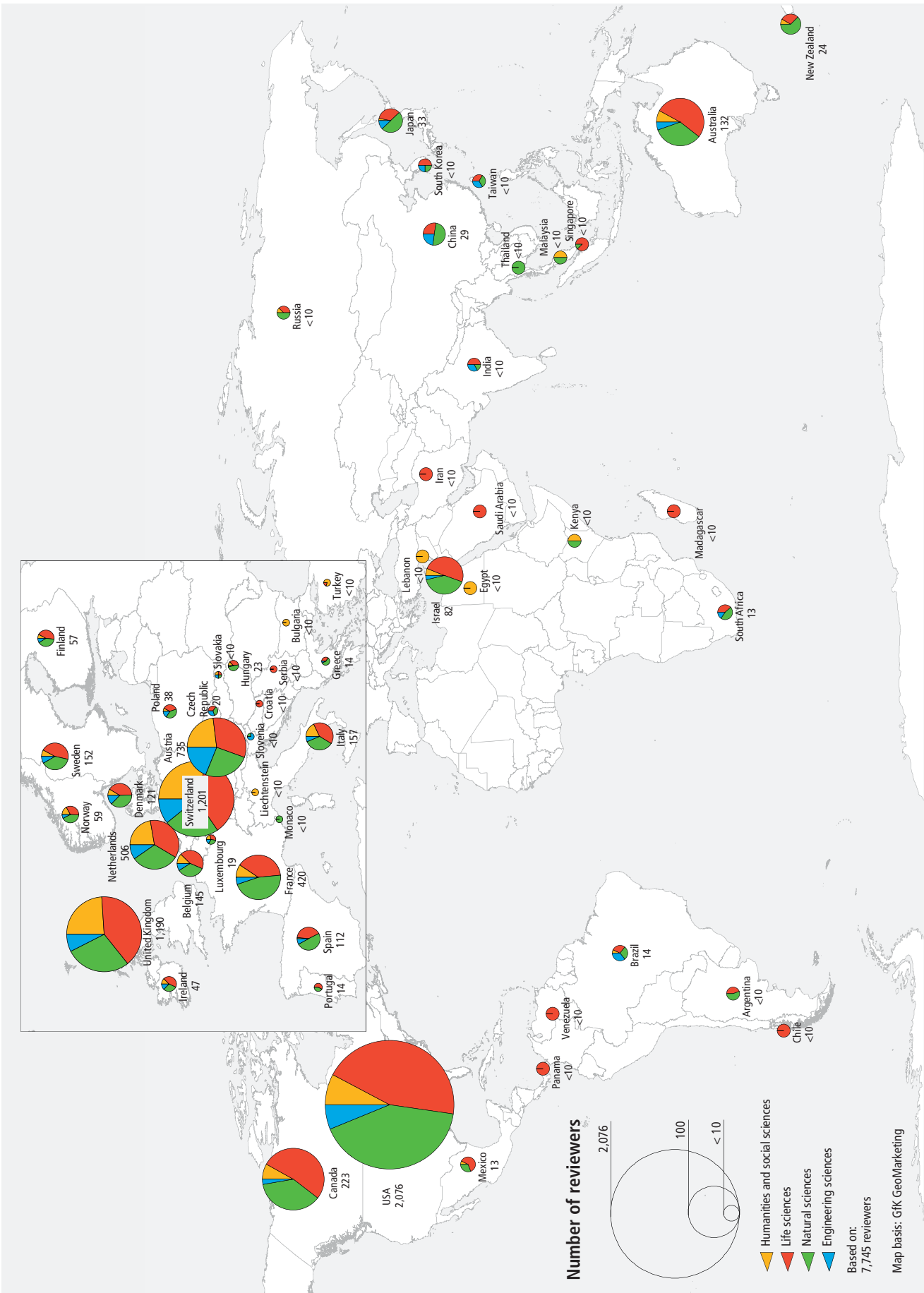
**Figure 7:**  
Trends in HEI income from third-party sources by funding source



**Note:**  
Corresponds to Figure 2-7 of the DFG Förderatlas 2012.

**Data basis and source:**  
Federal Statistical Office of Germany (DESTATIS): Education and culture. HEI finances, 2009. Special analysis of Subject-Matter Series 11, Series 4.5. Calculations by the DFG.

Figure 8:  
Countries of origin of international DFG reviewers by scientific discipline



institutions is the number of individuals from one institution who are consulted in the course of a DFG review process, either in the capacity of review board member or of reviewer.

## Data Basis of the Funding Atlas

The wide and varying range of DFG funding programmes (refer to [www.dfg.de/en/research\\_funding/programmes/](http://www.dfg.de/en/research_funding/programmes/)) can be grouped in the categories of Individual Grants, Coordinated Programmes, Scientific Infrastructure, and the Excellence Initiative of the federal and state governments. The statistics presented in the DFG Funding Atlas are based on the data for funding approvals granted during the 2008–2010 review period. The figures underlying these calculations reflect the funding

volumes approved within the particular year rather than the expenditure for that year. The DFG's statistics thus reflect funding decisions rather than funding expenditure (refer to the Glossary of Methodological Terms at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

Table 1 gives for the DFG programme portfolio an overview of the grants approved during the 2008–2010 period broken down by individual funding programme. All of the programmes serving as the basis for this publication are found in the upper section under the headings: Individual Grants, Coordinated Programmes and Excellence Initiative. The Funding Atlas does not take into account the programmes listed in Table 1 for information purposes only, specifically: infrastructure funding, prizes, and the funding for committees, commissions and the development of international scientific contacts.

**Table 1:**  
The DFG funding portfolio: awards in the years 2008 to 2010

Programme group / funding programme	Funding <sup>1)</sup>	
	Mio. €	%
<b>Individual Grants Programme</b>	<b>2,374.7</b>	<b>32.5</b>
Individual proposals <sup>2)</sup>	2,096.4	28.7
Research Fellowships	41.6	0.6
Emmy Noether Programme	184.3	2.5
Heisenberg Programme	43.5	0.6
Reinhart Koselleck Projects	9.0	0.1
<b>Coordinated Programmes</b>	<b>3,026.9</b>	<b>41.4</b>
Priority Programmes	517.1	7.1
Research Units <sup>3)</sup>	391.7	5.4
Research Training Groups	384.1	5.3
Collaborative Research Centres <sup>4)</sup>	1,614.0	22.1
DFG Research Centres	120.1	1.6
<b>Excellence Initiative of the German federal and state governments</b>	<b>1,263.7</b>	<b>17.3</b>
Graduate Schools	138.2	1.9
Clusters of Excellence	747.5	10.2
Institutional Strategies	378.0	5.2
<b>Total</b>	<b>6,665.4</b>	<b>91.2</b>
<b>Programmes not covered in this report</b>	<b>642.1</b>	<b>8.8</b>
Infrastructure	516.6	7.1
Prizes, other funding tracks	125.5	1.7
<b>Total</b>	<b>7,307.5</b>	<b>100.0</b>

<sup>1)</sup> Includes programme allowances for indirect project costs.

<sup>2)</sup> Includes publishing allowances, clinical studies, WGI Funding for Individual Instruments, workshops for early career investigators and scientific networks.

<sup>3)</sup> Includes specialised programmes for Clinical Research Units.

<sup>4)</sup> Includes the CRC/Transregio, Transfer Unit, and Research Centre programmes.

**Note:**

Corresponds to Table 2-4 of the DFG Förderatlas 2012.

**Data basis and source:**

Deutsche Forschungsgemeinschaft (DFG): DFG awards for 2008 to 2010.

Calculations by the DFG.



Table 2:

DFG awards for 2008 to 2010 relative to numbers of full-time scientific personnel employed at universities by research areas

Scientific discipline / research area	DFG awards		Directed to universities				
			DFG awards	Professorial staff		Researchers	
	Mio. €	%	Mio. €	No.	T € per prof.	No.	T € per res.
Humanities and social sciences	973.3	14.6	885.2	9,211	96.1	42,477	20.8
Life sciences	2,329.0	34.9	2,014.1	5,074	396.9	67,543	29.8
Natural sciences	1,590.2	23.9	1,362.2	4,055	336.0	28,578	47.7
Engineering sciences	1,394.9	20.9	1,270.1	3,283	386.9	30,125	42.2
<b>Scientific disciplines overall</b>	<b>6,287.4</b>	<b>94.3</b>	<b>5,531.6</b>	<b>21,623</b>	<b>255.8</b>	<b>168,722</b>	<b>32.8</b>
<b>Unspecified<sup>1)</sup></b>	<b>378.0</b>	<b>5.7</b>	<b>378.0</b>	-	-	-	-
<b>Total</b>	<b>6,665.4</b>	<b>100.0</b>	<b>5,909.6</b>	<b>21,623</b>	<b>273.3</b>	<b>168,722</b>	<b>35.0</b>

<sup>1)</sup> Awards made in the third funding line of the Excellence Initiative (Institutional Strategies) are allocated at university level and are accordingly shown separately here.

**Note:**

Abridged excerpt from Table 2-5 of the DFG Förderatlas 2012. Table 2-5 in its complete form, additionally broken down by research area, is available in English at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas).

**Data basis and sources:**

Deutsche Forschungsgemeinschaft (DFG): DFG awards for 2008 to 2010.

Federal Statistical Office of Germany (DESTATIS): Education and culture. Personnel at HEIs, 2009. Special analysis of Subject-Matter Series 11, Series 4.4.

Calculations by the DFG.

These funding programmes are excluded because approval in these cases is not based on scientific expertise, and thus there is little basis for drawing conclusions concerning the subject areas to which a particular scientific institution devotes priority. For the programmes actually included, a total of €6.7 billion was approved during the three-year period under review. These programmes, which received more than 90% of total funding, cover almost completely the range of funding programmes offered by the DFG that are related to scientific disciplines.

During the period under review, €2.4 billion in funding was provided to the Individual Grants Programme, which represents the main vehicle of research funding. Evidence for the high priority given to individual funding throughout Germany is also found in the distribution of DFG approvals by programme group among the various regions and research locations in Germany, as shown in [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas), Figure 2-9.

With a nationwide or international scope, the DFG's Coordinated Programmes are aimed at promoting cooperation. They provide an opportunity for partners at universities and non-university institutions to cooperate or to pool the potential existing at one or more centres of higher education. A total of €3.0 billion was approved for funding programmes from this category during the 2008–2010 pe-

riod. Funding approvals totalling €1.3 billion were granted to the Excellence Initiative, a group of programmes conducted jointly with the German Council of Science and Humanities (see below). This amount equals more than 17% of the total volume of funding approved by the DFG. For details on the complete range of programmes within the DFG funding portfolio, refer to: [www.dfg.de/en/research\\_funding/programmes/](http://www.dfg.de/en/research_funding/programmes/).

### Differences among Various Disciplines with Regard to DFG Third-party Funding

The DFG uses a four-level subject classification system (refer to Table 2-3 for levels 1-3 and Table A-7 for level 4, available at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)) that distinguishes four major scientific disciplines: humanities and social sciences, life sciences, natural sciences and engineering sciences. These are further broken down into 12 research areas, which are made up of 48 review boards (or research fields). This classification is applied in all DFG approval procedures as well as, to the extent feasible, with the other sources of third-party funding.

At just under 35%, life sciences received the largest share of total funding approved by the DFG, with natural sciences (at 24%) and

engineering sciences (at 21%) ranking second and third (refer to Table 2). To projects classified under humanities and social sciences, almost 15% of total funds or just under €1 billion was awarded during the period under review. Table 2 also lists for third-party funding directed to universities the income relative to the number of professors and the total number of researchers active at these institutions. The amount awarded per capita reveals substantial differences in third-party funding received by the various scientific disciplines from the DFG. Whereas a professor in the scientific discipline of humanities and social sciences was approved an average of €96,000 for the three-year period, the comparable amount for engineering sciences was €387,000 and €397,000 for life sciences. At €336,000 per capita on average, natural science professors also acquire substantial amounts in third-party funding.

### International Aspects Related to DFG Funding

The DFG encourages cooperation with international partners in all of its funding programmes. A large number of instruments are used in this context (refer to [www.dfg.de/en/international/](http://www.dfg.de/en/international/)). An important part of these activities are stays by visiting researchers in Germany and stays abroad by researchers working in Germany. Empirically reliable data on these research visits and stays abroad are available from the annually revised monitoring report for the Collaborative Research Centre and Research Training Group programmes (refer to [www.dfg.de/en/statistics/](http://www.dfg.de/en/statistics/) > Programme-related Statistics > Statistical Reports). The report specifically allows analysis of the stays of visiting researchers in Germany as part of the Collaborative Research Centres in the 2008–2010 period and of the stays abroad of researchers participating in Collaborative Research Centres (2009–2010) and Research Training Groups (2008–2010).

The results are shown in the form of maps in Figures 9 and 10. The details are also listed in Table 9 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas). As seen in the two figures, the funded researchers come from and travel to a great number of countries, on every continent. In detail, it can be observed that mostly early career researchers (i.e. doctoral and postdoctoral researchers) are involved in stays abroad (the outgoing perspective), while visiting researchers

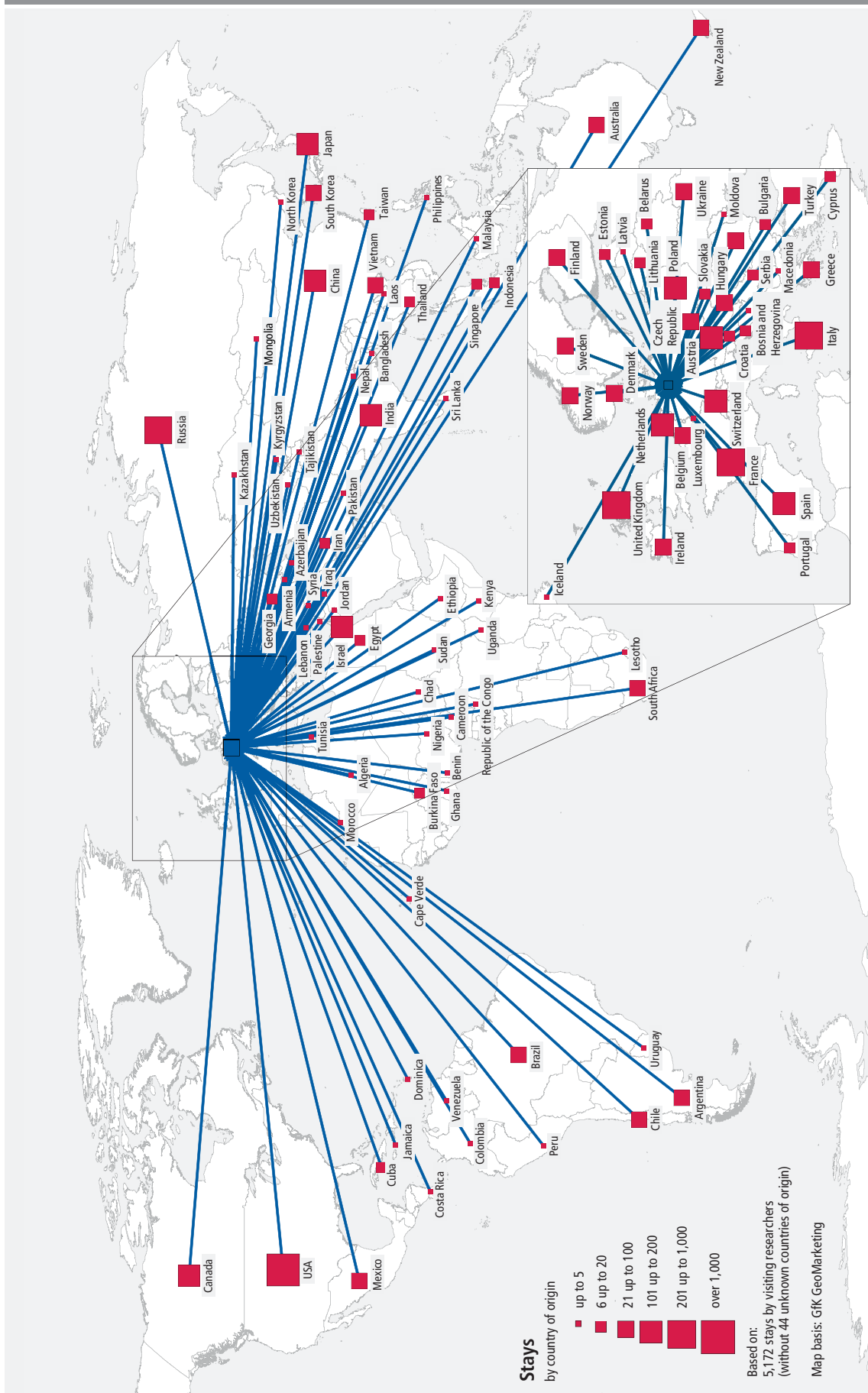
are usually established scientists (incoming perspective). This explains the differences observed, namely that countries in Africa and Latin America are more likely to constitute the destinations of researchers working in Germany, while these regions of the world are not as prominent in the incoming perspective. When the top 40 countries according to the incoming perspective and the outgoing perspective are compared some overlapping is seen. A median correlation is found between the countries' rankings in the two lists (Spearman  $r = 0.66$ ). Although the US heads both the list of destinations and of countries of origin, significant differences exist, for example in the case of Russia, which ranks fourth on the scale of researchers' home countries but only 13th as a destination for researchers. Similarly, India, Israel, the Ukraine, Brazil and Argentina tend to be countries of origin among visiting researchers in Germany. On the other hand, Austria, Finland, South Korea, Turkey and Portugal appear as preferred destinations for stays abroad. European countries are generally chosen more often as destinations, specifically in 63% of all cases, compared with the 47% share of these countries among countries of origin. A factor not least influencing this distribution is the programme line referred to as International Research Training Groups, in which the participating institutions in each of the partner countries exchange doctoral students as part of joint training (refer to [www.dfg.de/gk/en/](http://www.dfg.de/gk/en/) > International Research Training Groups).

### 2.3.2 Excellence Initiative of the German Federal and State Governments

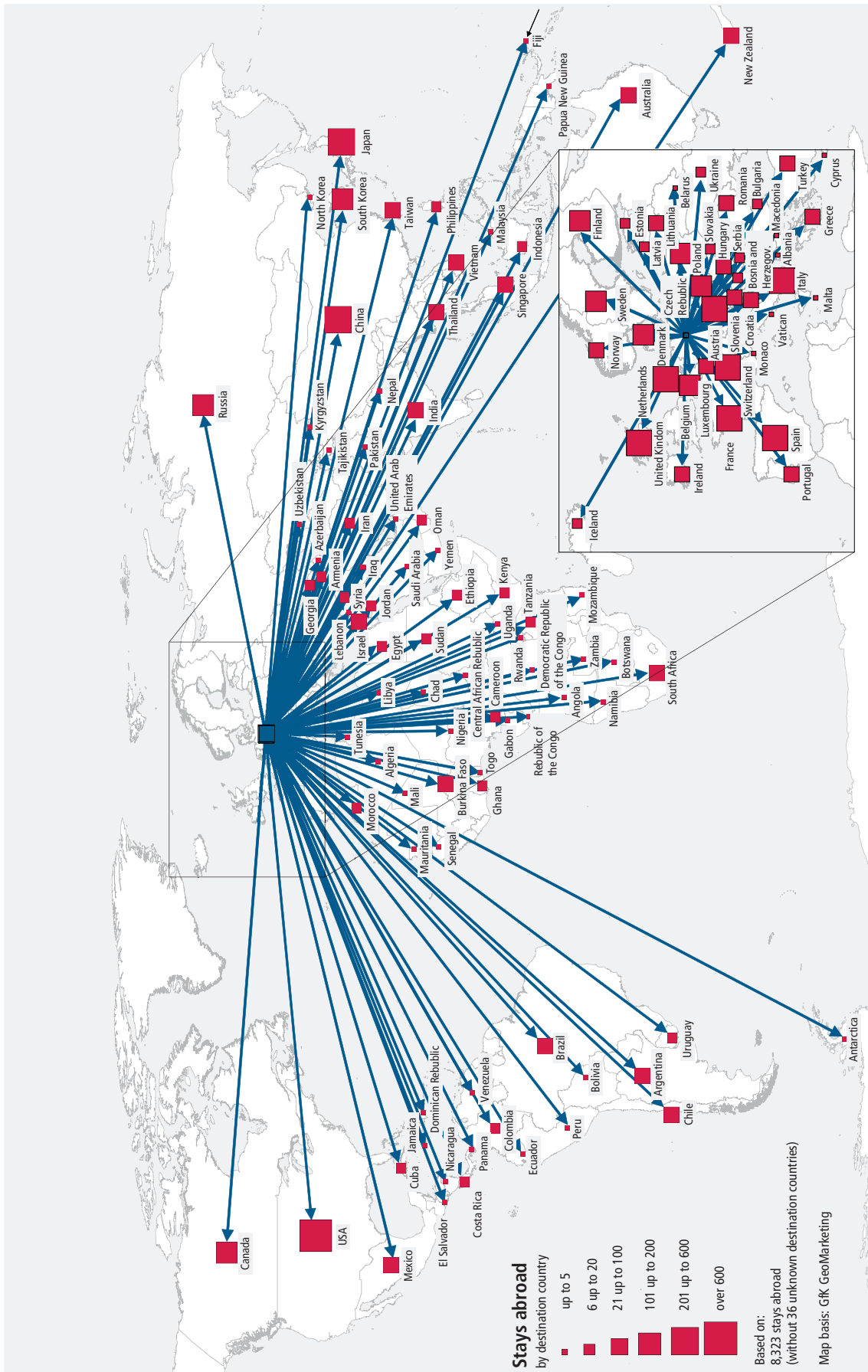
The Excellence Initiative of the federal and state governments of Germany is highly recognised at the international level. The programme received €1.9 billion in funding during the first phase (2007–2012) and will be funded with €2.4 billion during the second phase, which began in 2012 and runs until 2017. This section is presented as a supplement to the English edition of the Funding Atlas because the decisions for the second phase of the Excellence Initiative were handed down in June 2012, after the German edition was published.

The Excellence Initiative, which was established in 2005, aims to promote excellence in

**Figure 9:**  
Stays by visiting researchers in DFG-funded Collaborative Research Centres by country of origin 2008 to 2010



**Figure 10:**  
Stays abroad by researchers in DFG-funded Collaborative Research Centres (2009–2010) and Research Training Groups (2008–2010) by destination country



research at universities in Germany. The Initiative is intended to both foster top-level research and to enhance the quality of German universities and research institutions across a broad base. Specific aims are to raise the visibility of research in Germany and to promote top-level institutions in the university and research sectors.

The Excellence Initiative includes three funding lines:

1. Graduate Schools for promoting early career researchers
2. Clusters of Excellence for promoting top-level research
3. Institutional strategy projects to promote top-level university research

Graduate Schools are an important instrument for promoting early career researchers in Germany. Such schools help institutions better compete at the international level and support locations of excellence in further developing their profiles. Graduate Schools are dedicated to the notion that excellent doctoral researchers are trained within an excellent research environment. These schools, which are led by recognised researchers, aim to provide optimum conditions for completing doctoral research in a broad area of science or the humanities. As a result of the decision for the second phase, a total of 45 Graduate Schools currently receive funding.

As research and training institutions at German universities, Clusters of Excellence are intended to be both visible and capable of competing at the international level. They concentrate the research potential existing at individual locations as well as enable researchers to network and pursue cooperation in particularly promising areas of research. Alongside cooperative efforts involving various university institutions, Clusters of Excellence also include non-university research institutions (refer to section 2.2). Clusters of Excellence offer specific higher education institutions the opportunity to define subject areas of specialisation and to develop their profiles in line with their individual strategy. As a result of the decision for the second phase, a total of 43 Clusters of Excellence currently receive funding.

Institutional strategies are designed to promote entire institutions, with the aim of successfully competing in the international research arena. The universities develop long-term strategies aimed at fostering top-level research and junior researchers. In order to

be eligible for institutional strategy funding, universities must already have at least one Graduate School and one Cluster of Excellence. As a result of the decision in the second phase, a total of 11 universities receive funding for developing their institutional strategies.

Further details about the three funding lines and the decisions in the Excellence Initiative are available at [www.dfg.de/en/excellence-initiative/](http://www.dfg.de/en/excellence-initiative/).

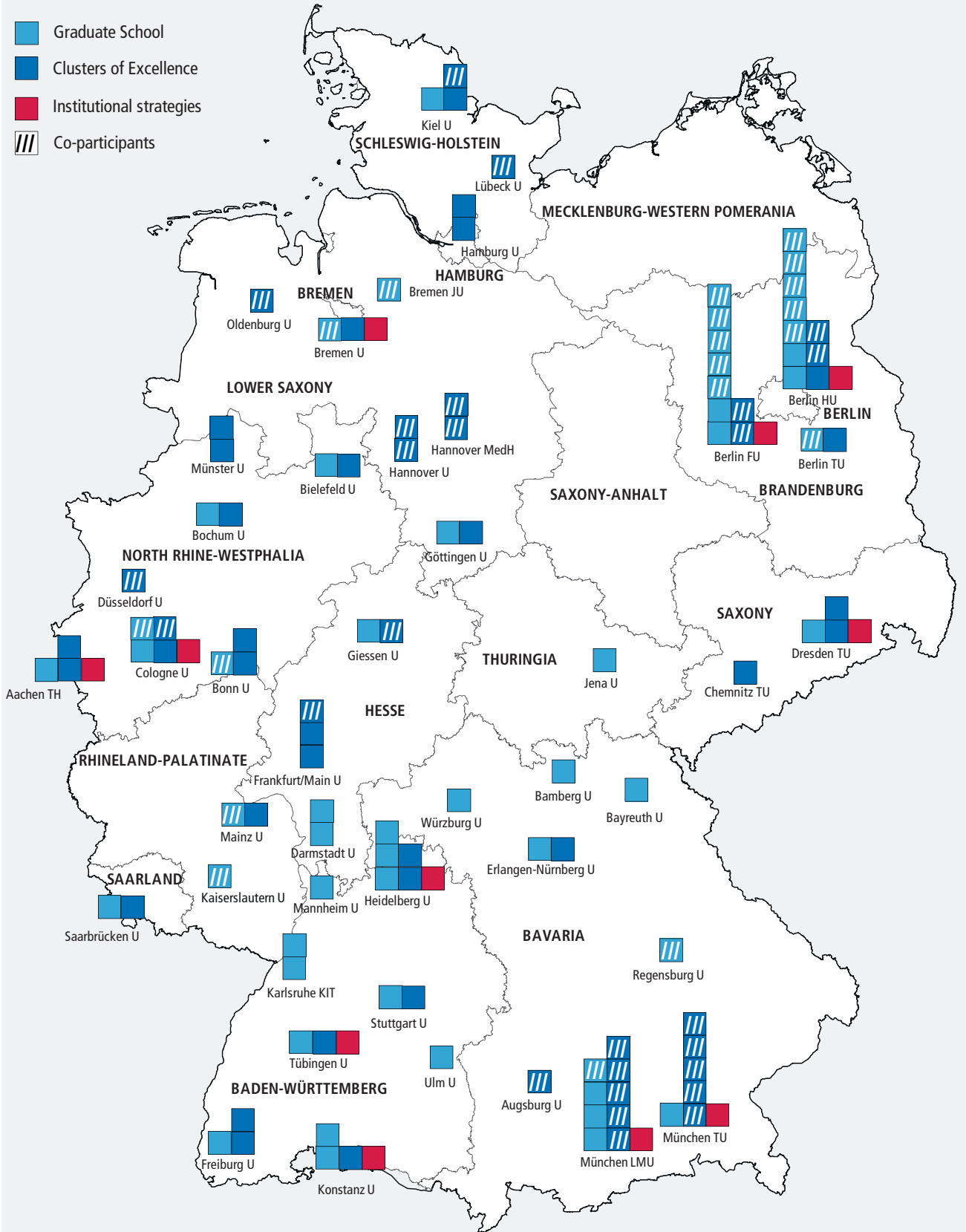
The DFG and the German Council of Science and Humanities are jointly responsible for the Excellence Initiative of the federal and state governments of Germany. The German Council of Science and Humanities is the main body advising the federal and state governments on further developing programmes and structures in the areas of higher education institutions, science and the humanities, and research (refer to [www.wissenschaftsrat.de](http://www.wissenschaftsrat.de)). It is responsible for the third funding line, the institutional strategies. The DFG is responsible for the programme lines of Graduate Schools and Clusters of Excellence.

The decisions on the Excellence Initiative were taken in the course of a process involving two stages. After a preliminary selection based on draft proposals, a total of 143 applications were submitted for the three funding lines during the evaluation phase, which took place between 2011 and 2012. In this process, projects that had received funding during the first phase competed directly with new applications and thus had to submit to another review process.

The reviews were conducted by international panels involving a total of about 600 experts, with more than 80% from countries other than Germany.

Of the 45 Graduate Schools approved for funding during the second phase, 33 had already participated in the first programme phase, while 12 projects received funding for the first time. Among the Clusters of Excellence, 12 projects also received first-time funding, and 31 had already been successful during the first phase. As part of the third funding line, i.e. institutional strategies, five new applications were approved, while six established strategy projects were approved for continued funding. Projects from the first programme phase, ending in 2012, that were not successful with their second-phase proposals will receive transitional funding for a two-year term.

Figure 11:  
Decisions on the Excellence Initiative reached in the second programme phase



Map basis: GfK GeoMarketing

**Table 3:**

Funded Graduate Schools and Clusters of Excellence  
(newly approved institutions are shown in **blue**; institutions proposed jointly by several universities are shown in *italics*)

University	Name of Graduate School	Name of Cluster of Excellence
Aachen TH	Aachen Institute for Advanced Study in Computational Engineering Science (AICES)	Integrative Production Technology for High-Wage Countries/ Tailor-Made Fuels from Biomass
Augsburg U	–	<i>Nanosystems Initiative Munich (NIM)</i>
Bamberg U	Bamberg Graduate School of Social Sciences (BAGSS)	–
Bayreuth U	Bayreuth International Graduate School of African Studies (BIGSAS)	–
Berlin FU	Graduate School of North American Studies/ Graduate School of East Asian Studies (GEAS)	–
Berlin FU and Berlin HU	<i>Berlin-Brandenburg School for Regenerative Therapies (BSRT)/ Berlin School of Integrative Oncology (BSIO)/Berlin Mathematical School (BMS)/Berlin Graduate School Muslim Cultures and Societies (BGSMCS)/Friedrich Schlegel Graduate School of Literary Studies (FSGS)</i>	<i>NeuroCure: Towards a Better Outcome of Neurological Disorders/Topoi: The Formation and Transformation of Space and Knowledge in Ancient Civilizations</i>
Berlin HU	Berlin School of Mind and Brain/ School of Analytical Sciences (SALSA)	Image Knowledge Gestaltung: An Interdisciplinary Laboratory
Berlin TU	<i>Berlin Mathematical School (BMS)</i>	Unifying Concepts in Catalysis (UniCat)
Bielefeld U	Bielefeld Graduate School in History and Sociology (BGHS)	Cognitive Interaction Technology
Bochum U	Ruhr University Research School Plus	RESOLV (Ruhr Explores Solvation): Understanding and Design of Solvent Controlled Processes
Bonn U	<i>Bonn-Cologne Graduate School of Physics and Astronomy (BCGS)</i>	Mathematics: Foundations, Models, Applications/ ImmunoSensation: The Immune Sensory System
Bremen JU	<i>Bremen International Graduate School of Social Sciences (BIGSSS)</i>	–
Bremen U	<i>Bremen International Graduate School of Social Sciences (BIGSSS)</i>	The Ocean in the Earth System – MARUM – Center for Marine Environmental Sciences
Chemnitz TU	–	Merge Technologies for Multifunctional Lightweight Structures – MERGE
Cologne U	<i>Bonn-Cologne Graduate School of Physics and Astronomy (BCGS)/a.r.t.e.s. Graduate School for the Humanities Cologne (AGSHC)</i>	Cellular Stress Responses in Aging-Associated Diseases (CECAD)/ Cluster of Excellence on Plant Sciences: From Complex Traits Towards Synthetic Modules (CEPLAS)
Darmstadt TU	Graduate School of Computational Engineering (CE)/ Darmstadt Graduate School of Energy Science and Engineering	–
Dresden TU	Dresden International Graduate School for Biomedicine and Bioengineering (DIGS-BB)	Center for Regenerative Therapies Dresden (CRTD)/ Center for Advancing Electronics Dresden (cfaED)
Düsseldorf U	–	<i>Cluster of Excellence on Plant Sciences: From Complex Traits Towards Synthetic Modules (CEPLAS)</i>
Erlangen-Nürnberg U	Erlangen Graduate School in Advanced Optical Technologies (SAOT)	Engineering of Advanced Materials: Hierarchical Structure Formation for Functional Devices (EAM)
Frankfurt/Main U	–	Macromolecular Complexes in Action/ The Formation of Normative Orders/ Cardiopulmonary System (ECCPS)
Freiburg U	Spemann Graduate School of Biology and Medicine (SGBM)	BIOS Centre for Biological Signalling Studies: From Analysis to Synthesis/ BrainLinks – BrainTools
Giessen U	International Graduate Centre for the Study of Culture (GCSC)	<i>Cardiopulmonary System (ECCPS)</i>
Göttingen U	Göttingen Graduate School for Neurosciences, Biophysics, and Molecular Biosciences (GGNB)	Nanoscale Microscopy and Molecular Physiology of the Brain (CNMPB)
Hamburg U	–	Integrated Climate System Analysis and Prediction (CliSAP)/ Hamburg Centre for Ultrafast Imaging: Structure, Dynamics and Control of Matter at the Atomic Scale (CU)
Hannover MedH	–	<i>REBIRTH: From Regenerative Biology to Reconstructive Therapy/Hearing4all: Models, Technology and Solutions for Diagnostics, Restoration and Support of Hearing</i>
Hannover U	–	<i>REBIRTH: From Regenerative Biology to Reconstructive Therapy/Hearing4all: Models, Technology and Solutions for Diagnostics, Restoration and Support of Hearing</i>
Heidelberg U	Heidelberg Graduate School of Fundamental Physics/ Heidelberg Graduate School of Mathematical and Computational Methods for the Sciences (HGS MathComp)/ Hartmut Hoffmann-Berling International Graduate School of Molecular and Cellular Biology (HBIGS)	Cellular Networks: From Molecular Mechanisms to Quantitative Understanding of Complex Functions/ Asia and Europe in a Global Context: The Dynamics of Transculturality
Jena U	Jena School for Microbial Communication (JSMC)	–
Kaiserslautern TU	MAterials Science IN MainZ (MAINZ)	–
Karlsruhe KIT	Karlsruhe School of Optics & Photonics/ Karlsruhe School of Elementary Particle and Astroparticle Physics: Science and Technology (KSETA)	–
Kiel U	Graduate School for Integrated Studies of Human Development in Landscapes	The Future Ocean/ Inflammation at Interfaces
Konstanz U	Konstanz Research School Chemical Biology (KoRS-CB)/ Graduate School of Decision Sciences	Cultural Foundations of Social Integration

**Table 3:**

Funded Graduate Schools and Clusters of Excellence  
(newly approved institutions are shown in blue; institutions proposed jointly by several universities are shown in *italics*)

University	Name of Graduate School	Name of Cluster of Excellence
Lübeck U	–	<i>Inflammation at Interfaces</i>
Mainz U	<i>MAterials Science IN MainZ (MAINZ)</i>	Precision Physics, Fundamental Interactions and Structure of Matter (PRISMA)
Mannheim U	Graduate School of Economic and Social Sciences (GESS): Empirical and Quantitative Methods	–
München LMU	Graduate School of Systemic Neurosciences (GSN)/ <i>Graduate School for Quantitative Biosciences Munich (QBM)/Distant Worlds: Munich Graduate School for Ancient Studies/Graduate School for East and Southeast European Studies</i>	–
München LMU and München TU	–	<i>Nanosystems Initiative Munich (NIM)/Center for Integrated Protein Science Munich (CIPSM)/Origin and Structure of the Universe/Munich Centre for Advanced Photonics (MAP)/Munich Cluster for Systems Neurology (SyNergy)</i>
München TU	International Graduate School of Science and Engineering (IGSSE)	–
Münster U	–	Religion and Politics in Pre-Modern and Modern Cultures/ <i>Cells in Motion: Imaging and Understanding Cellular Behaviour in Organisms (CiM)</i>
Oldenburg U	–	<i>Hearing4all: Models, Technology and Solutions for Diagnostics, Restoration and Support of Hearing</i>
Regensburg U	<i>Graduate School for East and Southeast European Studies</i>	–
Saarbrücken U	Saarbrücken Graduate School of Computer Science	Multimodal Computing and Interaction: Robust, Efficient and Intelligent Processing of Text, Speech, Visual Data and High Dimensional Representations
Stuttgart U	Graduate School of Excellence advanced Manufacturing Engineering (GSaME)	Simulation Technology
Tübingen U	<i>Learning, Educational Achievement, and Life Course Development: An Integrated Research and Training Program</i>	Werner Reichardt Centre for Integrative Neuroscience (CIN)
Ulm U	International Graduate School in Molecular Medicine Ulm (IGradU)	–
Würzburg U	Graduate School of Life Sciences (GSLs)	–

**Data basis and sources:**

Deutsche Forschungsgemeinschaft (DFG): Funding Decisions by the Joint Commission of the DFG and the German Council of Science and Humanities, 15 June 2012.

Figure 11 provides an overview of the decisions for the second programme phase of the Excellence Initiative, handed down on 15 June 2012. In detail, the representation in map form distinguishes the HEIs both according to the three funding lines and as to whether they were co-applicants. The universities, for which institutional strategy projects were approved, were (listed alphabetically):

- ▶ RWTH Aachen University
- ▶ Freie Universität Berlin
- ▶ Humboldt-Universität zu Berlin (new in the second programme phase)
- ▶ University of Bremen (new in the second programme phase)
- ▶ University of Cologne (new in the second programme phase)
- ▶ Technische Universität Dresden (new in the second programme phase)
- ▶ Heidelberg University
- ▶ University of Konstanz
- ▶ Ludwig-Maximilians-Universität München
- ▶ Technische Universität München

- ▶ Eberhard Karls Universität Tübingen (new in the second programme phase)

Each of these universities was also successful with a proposal for at least one other funding line. Table 3 also lists the decisions on Graduate Schools and Clusters of Excellence. With a total of 44 HEIs receiving funding, the Excellence Initiative demonstrates on the whole how broadly based top-level research in Germany actually is.

### 2.3.3 R&D Project Funding by the Federal Republic of Germany (Federal Government)

On the whole, the Federal Republic of Germany (federal government) funds research and development through two avenues: medium and long-term funding of research institutions, and by means of project funding. In the project funding programme, HEIs, non-university research institutions and



commercial companies can apply for fixed-term research projects in the context of funding or specialised programmes. Whereas any R&D project is eligible for indirect project funding, direct project funding is awarded according to the top-down principle, i.e. the focus of content and thus the fields of research and technology in the particular case are pre-defined by the federal ministries responsible, as part of a call for proposals aligned with a specific topic. The analyses provided in the Funding Atlas are based on data that cover most of the federal government's project funding in the civil sector. Most of the R&D research projects, totalling €6.9 billion during the 2008–2010 period under review, which were evaluated for the report, were in research fields related to life sciences, natural sciences and, in particular, engineering sciences.

The largest area of research in terms of funding was in information and communication technologies, which was awarded 17% of the total funding volume provided by the federal government, as taken into account here. Activities in the area of energy research and technology received a 13% share. Research in the field of biotechnology, a sub-area of the life sciences discipline, ranked third in terms of the funding volume awarded, which amounted to €723 million. Ranking beyond were the funding areas of climate, environment and sustainability, health research and medical technology, and aviation and space technology (refer to Table 2-8 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

Figure 12 presents the regions that proved to be especially active in acquiring funds from the federal government's direct project funding programme and the thematic priorities that were set by these regions. The figure presents a combined view of funding programmes for scientific institutions and for private enterprise. The Stuttgart, Munich and Berlin regions received especially large amounts of funding. Compared with the previous Funding Ranking (for 2005–2007), the federal government provided increased funding for the humanities and social sciences, the impact of which was seen especially for Berlin. Both Berlin and Stuttgart give priority to research in information and communication technologies as well as to energy research and technology. In the Munich region, much of the funding acquired from the federal government is allotted to aviation and space research, which also plays a major role in Ham-

burg. In this region, substantial amounts of funding are accounted for by the German Electron Synchrotron (DESY) project, which is classified as major instrumentation for basic research.

### 2.3.4 EU Framework Programme

The EU's funding activities in the area of research and technology have been consolidated since 1984 in framework programmes lasting several years. The current Seventh Framework Programme has a budget of €53.3 billion for the 2007–2013 period. The goal of the framework programmes is to strengthen the EU's scientific and technological base and encourage its international competitiveness. This is achieved primarily through the support of cross-border research and development projects.

For the HORIZON 2020 framework programme, slated to begin in 2014, the European Commission has proposed a budget topping €80 billion, increasing funding by more than 50% compared with the previous programme. HORIZON 2020 will also feature a novel programme architecture, consisting of three key focuses: scientific excellence, industrial leadership, and societal challenges. Worthy of special mention are the plans to combine, within the focus on scientific excellence, actions aligned with basic research that are open to any topic (specifically through the European Research Council (ERC) and the Marie Curie Actions for encouraging mobility and supporting early career researchers). As part of HORIZON 2020 it is also planned to achieve enhanced synergy effects between the EU research funding programme and the European Structural Fund, in a bid to further strengthen, for example, the research capacities of the twelve new EU Member States.

### Seventh Framework Programme – Data Basis for the Funding Atlas

The Seventh Framework Programme consists primarily of the specific programmes: Cooperation, Ideas, People and Capacities. The available funds are distributed in highly varying amounts among the specific programmes. The *Cooperation* Programme (with the aim of supporting transnational collaborative projects) receives €32.4 billion, which represents the

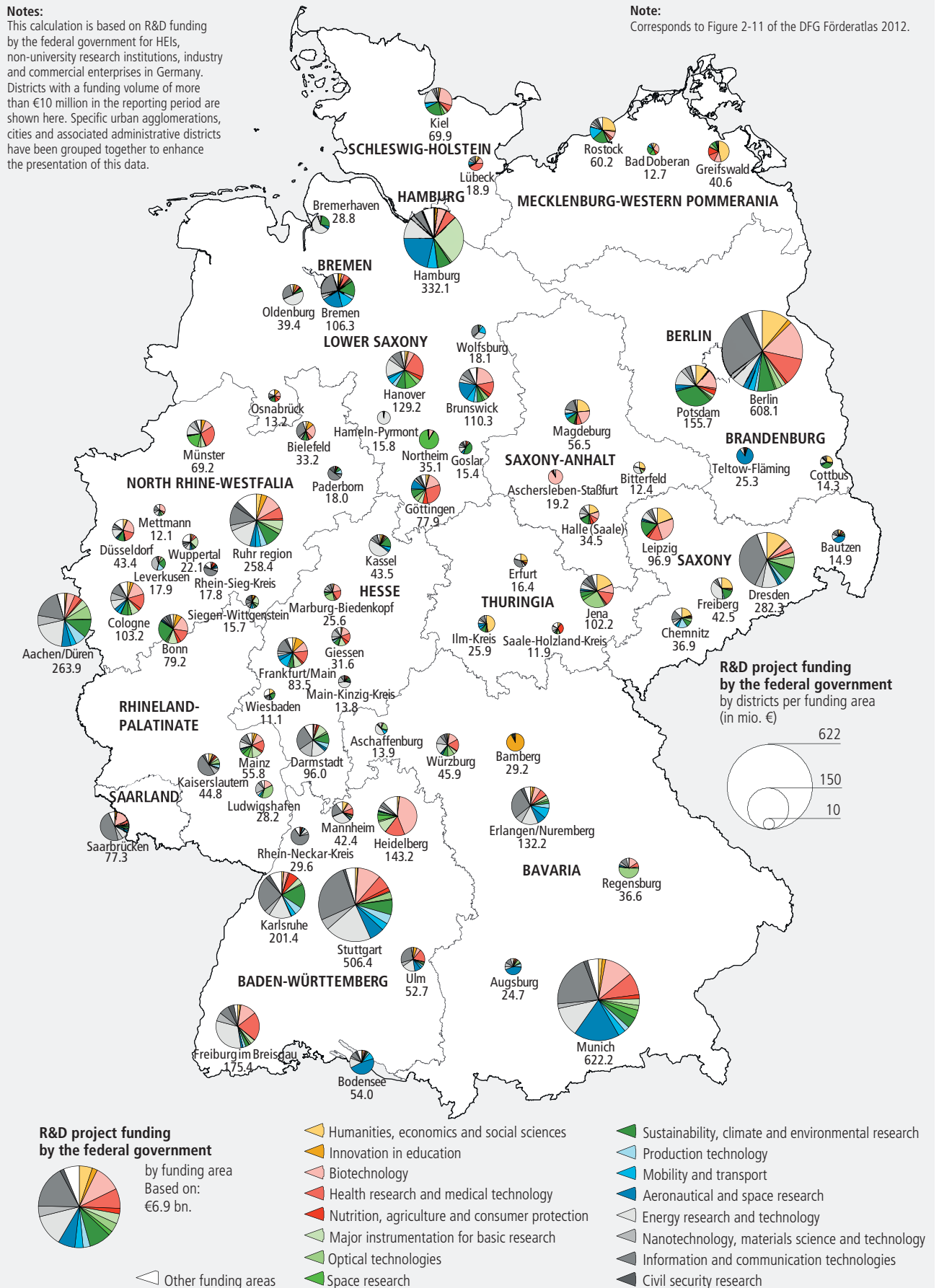
**Figure 12:**  
Regional distribution of R&D project funding by the federal government 2008 to 2010 by funding areas

**Notes:**

This calculation is based on R&D funding by the federal government for HEIs, non-university research institutions, industry and commercial enterprises in Germany. Districts with a funding volume of more than €10 million in the reporting period are shown here. Specific urban agglomerations, cities and associated administrative districts have been grouped together to enhance the presentation of this data.

**Note:**

Corresponds to Figure 2-11 of the DFG Förderatlas 2012.



largest share of the total budget and about two thirds of all funds. The *Ideas* Programme (serving as the basis of the ERC) has a budget of €7.5 billion, while the programmes *People* (promoting mobility and early career researchers) and *Capacities* (for research infrastructure and similar projects) receive €4.8 and €4.1 billion in funding respectively. Since the beginning of the Seventh Framework Programme in 2007, more than 10,000 contracts (grant approvals) involving some 60,000 participants had been recorded by early 2011.

### Cooperation Programme – Transnational Cooperation, Collaboration Focussed on Research Areas

The specific programme Cooperation provides funding to large-scale transnational cooperative projects (in most cases), involving HEIs, industry and research institutions, whereas the networks are required to be made up of cooperating partners coming from at least three countries. This specific programme is structured along the lines of ten priority subject areas, most of which are related to research fields within the engineering sciences and life sciences.

Figure 13 depicts the distribution of funding allocated to the various priority subject areas and funding recipients in the participating countries. Of the total funding provided to date through the Seventh Framework Programme, about 16% (or €3 billion) has been granted to recipients in Germany. Consequently, Germany ranks first in terms of funding volume received, followed by the UK (at just below €2.7 billion), France (€2.2 billion), Italy (€1.5 billion) and the Netherlands (€1.2 billion).

### People Programme – Continued Advancement of Early Career Researchers and Career Development

Encouraging early career researchers plays a key role in continued development of the European research framework. The People Programme includes the Marie Curie Actions, which pursue the goals of promoting international mobility among doctoral students and postdoctoral researchers and of creating a European job market for researchers. Specific actions include individual fel-

lowships for experienced researchers (i.e. postdocs) as well as funding Initial Training Networks in order to establish and expand structured training systems for doctoral students. Through COFUND, national fellowship programmes with a cross-border orientation can acquire additional co-financing from the EU.

The analysis offered by the Funding Atlas is based on a total of 4,470 contracts for Marie Curie Actions, representing more than 40% of all contracts signed to date as part of the Seventh Framework Programme. The majority of contracts are for individual fellowships intended to promote the geographic or trans-sectoral mobility of researchers. Among the countries selected by funding recipients for carrying out their projects, the UK ranks first, followed by Germany, France and the Netherlands. About half of the research stays were at HEIs.

### Diverse Patterns of Participation for HEIs, Research Institutions and the Private Sector

The relative importance of the individual sectors for a particular country becomes apparent when funding is differentiated according to the type of institution at which participants conduct their research project. In this context, the Seventh Framework Programme encourages cooperation between science and business in a variety of ways, whether it be through international cooperative projects or through exchanges of staff. The average total share of funds allocated to commercial companies is about 23% of the funding volume provided to all of the countries shown here. Germany shows a relatively large share for industry at 26%, whereas the three recipient sectors (industry, HEIs and non-university institutions) were allocated roughly equal funding amounts.

An international comparison reveals that the proportions allocated to HEIs and non-university research institutions varies strongly among European countries. While in the United Kingdom, Switzerland and Sweden more than half of the funds went to the HEI sector, in countries such as France and Spain much larger shares went to non-university research institutions (including the CNRS, INRA and INSERM). In the UK, the universities enjoying a prominent international reputation, specifically Oxford and

Cambridge, participate most strongly in the programme, whereas in Germany, in contrast, a close network of HEIs and non-university research institutions can be identified as the main funding recipients.

### 2.3.5 European Research Council (ERC)

Through the European Research Council (ERC), the EU has been pursuing a systematic and substantial commitment to the funding of basic research since 2007. As part of the Seventh EU Framework Programme (2007–2013), the ERC is allocated a budget of €7.5 billion through the FP7 specific programme *Ideas*. HORIZON 2020, the next EU Framework Programme beginning in 2014, can be expected to provide a considerable increase in the ERC's budget.

The ERC's funding lines are open to researchers in all disciplines from any country; the specific schemes are: Starting Grants, Consolidator Grants, Advanced Grants and Synergy Grants (refer to <http://erc.europa.eu/funding-schemes>). The only decisive factor for the review and approval of project proposals is the scientific excellence of both the applicant and of the proposed research project. The ERC Scientific Council is the science management body responsible for decisions relating to funding strategy and for all programme development. The ERC Scientific Council has set up international panels for each of the funding schemes, made up of high-profile experts, with the task of conducting peer reviews and approving project proposals.

#### ERC Programme Portfolio: Individual Top-level Funding

The goal of the two funding schemes introduced in the following (Starting and Advanced Grants) is the individual funding of outstanding researchers. Funding can be granted for a maximum of five years for the purpose of establishing or expanding research groups located in Europe (in EU Member States and countries such as Switzerland, Norway and Israel that are associated with the Framework Programme). The ERC Starting Grants programme is aimed at promising young researchers and provides funding of up to €1.5 million (or as much as €2 million in exceptional cases). The target group of the ERC Advanced Grants includes established

researchers, who are eligible for up to €2.5 million (and in exceptional cases €3.5 million) in funding (refer to <http://erc.europa.eu/funding-schemes>).

### Data Basis of the Funding Atlas

ERC funding approvals are depicted in two ways:

- ▶ According to the funding recipient's nationality or home country: this analysis allows observations about the (junior) research potential of each country's science and research system.
- ▶ According to the funding recipient's destination country: this allows observations about the comparative attractiveness across Europe of the research institutions hosting the recipients and of the national science and research system in the particular case.

The results shown cover calls for proposals issued for Starting Grants in the years 2007, 2009, 2010 and 2011 (no calls were issued in 2008) and for Advanced Grants during the 2008 to 2010 period (no calls were issued in 2007).

#### Germany Leads among Home Countries of ERC Grant Recipients

As previously seen in the 2009 Funding Ranking, Germany ranks first in terms of the home country (or nationality) of researchers awarded ERC grants (318), followed by the UK (253 recipients) and France (232). Researchers coming from the German science system are thus once again seen to be very effective in competing for ERC grants – but not necessarily at research locations in Germany.

From the group of relatively small countries with a strong research emphasis, the Netherlands (at 158 grant recipients) and Israel (122) once again made an excellent showing in terms of ERC funding received (refer to Table 2-10 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

#### UK – Number one Destination for ERC Grant Recipients

A comparison of destination countries for ERC grant recipients (i.e. country of the institution where the ERC project is conducted) reveals research locations in the UK in first place, as in the period reviewed for the 2009

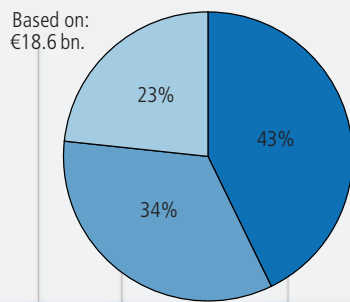
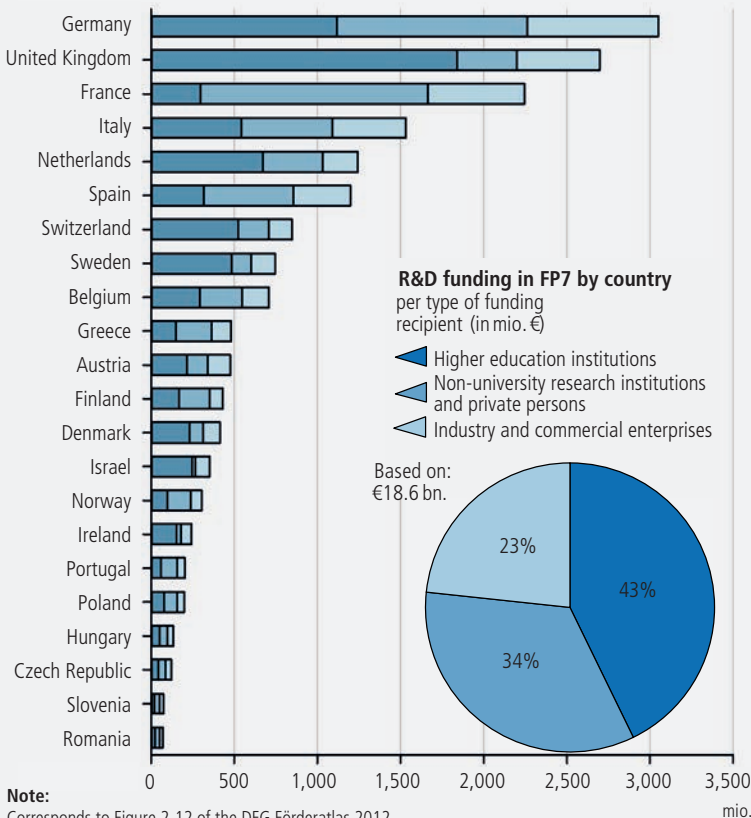
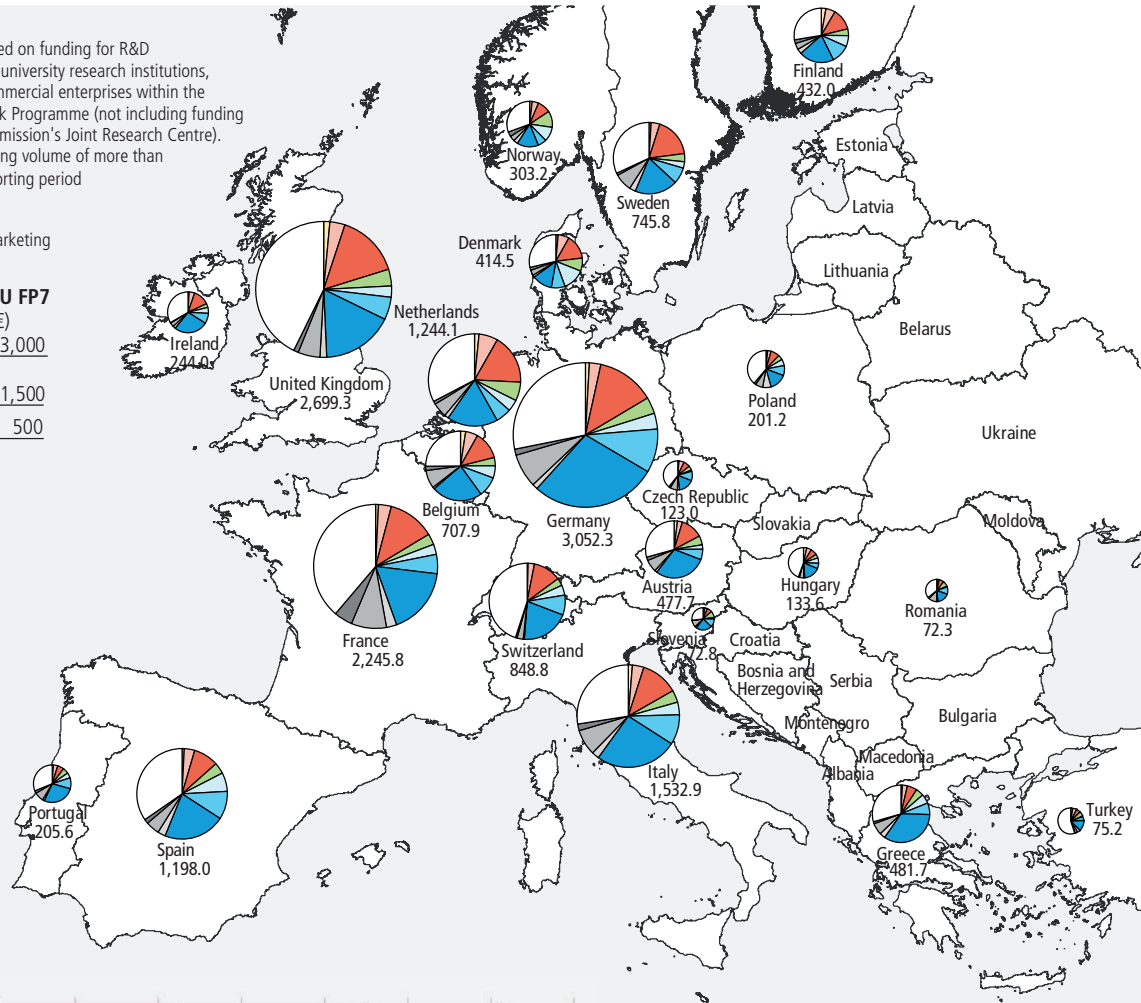
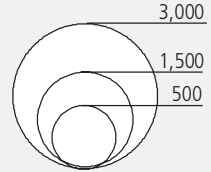
**Figure 13:**  
Regional distribution of R&D funding in the Seventh EU Framework Programme by country

**Notes:**

This calculation is based on funding for R&D provided to HEIs, non-university research institutions, and industrial and commercial enterprises within the Seventh EU Framework Programme (not including funding for the European Commission's Joint Research Centre). Countries with a funding volume of more than €50 million in the reporting period are shown here.

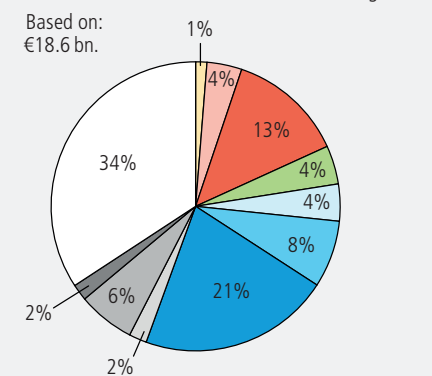
Map basis: GfK GeoMarketing

**R&D funding in EU FP7 by country (in mio. €)**



**R&D funding in FP7 by funding area (in mio. €)**

- Humanities, social and economic sciences
- Food, agriculture, fisheries, biotechnology
- Health
- Environment and climate change
- Energy
- Nanosciences/technologies, materials and production technologies
- Information and communication technologies
- Security
- Transport and aeronautics
- Space
- Cross-thematic and cross-sectoral funding areas



**Note:**  
Corresponds to Figure 2-12 of the DFG Förderatlas 2012.

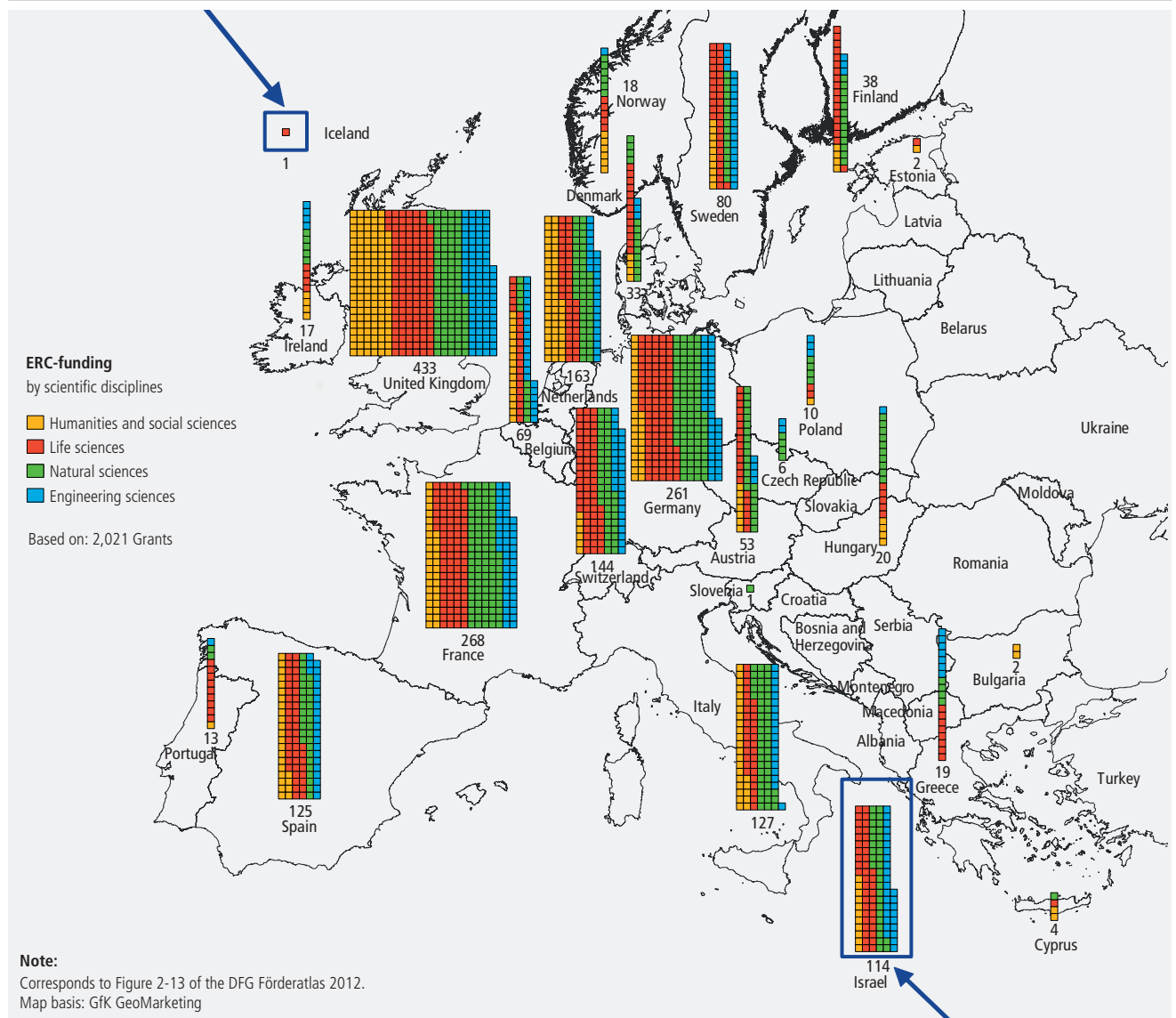
Funding Ranking, with a total of 433 grants or more than 20% of all ERC grants approved. France (268 grants) and Germany (261) trail, again at some distance. The Netherlands in fourth place (163 grants) and Switzerland in fifth place (144) were again remarkably effective in attracting ERC grant recipients, thus demonstrating the strength of their research systems, which, though comparatively small, are highly capable of competing in the international arena (refer to Table 2-10 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

### Distribution of ERC Grants by Scientific Discipline

Figure 14 shows the geographic distribution of research institutions hosting ERC grant re-

cipients, further broken according to the scientific discipline under which the ERC-funded research project is classified. Ranking at the top, research institutions in the UK show superior and roughly equal numbers of participants for all four scientific disciplines (humanities and social sciences, life sciences, natural sciences, and engineering sciences). For other countries also showing a substantial number of grant approvals, varying emphases can be seen when the distribution of ERC grants is viewed according to discipline. Germany, France and Switzerland stand out, for example, on account of a relatively large proportion of ERC grants for research in life sciences and natural sciences. Especially in view of the relative size of the country's science and research system, the proportion of ERC grants for humanities and social sciences

**Figure 14:**  
ERC-funded researchers by destination country per scientific discipline



research in the Netherlands is remarkable: more ERC grants were approved for humanities and social sciences in the Netherlands than in any other European country with the exception of the UK.

### ERC Grants – an Indicator and Driver for the Internationality of Research Locations

The ERC's funding activities have given new impetus to processes serving global competition within the science system: researchers worldwide are now competing for ERC grants, which are both prestigious and financially attractive. At the same time European research institutions are publicising their ERC funding achievements, while striving to attract ERC grant applicants with good prospects for approval.

ERC projects can be conducted at any research institution in Europe (i.e. in EU Member States and associated countries) regardless of the grant recipient's nationality. Mobility of applicants, and thus enhanced internationality of funded research groups, is not a primary objective of the ERC funding programme but results, in the ideal case, as a by-product of collaborative projects involving top-level researchers.

### Complementary System of Funding Options within the European Research Area

The DFG has supported the establishment of the ERC from the outset and regards the ERC as a partner in competition at European level. With its commitment to the ERC, the DFG supports competition among scientific institutions in Europe to attract outstanding researchers, and cultivates the diversification of funding options available to researchers. ERC funding programmes are also a suitable way of developing and refining international peer review procedures and of establishing high uniform standards for research funding to be applied in all of Europe.

Cooperation and competition among the national funding agencies and the ERC has resulted in a productive interplay that will be decisive for the further development of the European Research Area. Within an integrated European system of funding options, ERC grants are a module with a complementary

function. Through them researchers have a broader range of funding measures to choose from, while research institutions receive the opportunity to boost their international visibility through achievements in this European competition for excellence.

To promote science and research, the DFG and the Federal Ministry of Education and Research (BMBF) have established a joint National Contact Point, which provides information and advice about the ERC funding programmes. This service is directed especially at researchers wishing to apply for ERC grants for projects at research institutions in Germany as well.

### 2.3.6 Alexander von Humboldt Foundation (AvH)

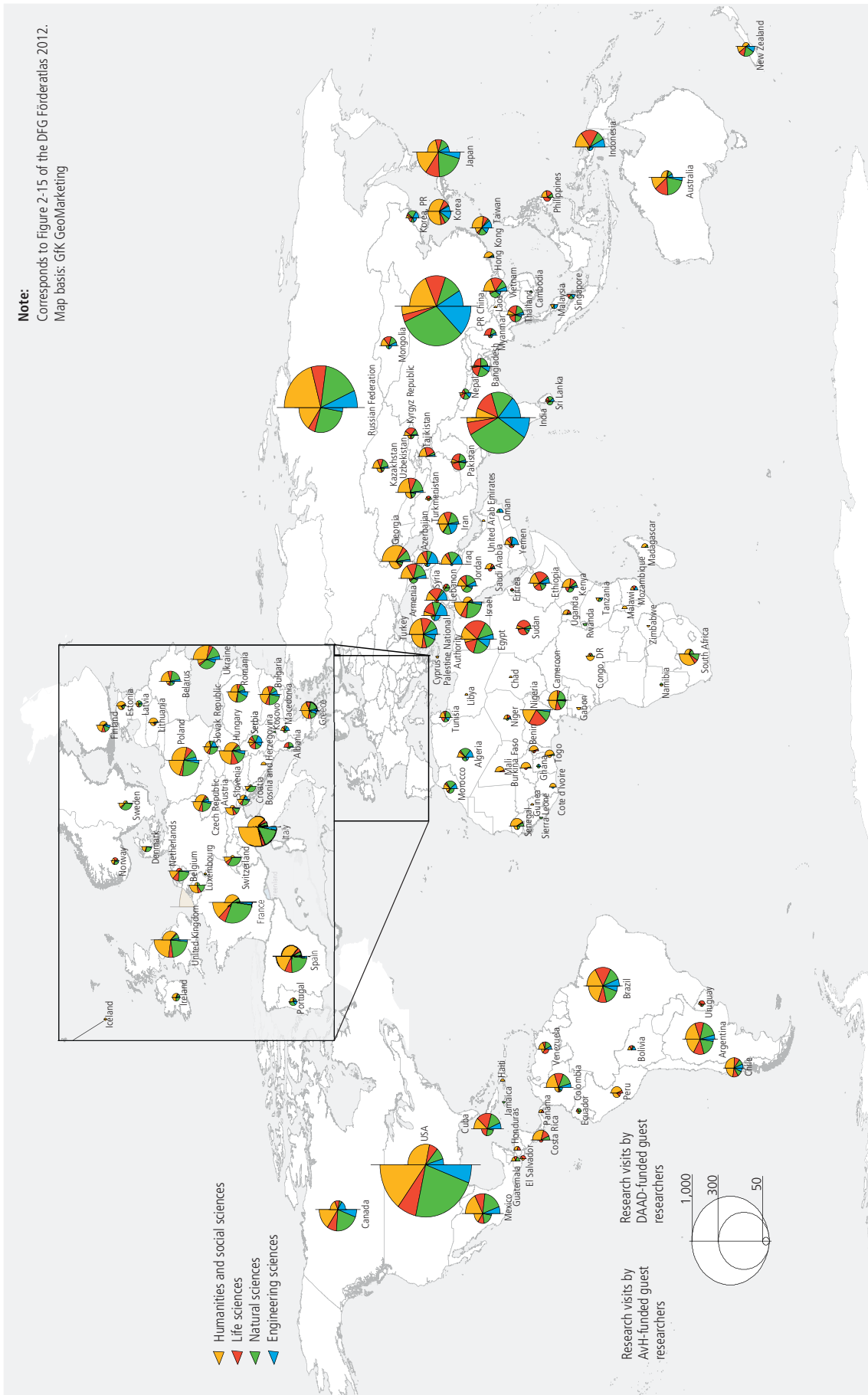
Within the framework of its funding programmes, the Alexander von Humboldt Foundation (AvH) grants fellowships and research awards, both to researchers from abroad for their research stays at institutions in Germany and to scientists working in Germany who wish to conduct research in a foreign country. Those interested can apply personally for the fellowships. Research awards, in contrast, are not conferred in response to an application but on the basis of a nomination by recognised experts in Germany.

The fellowships and awards are intended for researchers at one of four levels of career development: postdoctoral researchers, early career researchers, experienced researchers and top researchers. The individual selection committees decide on funding solely based on applicants' research qualifications (refer to [www.humboldt-foundation.de](http://www.humboldt-foundation.de) for details).

For the target group of researchers from foreign countries, the AvH sponsored a total of 4,928 research stays within the framework of the fellowship programme and 1,076 stays as part of the awards programme, during the period under review (2006–2010). This report is concerned only with investigating the attractiveness of German research institutions. Hence only those stays sponsored by the AvH fellowship and awards programmes are considered, which allowed researchers from other countries to visit Germany.

**Figure 15:**  
Research visits funded by the AvH Foundation and DAAD 2006 to 2010 by country of origin per scientific discipline

**Note:**  
Corresponds to Figure 2-15 of the DFG Förderatlas 2012.  
Map basis: GfK GeoMarketing





### 2.3.7 German Academic Exchange Service (DAAD)

One of the main programmes offered by the German Academic Exchange Service (DAAD) are the fellowships granted to students and graduate students or researchers, which allow them to visit other countries to pursue studies or research (individual funding). The DAAD also provides institutional funding (project funding) to support the internationalisation of HEIs in Germany. The individuals participating in these DAAD projects who are funded via third-party sources represent a second main focus within the DAAD funding statement. Yet the DFG Funding Atlas takes into account only recipients of individual funding from the DAAD who visited a scientific institution in Germany for the purpose of research. An additional condition for inclusion here is that the total amount of expenditures apportioned to HEIs as shown in the DAAD funding statement must be at least €1 million for each of the five years covered by the report (2006–2010).

Of the 45,797 DAAD funding recipients from other countries who qualify for inclusion in this category, 40,848 were students or graduate students (including doctoral candidates) and 4,949 were researchers (refer to Table 2-12 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

### 2.3.8 Scientific Disciplines and Countries of Origin of Researchers Receiving Funding from AvH and DAAD

Figure 15 provides a summary of all cases where the AvH and the DAAD granted funding, broken down by country of origin and by scientific discipline. Both funding organi-

sations provide strong support to researchers from the US, Russia, China and India. It can also be observed that there is a stronger tendency for researchers funded by the DAAD to come from regions outside Europe than those receiving grants from the AvH. The countries of origin are represented more evenly among recipients of DAAD funding compared with those funded by the AvH. As revealed by the map, AvH funding recipients come for the most part from industrial nations such as the US, EU countries, Canada, Japan and Australia, whereas the DAAD focusses somewhat more strongly on providing support to researchers from Turkey and the Middle East and from former Soviet countries.

A summary of the most common countries of origin for AvH-funded researchers is provided in Table 2-11 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas). Similar details about DAAD funding recipients are provided in Table 2-12, also at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas). The German HEIs that hosted researchers funded by the AvH and the DAAD are listed in Tables A-41 and A-42 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas).

A view to the scientific discipline reveals that the DAAD focusses funding activities more strongly on humanities and social sciences, with 41% of funding recipients classified under this discipline. Researchers in the natural sciences represent at roughly one quarter another large group of DAAD funding recipients. For the AvH, in contrast, natural sciences represent at 46% the largest group funded, followed by humanities and social sciences at 28%. Engineering sciences play a minor role in funding activities by both the AvH (at 11%) and the DAAD (13%; refer to Table 2-14 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

### 3 Funding Profiles of Research Institutions and Regions

Whereas Chapter 2 provided an overview of the various sources of research funding in Germany, the view in the following chapter is shifted to the institutions receiving funding. This chapter is mainly concerned with presenting indicators derived from data relating to participation in DFG funding programmes. These indicators will be supplemented by the profiles obtained from information on participation in programmes for direct project funding offered by the federal ministries of the German government (federal government) and the European Union (EU). Section 3.2 presents relevant information for non-university research institutions, while 3.3 examines funding by the DFG and the federal government from a regional perspective with the use of cartographic representations.

#### 3.1 Higher Education Institutions

The scope of the analyses presented in this section is limited to the 40 HEIs with the highest volume of DFG approvals in each case, depending on the particular area under consideration. The sections dealing with the DFG concentrate on the 40 HEIs receiving the largest amounts of funding approved by the DFG. R&D project funding by the federal government as well as EU funding through the Seventh Framework Programme are additionally presented with reference to a selection of the 40 HEIs acquiring the most funding in each case. In addition, alphabetical lists of all HEIs and non-university research institutions, providing more details for each indicator, can be viewed at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas).

#### 20th Anniversary of Funding Atlas Spotlight on DFG Funding

With the five previous editions of the Funding Ranking (refer to [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)) and the Funding Atlas presented here, the

statistical reports specifically on DFG funding now cover a period of exactly 20 years.

During the past 20 years, the various HEIs have ranked at relatively consistent positions when rated on the six categories (refer to Table 3-1 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)). First and second place have been consistently taken by the **RWTH Aachen University** and the **LMU München**, with the two merely exchanging positions on many occasions. Of the ten HEIs with the most funding approvals, eight had finished among the top ten HEIs already in the approval ranking for the 2002–2004 review period. A glance further back in time, to the first ranking report published for the five-year period of 1991–1995, reveals that eight of the ten HEIs with the most approvals today already belonged to the top ten at that time.

The only striking changes can be seen from a long-term perspective. In the wake of German reunification in 1990, the research system of the former GDR was restructured from the ground up, and research activities were relaunched in the new states (Brandenburg, Mecklenburg-Western Pomerania, Saxony, Saxony-Anhalt and Thuringia). HEIs in the new states have correspondingly predominated among institutions that have climbed positions since the first research ranking, covering the 1991–1995 period. The first to be mentioned in this regard is the **TU Dresden**, which began climbing from 35th place in the first half of the 1990s and has since continued to improve, now placing 13th in the current Funding Atlas edition and thus ranking with the top HEIs.

The **TU Dresden** is more the exception than the rule, however. For the majority of HEIs, the ranking has remained relatively stable even when viewed over the 20-year period. Apart from the **TU Dresden**, the universities of **Münster**, **Bremen** and **Jena** and the **Humboldt-Universität zu Berlin** as well as the **Hannover Medical School** rose by more than ten positions within the ranks during the 20 years under review.

**Table 4:**  
Ranking analysis of HEIs by DFG awards for 2008 to 2010

Higher education institution	Rank	Mio. €	cum. %	Higher education institution	Rank	Mio. €	cum. %
Aachen TH	1	278.1	4.7	Bremen U	21	116.8	61.9
München LMU	2	263.7	9.1	Hannover U	22	112.4	63.8
Berlin FU	3	250.8	13.4	Stuttgart U	23	110.8	65.7
München TU	4	250.1	17.6	Bochum U	24	104.8	67.4
Heidelberg U	5	246.3	21.7	Mainz U	25	95.9	69.0
Freiburg U	6	202.1	25.2	Berlin TU	26	95.3	70.7
Karlsruhe KIT	7	200.5	28.5	Kiel U	27	94.4	72.2
Berlin HU	8	179.8	31.6	Hannover MedH	28	88.5	73.7
Göttingen U	9	168.6	34.4	Bielefeld U	29	78.4	75.1
Erlangen-Nürnberg U	10	159.1	37.1	Düsseldorf U	30	77.7	76.4
Bonn U	11	157.4	39.8	Jena U	31	76.8	77.7
Münster U	12	149.4	42.3	Regensburg U	32	72.4	78.9
Dresden TU	13	144.0	44.7	Ulm U	33	70.9	80.1
Tübingen U	14	140.9	47.1	Duisburg-Essen U	34	70.6	81.3
Würzburg U	15	133.1	49.3	Giessen U	35	68.3	82.4
Frankfurt/Main U	16	131.7	51.5	Marburg U	36	66.9	83.6
Cologne U	17	129.6	53.7	Dortmund TU	37	64.5	84.6
Darmstadt TU	18	126.2	55.9	Leipzig U	38	63.0	85.7
Konstanz U	19	123.6	57.9	Saarbrücken U	39	62.5	86.8
Hamburg U	20	117.6	59.9	Braunschweig TU	40	61.5	87.8
<b>Ranked 1-40</b>						<b>5,204.9</b>	<b>87.8</b>
<b>HEIs overall</b>						<b>5,927.9</b>	<b>100.0</b>

**Note:**

Abridged excerpt from Table 3-2 of the DFG Förderatlas 2012. Table 3-2 in its complete form, with figures including and excluding the Excellence Initiative, is available in English at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas).

**Data basis and source:**

Deutsche Forschungsgemeinschaft (DFG): DFG awards for 2008 to 2010.  
Calculations by the DFG.

## Current Ranking

As in every previous DFG approval ranking, first and second place were taken by the **RWTH Aachen University**, at €278 million in funding approved, and the **LMU München**, at €264 million (refer to Table 4). The **FU Berlin**, the **Technische Universität München (TU München)** and the **Heidelberg University** came in third to fifth, whereas each was approved roughly the same amount of funding at about €250 million.

The **Karlsruhe Institute of Technology (KIT)** is found at seventh place in the current ranking report. It should be noted here that the KIT is the result of the merger, in 2009, of the **Karlsruhe Research Centre** and the **Karlsruhe University (TH)**. Within the German system of higher education, this merger of a non-university research centre and a university was an exceptional move,

which has consolidated into one organisation the close cooperation previously practised between the two institutions in order to achieve synergy effects in research and teaching.

As pointed out in the previous edition of the Funding Ranking, the **University of Konstanz** has climbed the most rapidly in the rankings in recent years. This institution has succeeded as part of the Excellence Initiative in gaining funding not only for a Cluster of Excellence and a Graduate School but also for an institutional strategy to promote top-level research, being the only medium-sized university to achieve the latter. This resulted in a rise from 34th to 16th place as reported in the Funding Ranking 2009. During the period considered here the **University of Konstanz** also ranks at a comparable position (19th place; for details of the results of the decisions taken as part of the second programme phase in June 2012, refer to section 2.3.2).

Among the positions 21 to 30, the **University of Bremen** (21st place) and the **Hannover Medical School** (28th place) were particularly successful, Bremen rising by four and Hannover by three positions compared with the last previous ranking. One of the underlying reasons is these institutions' success in the Excellence Initiative. Other institutions rising in ranking include, between positions 31 and 40, the universities of **Regensburg**, which climbed six positions, and **Duisburg-Essen**, which moved up five places.

Figure 16 shows the total grants approved by the DFG as broken down by subject area, revealing how the success of individual HEIs is to be attributed to specialisations in highly differing areas.

Chapter 4 below presents a detailed analysis of rankings by scientific discipline. A summary table is available at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas) (Table 3-3).

### Funding Profiles – a Method for Analysing Similarities

The following section examines in greater detail the topic of developing a specialised profile. Figure 17 provides a visualisation of this phenomenon based on the DFG grants awarded to the top 40 HEIs. The visualisation was generated using an iterative algorithmic process developed at the Max Planck Institute for the Study of Societies in Cologne. The method makes it possible, by means of a representation of the percentage of grant approvals in the specific research areas, to compare the research profiles of the individual HEIs and to highlight similarities with the aid of graphics.

Specifically, the spheres represent research or funding areas, while the pie charts represent institutional funding recipients (HEIs). The size of the spheres (each labelled with an abbreviation indicating the area) varies commensurately with the amount of funding allocated to that research area. The amount of overall (cross-disciplinary) funding for each HEI is symbolised by the size of the pie chart representing the particular institution (HEI). The individual segments of the pie charts indicate the percentage of funding distributed to each research area at the particular HEI.

The two-dimensional arrangement of the funding area symbols and pie charts was optimised by performing several iterations in order to visually depict structural similarities

among the HEIs. The proximity of an HEI to a particular funding area correlates with a research focus in this funding area. Two institutions with similar research focuses (e.g. GEO for geosciences or ME for mechanical engineering) are also positioned as closely as possible to each other. In such cases the particular research focus might also be combined with entirely different research areas. Conversely, the more the research focuses of recipient institutions vary, the farther apart are the pie charts symbolising the institutions. HEIs with strongly defined research focuses are located along the fringes of the diagram.

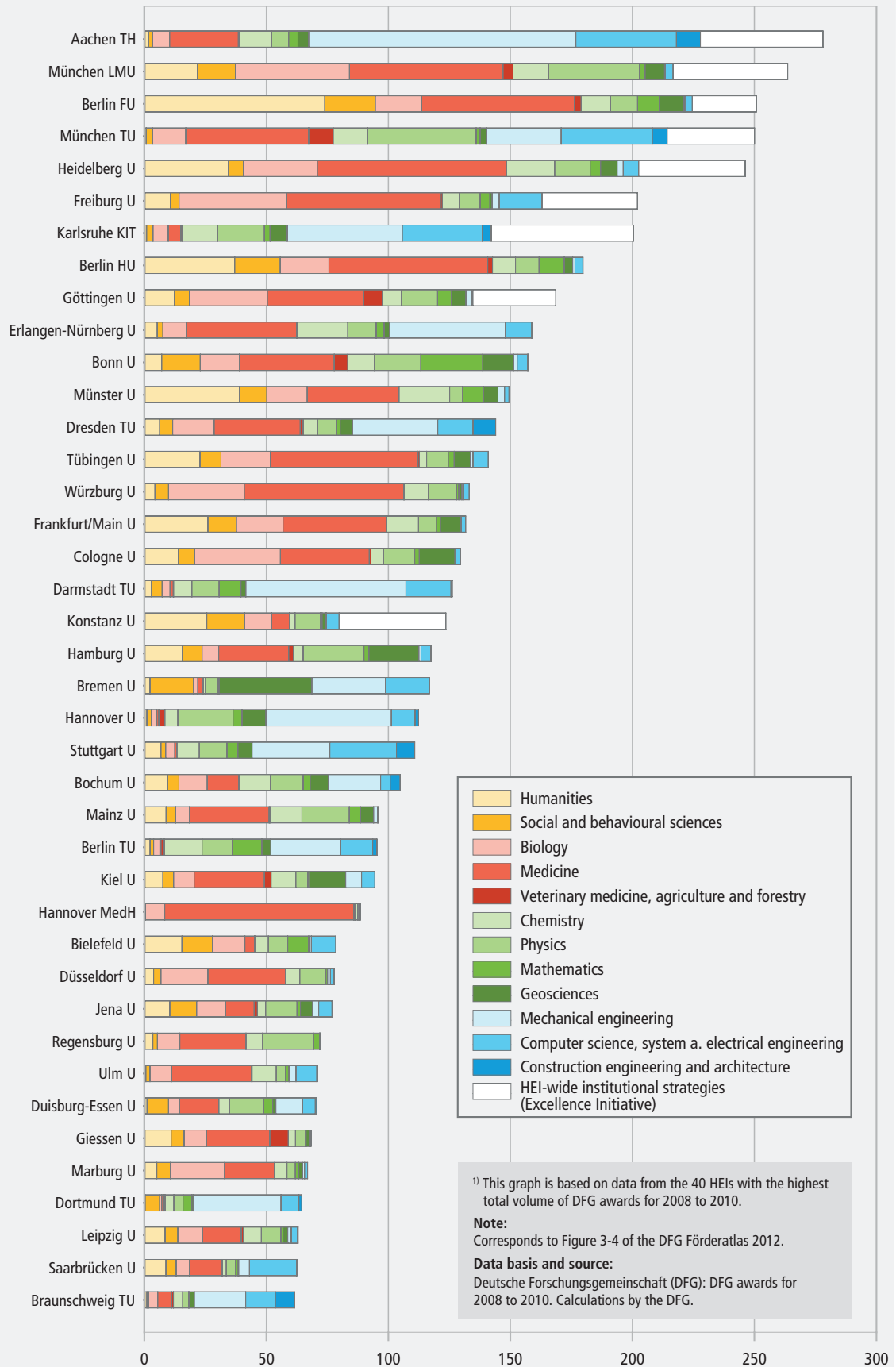
The results of the iteration process described above, as depicted in Figure 17, show the humanities and social sciences in shades of yellow in the right half of the chart and nearby the HEIs receiving a large percentage of DFG grants for research classified as belonging to this discipline. The research areas related to life sciences, symbolised by shades of red, along with the HEIs with a related specialisation are positioned mostly at the top and top right of the chart, while engineering sciences are shown in shades of blue at left. Physics and chemistry as natural science fields are displayed in green at centre: this indicates that these fields represent a focal subject of research funded by the DFG at most of the institutions depicted in the chart. Recipients of large amounts of funding for mathematics and geosciences are shown at the bottom of the figure.

When initially only the spheres representing research areas are considered, the size of the symbol for medicine stands out, indicating that this area receives the largest amount of DFG-approved grants (refer to Table A-9 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)). The second-largest research area, in terms of funding, includes subjects related to mechanical engineering, followed by biology. The largest pie charts, and correspondingly the recipients of the largest amounts of DFG-approved grants, can be recognised as the **RWTH Aachen** at left, the **LMU München** at the top, the **FU Berlin** at the upper right, and the **TU München** at the upper left.

The arrangement of the individual HEI profiles reveals a large number of HEIs with similar research focuses and subject portfolios. Structural similarities among HEIs are presented in the following by referring to several examples.

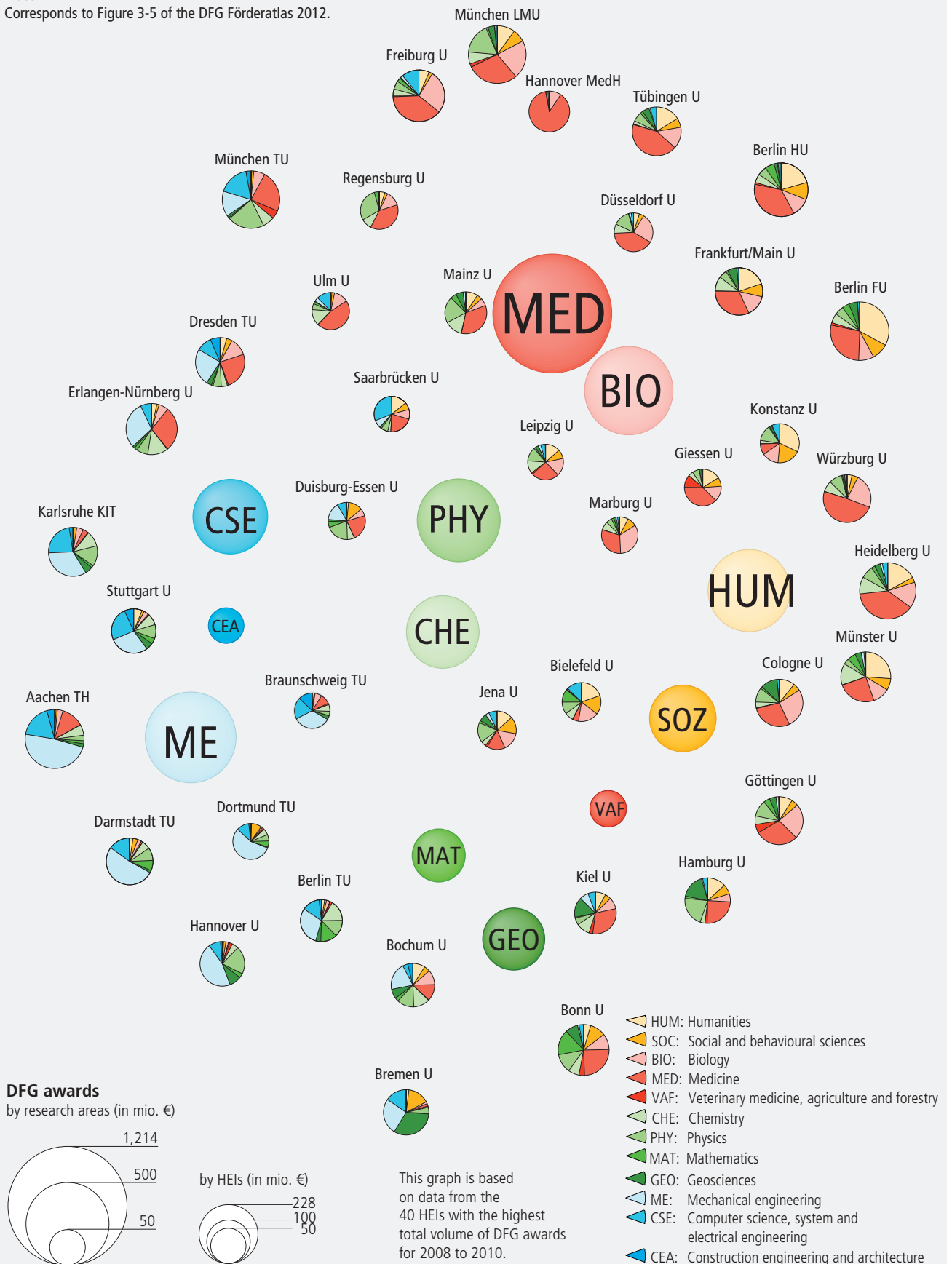
► **Example 1:** Similar profiles are seen for the universities **HU Berlin**, **Tübingen** and **Frankfurt am Main**, at the top right of the chart. Medicine and the related field of biol-

**Figure 16:**  
 DFG awards for 2008 to 2010 by HEI per research area (in millions of euros)<sup>1)</sup>



**Figure 17:**  
Funding profiles of HEIs: Subject map based on DFG awards (Ranks 1–40)

**Note:**  
Corresponds to Figure 3-5 of the DFG Förderatlas 2012.



ogy account for roughly half of total funding, while a second focus is found in humanities and social sciences and a third in natural sciences. Subjects related to engineering sciences are of almost no significance.

- ▶ **Example 2:** The HEIs **FU Berlin** and **Konstanz** are also similar yet, compared with the universities cited in Example 1, are aligned more with humanities and social sciences, with Konstanz in fact showing more than 50% of research in related fields.
- ▶ **Example 3:** Examples of universities aligned more with medicine and natural sciences are **Hamburg, Kiel** and **Bonn** (at the bottom right of the chart). Within the natural sciences, Hamburg and Kiel show a greater concentration on geosciences, while Bonn stands out in particular on account of its mathematical research. All three research locations were able to intensify their focuses as a result of the Excellence Initiative: Hamburg and Kiel through the geoscience Clusters of Excellence “*Integrated Climate System Analysis and Prediction*” and “*The Future Ocean*”; and Bonn through the Cluster of Excellence “*Mathematics: Foundations, Models, Applications*”.
- ▶ **Example 4:** The profiles of the technical universities of **Darmstadt** and **Dortmund**, at the bottom left of the chart, show a similar orientation towards engineering and natural science fields. More than 50% of the funding portfolio is accounted for in each case by mechanical engineering, and engineering science subjects amount to two thirds of all DFG grants.

Natural sciences, including physics, chemistry and mathematics, represent the second focus. Humanities and social sciences are represented to a minor extent but life sciences hardly at all. The engineering and natural sciences are represented more strongly and to an equal extent at the **TU Berlin** and the **Gottfried Wilhelm Leibniz Universität Hannover**. These institutions display a profile variant that features an engineering and natural science orientation with very minor shares in the other two scientific disciplines.

Figure 3-6, showing the HEIs at positions 41 to 80 of the funding approval ranking, is presented by way of a supplement at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas). The funding profiles for federal government funding and for the EU’s Seventh Framework Programme can be viewed by following the link above (Figures 3-7 and 3-8 and Tables A-36 and A-39).

## 3.2 Non-university Research Institutions

The non-university research institutions are a prominent feature of Germany’s science and research system. As introduced above in Chapter 2, this group includes the four major research organisations, specifically the **Fraunhofer-Gesellschaft (FhG)**, the **Helmholtz Association (HGF)**, the **Leibniz Association (WGL)** and the **Max Planck Society (MPG)**, in addition to a large number of **federal research institutions**. Altogether, the four main organisations, along with the federal institutes, constitute the great majority of the non-university research institutions, which received funding from the DFG, the EU and the federal government.

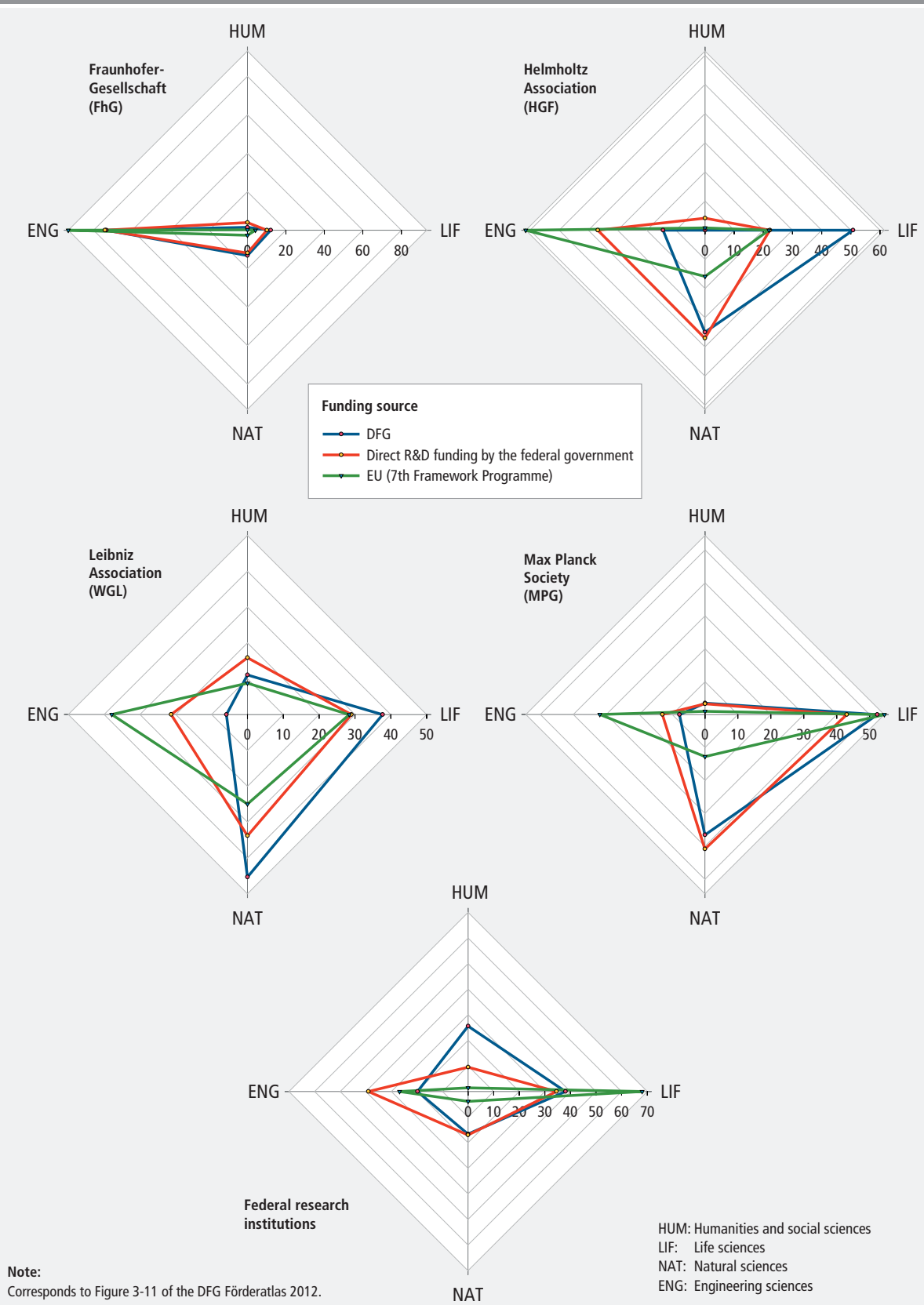
As can be seen from the funding statements of the four major research institutions, of the federal research institutions and of the other non-university research institutions, direct R&D funding by the federal government and the EU’s Seventh Framework Programme play a far more prominent role than funding by the DFG. During the 2008–2010 period, non-university research institutions received €2,164 million from the federal government, €856 million from the EU and €644 million by way of DFG funding programmes. Third-party funding by the EU has thus continued to gain prominence since the previous reporting period (refer to Table 3-4 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

Figure 18 presents a radar chart for each of the four research institutions and for the federal institutions, which show the research profiles of the non-university organisations with reference to the three funding sources DFG (blue), federal government (red) and EU (green). Each of the charts indicates the share of total funding provided to each of the scientific disciplines by the particular funding source, so that the four percentages at the corners of each of the quadrilaterals for the funding sources add up to 100%.

The figure shows clear differences among the profiles for the individual institutions.

- ▶ A more strongly varying pattern is seen for the **Helmholtz Association (HGF)**. The HGF centres with a focus on natural and engineering science research tend to receive more funding from the federal government and the EU, whereas HGF centres for research in biology and medicine draw more funding from the DFG. A total of 60% of EU funding is directed towards en-

**Figure 18:**  
 Research profiles of non-university research institutions in comparison:  
 funding by the DFG, federal government and EU by scientific disciplines (in percent)



**Note:**  
 Corresponds to Figure 3-11 of the DFG Förderatlas 2012.

**Data basis and sources:**  
 Federal Ministry of Education and Research (BMBF): Direct R&D project funding by the federal government 2008 to 2010 (project database PROFIL).  
 Deutsche Forschungsgemeinschaft (DFG): DFG awards for 2008 to 2010.  
 EU Office of the BMBF: Participation in the Seventh EU Framework Programme (Duration: 2007 to 2013, project data as of 16.03.2011).  
 Calculations by the DFG.

HUM: Humanities and social sciences  
 LIF: Life sciences  
 NAT: Natural sciences  
 ENG: Engineering sciences



gineering sciences, with the German Aerospace Center (DLR) receiving the largest amount (refer to Table A-40 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

- ▶ In the case of the **Leibniz Association (WGL)**, a large share of the funding provided by all three sources is dedicated to humanities and social sciences (DFG: 11%; EU: 9%; federal government: 16%). Compared with the other two research organisations previously mentioned, the WGL also has a broader range of research areas. From the DFG, the WGL predominantly receives grants for natural sciences (45%) and life sciences (38%). In contrast to this are the funding amounts awarded by the EU, the major portions of which go to the engineering sciences, and federal government funds, which are focussed on the natural sciences.
- ▶ At roughly 80 institutes, the **Max Planck Society (MPG)** conducts basic research, which is reflected in the above-average funding volumes awarded by the DFG (refer to Table 3-4 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)). The research focus of the third-party funding sourced by the MPG is on life sciences, which accounts for more than 40% of all funding from each of the three sources (refer to Table A-40 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

The DFG funding profiles for the federal institutions and the other institutions in the non-university sector also show large shares of funding for research in the humanities and social sciences. This is explained by the specific types of institutions making up this category. In the humanities and social sciences, on the one hand, the numerous museums, collections, academies, libraries and archives are the leading recipients of third-party funding. In contrast, it is primarily state institutions that benefit from third-party funding for the engineering sciences and non-university hospitals for the life sciences.

DFG funding awarded to federal institutions is distributed relatively evenly among all four scientific disciplines, whereas federal funding is focussed on the engineering and life sciences and EU funding is strongly concentrated on the life sciences.

The non-university research institutions listed below were especially successful during the 2008–2010 period in their bids for sourcing third-party funding from the DFG:

- ▶ **Fraunhofer Institute for Mechanics of Materials (IWM)**, Freiburg

- ▶ **Max Delbrück Center for Molecular Medicine (MDC)** of the Helmholtz Association, Berlin, and the **Helmholtz Centre (HMGU)**, Munich
- ▶ **Leibniz Institute of Marine Sciences (IFM GEOMAR)**, Kiel
- ▶ **Max Planck Institute for Biophysical Chemistry, Karl Friedrich Bonhoeffer Institute**, Göttingen
- ▶ **Laser Zentrum Hannover e.V. (LZH)** (refer to Table A-20 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

The non-university institutions listed below acquired substantial amounts of federal government project funding, which at a volume of €2.2 billion is particularly significant for such institutions:

- ▶ **Fraunhofer Institute for Solar Energy Systems (ISE)**, Freiburg
- ▶ **German Aerospace Center of the Helmholtz Association (DLR)**, Cologne
- ▶ **Leibniz Institute of Plant Genetics and Crop Plant Research (IPK)**, Gatersleben, Saxony-Anhalt
- ▶ **Max Planck Institute for Solar System Research**, Katlenburg-Lindau, Lower Saxony
- ▶ **Gauss Centre for Supercomputing**, Berlin (refer to Table A-37 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

Non-university research institutions were also highly effective in obtaining grants from the funding lines of the EU's Seventh Framework Programme. The following institutions deserve particular mention in this regard:

- ▶ **Fraunhofer Institute for Telecommunications, Heinrich Hertz Institute (HHI)**, Berlin
- ▶ **German Aerospace Center of the Helmholtz Association (DLR)**, Cologne
- ▶ **Potsdam Institute for Climate Impact Research (PIK)** of the Leibniz Association
- ▶ **Max Planck Institute of Molecular Cell Biology and Genetics**, Dresden
- ▶ **European Molecular Biology Laboratory (EMBL)**, Heidelberg (refer to Table A-40 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

### 3.3 Regional Research Profiles

Whereas each of the previous sections examined research activities at HEIs and non-university institutions separately, the section below provides in conclusion a summary from

the perspective of the individual regions in which these research institutions are based. This view highlights regions that are particularly active in competing for third-party funding. Differentiations are also made according to research area and field, additionally enabling a comparison of the specific profiles identified for the various regions. The presentation of the regions is based on data pertaining to third-party funding that was approved for specific research topics and fields by the DFG or by the project funding programmes of the federal ministries (federal government).

### Regional Research Focuses of DFG Funding

Figure 19 shows the regional distribution of DFG funding. Taken together, the locations depicted account for almost all of the DFG grants awarded to research institutions in Germany. At first glance **Berlin** and **Munich** are easily identified as the regions awarded the most DFG funding. The HEIs and non-university research institutions in Berlin received funding amounting to more than €630 million, while the city and region of Munich as a whole acquired a comparable amount. Examples of other regions worth mentioning in this regard are **Rhine-Neckar** and **Rhine-Main**. Regions in south-west Germany, one centred around **Mannheim, Heidelberg** and **Karlsruhe**, and the other taking in **Darmstadt, Frankfurt, Giessen, Mainz** and **Marburg** each received more than €500 million in DFG grants during the three years considered here.

In addition to total funding, each of the pie charts in Figure 19 differentiates the grants approved according to the share allotted to individual research areas, thus providing significant indications of the research focuses of the regions. **Berlin-Potsdam** may be highlighted here as an interesting example of a regional research profile, in this case heavily dominated by the life sciences and natural sciences, but also covering humanities research to a notable extent. Examples of regions clearly focussed on the geosciences are the north German city states of **Bremen** and **Hamburg** as well as the city of **Kiel**.

The three technical universities within the “Saxony Triangle” **Dresden, Freiberg** and **Chemnitz**, together with their neighbouring non-university research institutions,

dominate the region’s research profile primarily through the areas of mathematics, computer science, natural sciences and engineering.

**Heidelberg** is an example of a location for life sciences, where the research institutions include the DKFZ, EMBL and the Heidelberg University. These institutions account for the major share of the €272 million in DFG funding volume shown in Figure 19 for the Heidelberg region, about half of which is granted for research projects related to biomedicine.

The area including **Aachen, Bonn** and **Cologne**, referred to as the ABC region, continues to prove highly active in acquiring DFG funding. The DFG approved a total of €611 million for research institutions in this region, which includes the area around Düren, home of the Jülich Research Centre (FZJ).

### Regional Federal Government Funding of the Private Sector According to Industry

To supplement the representation of DFG grants above, focussed especially on HEIs and non-university research institutions, a comparable map is presented below in Figure 20, showing the regional distribution of federal government funding to the industrial and commercial sectors, which amounted to a total of €2.3 billion during the 2008–2010 period.

**Munich** and **Stuttgart** can be easily identified here as the regions receiving the largest amounts of this type of funding. For research projects conducted at or near these cities, a total of €315 million (Munich) and €258 million (Stuttgart) was provided from the R&D funding considered here, while during the same period the German capital of **Berlin** as well as **Dresden** and **Hamburg** acquired funding amounting to between €91 million and €131 million.

Important supplementary information to the total volumes per location as shown by Figure 20 is provided through differentiating R&D funding according to the various recipient industries, also seen in that figure. The classification of industries used here is based on that of the Federal Statistical Office.

In a way similar to the profile analyses of selected research institutions presented above, this break-down makes it possible to draw

**Figure 19:**  
Regional distribution of DFG awards for 2008 to 2010 by funding areas

**Notes:**

This calculation is based on awards to HEIs, non-university research institutions and private persons in Germany. Districts with an award volume of more than €10 million in the reporting period are shown here. Specific urban agglomerations, cities and associated administrative districts have been grouped together to enhance the presentation of this data.

**Note:**

Corresponds to Figure 3-13 of the DFG Förderatlas 2012.

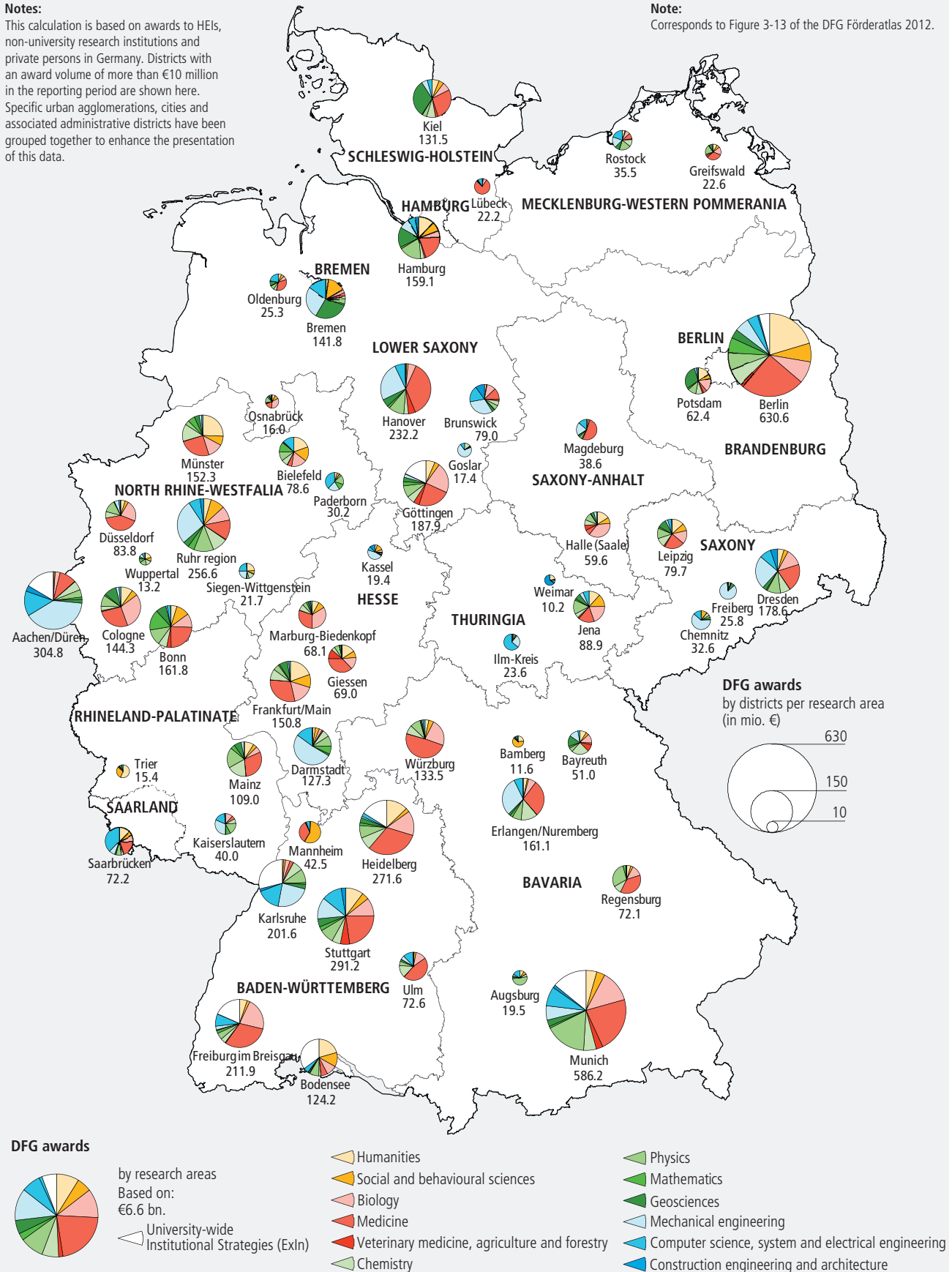


Figure 20:

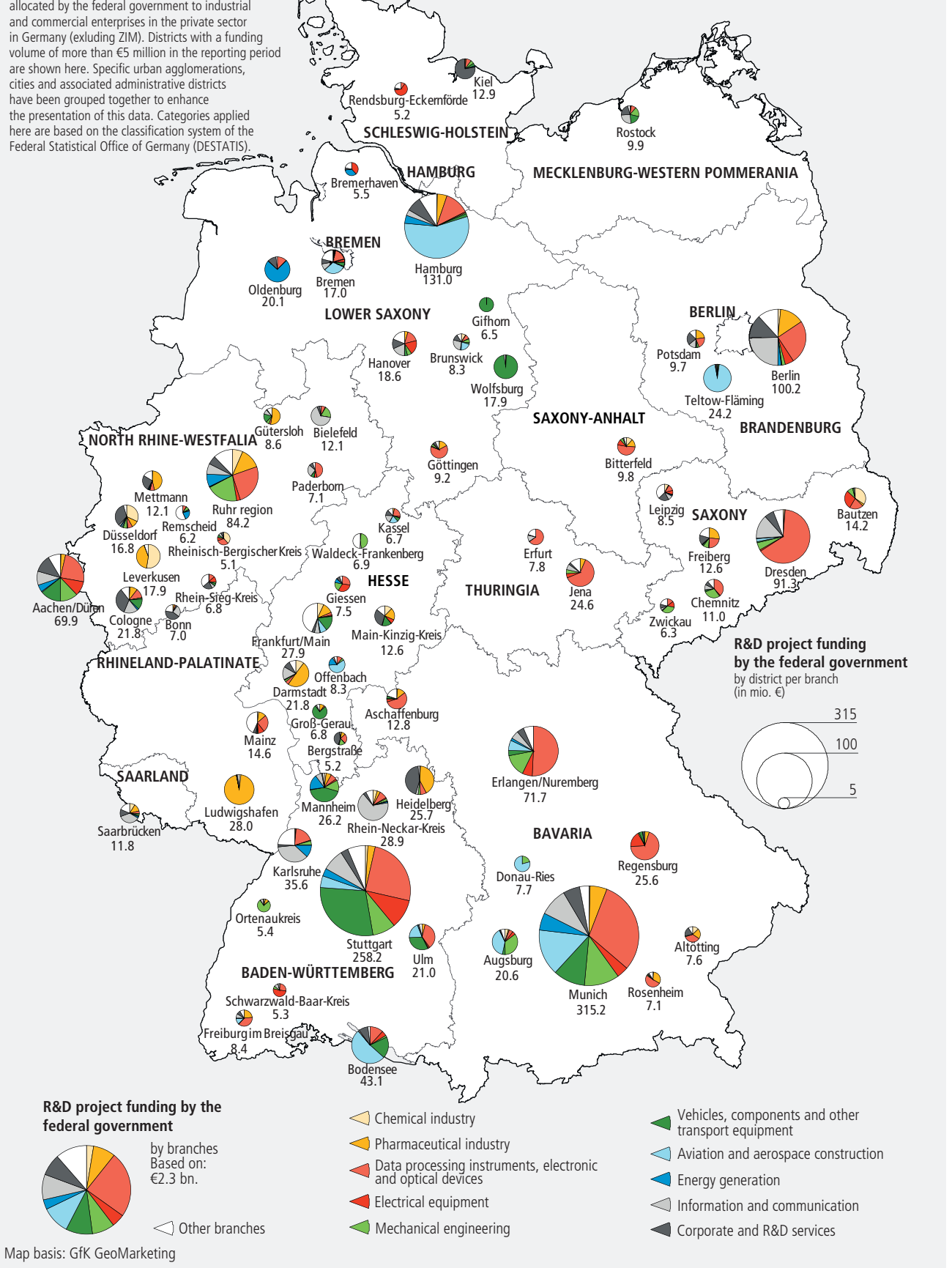
Regional distribution of R&D project funding by the federal government in the industrial and commercial sectors 2008 to 2010 by funding areas

**Notes:**

This calculation is based on R&D funding allocated by the federal government to industrial and commercial enterprises in the private sector in Germany (excluding ZIM). Districts with a funding volume of more than €5 million in the reporting period are shown here. Specific urban agglomerations, cities and associated administrative districts have been grouped together to enhance the presentation of this data. Categories applied here are based on the classification system of the Federal Statistical Office of Germany (DESTATIS).

**Note:**

Corresponds to Figure 3-12 of the DFG Förderatlas 2012.



conclusions regarding the focuses in terms of subject area that were funded in the corresponding regions.

The specific funding profiles for the regions of **Berlin**, **Dresden** and **Hamburg** reveal clear differences in terms of specialisation, whereas for the regions of **Munich** and **Stuttgart** a broader range of industries are seen to participate in federal project funding programmes.

At almost 50% of total funding, industries related to information technology receive the largest share of federal funding in **Berlin**. The pharmaceutical industry, together with R&D service companies with a strong focus on research in biotechnology and medicine accounts for another major portion of the region's funding profile.

This contrasts with the **Hamburg** region, where more than half of the total acquired funding of €131 million goes to the aviation and aerospace industry.

Another region displaying a strong emphasis is **Heidelberg**, which is specialised in life sciences through the presence of the German Cancer Research Centre (DKFZ), the European Molecular Biology Laboratory (EMBL) and of several industrial and pharmaceutical firms based in the region.

**Dresden's** funding profile reveals the special focus placed in this region on the chip industry and on the manufacturing of electronic components. This sector accounts for a good two thirds of all funding.

The funding programmes for the **Munich** region are also aimed at industries related to information technology to a large extent relative to overall funding. As in **Stuttgart**, vehicle manufacturing also plays a strong role here. Large portions of funding can also be observed as flowing to the aviation and aerospace industries in the Munich region.

The map reveals a number of additional research focuses among more minor locations in Germany. Only a few examples are pointed out here, including **Ludwigshafen** and **Leverkusen**, which show a special focus on the pharmaceutical and chemical industries, **Jena** (the "City of Light"), where the focus is on the optical engineering industry, and the automotive centre of **Wolfsburg** in Lower Saxony, which is specialised in vehicle manufacturing. In this way the perspective of individual industries that is applied in the representation also serves to reveal the most important centres for any one industrial sector. In the case of the aviation and aerospace industry, apart from the regions of **Hamburg** and **Munich** mentioned above, Figure 20 also shows the specialised clusters around **Bodensee** and in **Berlin-Brandenburg**, for example.

On the whole the map reveals a landscape that is relatively differentiated, with a wide range of small, medium-sized and large centres, each more or less specialised, which are distributed throughout all of Germany.

## 4 Research Profiles by Scientific Discipline

The following chapter details the profiles of HEIs and non-university research institutions in terms of specialisation and research topic and also discusses collaboration among these institutions within the space of networks spanning institutions. The profile analysis is based on those research activities that are supported by third-party funds provided by the DFG, the German federal ministries and by the European Union. Data on personal funding is additionally taken into account as provided by the European Research Council (ERC), the Alexander von Humboldt Foundation (AvH) and by the German Academic Exchange Service (DAAD; refer to sections 2.3.4–2.3.7).

### Observations Related to Research Area Are Made for Specific Funding Sources

As in the previous editions of the Funding Ranking, the analysis of the research focuses offered in this Funding Atlas is based on data provided by the research funding bodies. The research area or subject area to which the funding source has assigned the specific project is referred to here when examining subject area. This method offers the advantage of allowing a simple nationwide comparison of the reviewed institutions, specifically enabling this analysis of funding by source without having to survey in detail the HEIs and non-university research institutions included in the analysis.

The chapter is structured along the lines of the four scientific disciplines, i.e. humanities and social sciences, life sciences, natural sciences and engineering sciences.

The main part of the analysis is concerned with the subject areas, which the particular HEIs active in one scientific discipline emphasise in the course of their funding activities as considered in this study. For the DFG grants, these subject areas are identified for the 40 HEIs receiving the most funding in each case and represented in the form of subject maps.

In this context, reference is made to the third level within the DFG classification system, which differentiates 48 research fields that correspond to the DFG's review boards (refer to Table 2-3 and Table A-7 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas) and to section 2.3.1).

### More Details at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)

The Glossary of Methodological Terms, available at the website [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas), details the data and methods underlying the statistics. Cartographic representations can also be found at this link, which depict the networks, spanning all of Germany, that have been formed among HEIs and non-university research institutions as a result of the DFG-funded cooperation programmes.

Also available there are tables in English listing the detailed results of analyses performed at the research-area level as contained in the German edition of the DFG Funding Atlas 2012. The website offers detailed information on DFG grants for a large number of HEIs and non-university research institutions. Notes concerning more detailed information and data in each case are found at the end of the following sections discussing the individual scientific disciplines.

### 4.1 Humanities and Social Sciences

The humanities and social sciences account for more than one third of the professors working in all the scientific institutions in Germany. Moreover, an especially large number of HEIs and non-university research institutions are involved in research in this scientific discipline (refer to Table A-3 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

For a long time the humanities and social sciences have been regarded as rather beyond

the scope of third-party funding. A survey of professors, carried out by the Institute for Research Information and Quality Assurance (iFQ) on behalf of the DFG, afforded an opportunity to question this notion. When asked about their proposal activities in the previous five years, 85% of respondents among economic and social scientists and 79% of those classified as humanities researchers indicated having submitted at least one proposal for third-party funding entailing funds amounting to more than €25,000. The DFG was identified in this context as the “primary source of third-party funding” (as for all other research areas; refer to Böhmer et al., 2010: 36ff).

Statistics compiled by the DFG itself provide additional evidence for the fact that, for all research areas, about two out of three university professors submitted at least one proposal to the DFG during a five-year period (2006–2010). The percentage for the humanities is about 50% and roughly 45% for the social and behavioural sciences. While these shares are below average, they hardly support the argument of this discipline being beyond the scope of third-party funding. It has become usual also for researchers in the humanities and social sciences to compete for third-party funding, even if the amount of third-party funding per capita is less than in other scientific disciplines (refer to Table A-6 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

### DFG – the Largest Single Funding Body for the Humanities and Social Sciences

For research areas classified under this scientific discipline, the DFG awarded a total of more than €950 million in funding to HEIs and non-university research institutions in Germany during the 2008–2010 period. Compared with this, at just under €20 million, the amount of funding acquired by German research institutions involved in the humanities and social sciences programmes of the EU’s Seventh Framework Programme is relatively minor. Higher education institutions and non-university research institutions were able to acquire a total of €452 million from the federal ministries (refer to Table 4-1 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)). The DFG is thus one of the principal sources of income for research projects in the humanities and social sciences that are funded by third parties. The focus of DFG funding within these activities is

on HEIs. About 93% of the grants for humanities and social sciences research were awarded to HEIs (refer to Table 4-1 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

### In the Non-university Sector, the Leibniz Association (WGL) and the Max Planck Society (MPG) as well as Federal Research Institutions Are Especially Active

Among non-university research institutions, the **MPG**, the **WGL** and the **federal research institutions** play a prominent role. Institutes belonging to the **WGL** received roughly €19 million in DFG grants for projects classified under this scientific discipline during the period under review (2008–2010). The **WGL** institutes are also among the most active non-university research institutions in terms of obtaining third-party funding from other sources. The main federal institutions participating in DFG funding are the **German Archaeological Institute (DAI)** and the **Foundation of German Humanities Institutes Abroad (DGIA)**.

The largest percentage of funding to non-university research institutions is accounted for by institutions that are neither federal institutions nor members of the major research organisations. Specifically, more than €28 million is distributed among numerous **libraries, archives, museums and collections** as well as to the **Academies of Sciences and Humanities**. Examples of larger DFG funding recipients include: the **Berlin-Brandenburg Academy of Sciences and Humanities (BBAW)**, the **Prussian Heritage Foundation** and the **Humanities Research Centres (GWZ)**, all of which are located in Berlin. More details about the funding acquired by specific non-university research institutions from the DFG, the federal government and the EU, broken down by research area, are provided in Tables A-20, A-37 and A-40 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas).

### Berlin – a Prominent Region for Humanities and Social Sciences Research

Among the 20 HEIs that received the largest amounts of grants for humanities and social sciences research, the Berlin region plays a prominent role (refer to Table 5). The table

lists the 20 HEIs receiving the largest amounts in DFG funding for the humanities and social sciences, on the one hand in terms of absolute amount and also relative to staff size. At the top of the list of HEIs receiving the largest absolute amount of funding is the **FU Berlin** (with a substantial lead at €95 million), immediately followed by the **HU Berlin** (at €56 million) and the universities of **Münster**, **Konstanz** and **Heidelberg**.

The two universities in Berlin not only lead the ranks of the most successful HEIs in terms of absolute funding (due to their size), they are also found at prominent positions when ranked according to funding relative to staff numbers. Both in terms of funding relative to

the number of professors and to total research staff, the **FU Berlin** places second overall, with only the **University of Konstanz** achieving a superior ranking.

Another observation worth noting is the large degree of agreement between rankings in absolute terms and those relative to staff size: of the ten HEIs receiving the largest absolute amount of grants, seven are also among the top ten when ranked according to professorial staff. The listing in terms of funding relative to staff size additionally reveals several locations where small departments are active in humanities and social sciences research. One example is the **University of Stuttgart**, which successfully competed for €200,000 in grants per pro-

Table 5:

DFG awards for 2008 to 2010 in absolute figures and relative to size by HEI in the humanities and social sciences

DFG funding (absolute)		DFG funding <sup>1)</sup> relative to size					
Higher education institution	Total	Higher education institution	Professorial staff		Higher education institution	Researchers	
	Mio. €		No.	T € per prof.		No.	T € per res.
Berlin FU	94.6	Konstanz U	98	420.4	Konstanz U	524	78.4
Berlin HU	55.7	Berlin FU	289	326.7	Berlin FU	1,410	67.1
Münster U	50.2	Heidelberg U	175	231.0	Berlin HU	1,184	47.0
Konstanz U	41.1	Münster U	230	218.5	Heidelberg U	948	42.7
Heidelberg U	40.5	Stuttgart U	43	200.5	Tübingen U	766	41.0
Frankfurt/Main U	37.7	Berlin HU	284	195.8	Bielefeld U	726	38.3
München LMU	37.4	Bielefeld U	145	191.7	Münster U	1,382	36.3
Tübingen U	31.4	Mannheim U	115	182.7	Frankfurt/Main U	1,164	32.4
Bielefeld U	27.8	Tübingen U	184	170.4	Bremen U	690	29.3
Hamburg U	23.7	Bremen U	124	162.9	Bonn U	801	28.6
Bonn U	22.9	Jena U	159	134.6	Darmstadt TU	270	27.0
Jena U	21.4	Frankfurt/Main U	283	133.2	Jena U	805	26.6
Mannheim U	21.0	Saarbrücken U	99	130.9	Saarbrücken U	492	26.5
Cologne U	20.6	Darmstadt TU	57	127.3	Stuttgart U	331	26.3
Bremen U	20.2	Bonn U	186	122.9	Mannheim U	869	24.2
Göttingen U	18.4	München LMU	312	119.7	Giessen U	686	23.7
Giessen U	16.3	Freiburg U	127	111.9	Göttingen U	783	23.6
Freiburg U	14.2	Giessen U	150	108.5	München LMU	1,662	22.5
Bochum U	14.2	Potsdam U	117	105.4	Trier U	585	22.3
Halle-Wittenberg U	13.8	Trier U	126	103.8	Halle-Wittenberg U	655	21.0
<b>Ranked 1-20</b>	<b>623.1</b>	<b>Ranked 1-20</b>	<b>3,305</b>	<b>167.7</b>	<b>Ranked 1-20</b>	<b>16,732</b>	<b>35.4</b>
<b>HEIs overall</b>	<b>893.5</b>	<b>HEIs overall</b>	<b>18,777</b>	<b>47.6</b>	<b>HEIs overall</b>	<b>58,151</b>	<b>15.4</b>

<sup>1)</sup> Only HEIs which employed more than 30 professors and/or 150 researchers in the scientific discipline under consideration during 2009 were included within the scope of this calculation.

**Note:**

Abridged excerpt from Table 4-2 of the DFG Förderatlas 2012. Table 4-2 in its complete form, with the 40 HEIs receiving the most funding in 2008-2010, is available in English at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas).

**Data basis and sources:**

Deutsche Forschungsgemeinschaft (DFG): DFG awards for 2008 to 2010.

Federal Statistical Office of Germany (DESTATIS): Education and culture. Personnel at HEIs, 2009. Special analysis of Subject-Matter Series 11, Series 4.4.

Calculations by the DFG.



fessor in the scientific discipline examined here, and thus placed among the ten most successful HEIs as rated by per capita funding.

### Berlin – a Highly Attractive Destination for Researchers Visiting from Abroad

Berlin also enjoys an excellent international reputation for the humanities and social sciences, which is evidenced by the number of researchers visiting from abroad who choose to work there. Both in the case of visiting researchers funded by the Alexander von Humboldt Foundation (AvH) and of those receiving grants from the German Academic Exchange Service (DAAD), the largest number by far are attracted to one of Berlin's universities, either the **FU Berlin** or the **HU Berlin**. Among AvH funding recipients, the **LMU München, Cologne and Heidelberg** follow, and for DAAD recipients **Leipzig, Kassel** and the **LMU München** (refer to Tables 4-4, A-41 and A-42 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

### Specialised Profile Development within DFG-funded Humanities and Social Sciences Research

Figure 21 shows the funding profiles of the 40 HEIs that succeeded in acquiring the highest absolute amount of grants from the DFG, differentiated according to 13 research fields. The representation allows more specific identification of the research focuses that were defined by the HEIs for DFG-funded projects in the humanities and social sciences. A particular strength of this form of representation is that it also allows recognition of the special combination of research areas that is typical for any one HEI and that distinguishes it from others or, in certain cases, makes it comparable to others in specific ways as well.

Due to methodological considerations, the funds received as part of the Excellence Initiative are not taken into account in this figure or in the following detailed representations for the other scientific disciplines.

An analysis of the profiles results in a highly differentiated picture. Positioned at the top of the map, the **University of Mannheim** can be recognised as an HEI that receives DFG funding to a very large degree for social sciences research, and it is also very active in economics.

It is this particular combination that enhances the international visibility of this relatively small university specialised in economics and social sciences. The high ranking of the **University of Stuttgart** (at the right of the map) in terms of funding relative to staff number is to be attributed mainly to successful bids for linguistics research funding. In contrast, the special position that the **University of Bremen** (at left) occupies within the scientific discipline examined here is to be accounted for by its efforts to obtain third-party DFG funding for projects with a strong social sciences focus.

Among most of the major universities involved in the scientific discipline discussed here, a combination of research areas covering the entire spectrum can be seen to predominate. Yet, specialisation can be seen among these cases as well: a focus on linguistics can be identified for **Hamburg; Tübingen** applies for a relatively large amount of DFG funding for research projects in the field of ancient cultures; and in **Münster**, and similarly in **Jena** and **Bielefeld**, historical research accounts for an above-average proportion of total grants approved.

Tables listing the results of the detailed analysis for specific research fields within the humanities and the social and behavioural sciences are available at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas) (Tables 4-5 and 4-6). The figures serving as the basis for the map as well as the data on the DFG-funded HEIs not depicted are also available at this link (Table A-10). A cartographic representation continues to be provided, which depicts the networks, spanning all of Germany, that have been formed among HEIs and non-university research institutions as a result of the DFG-funded cooperation programmes in the scientific discipline of the humanities and social sciences (Figure 4-1 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

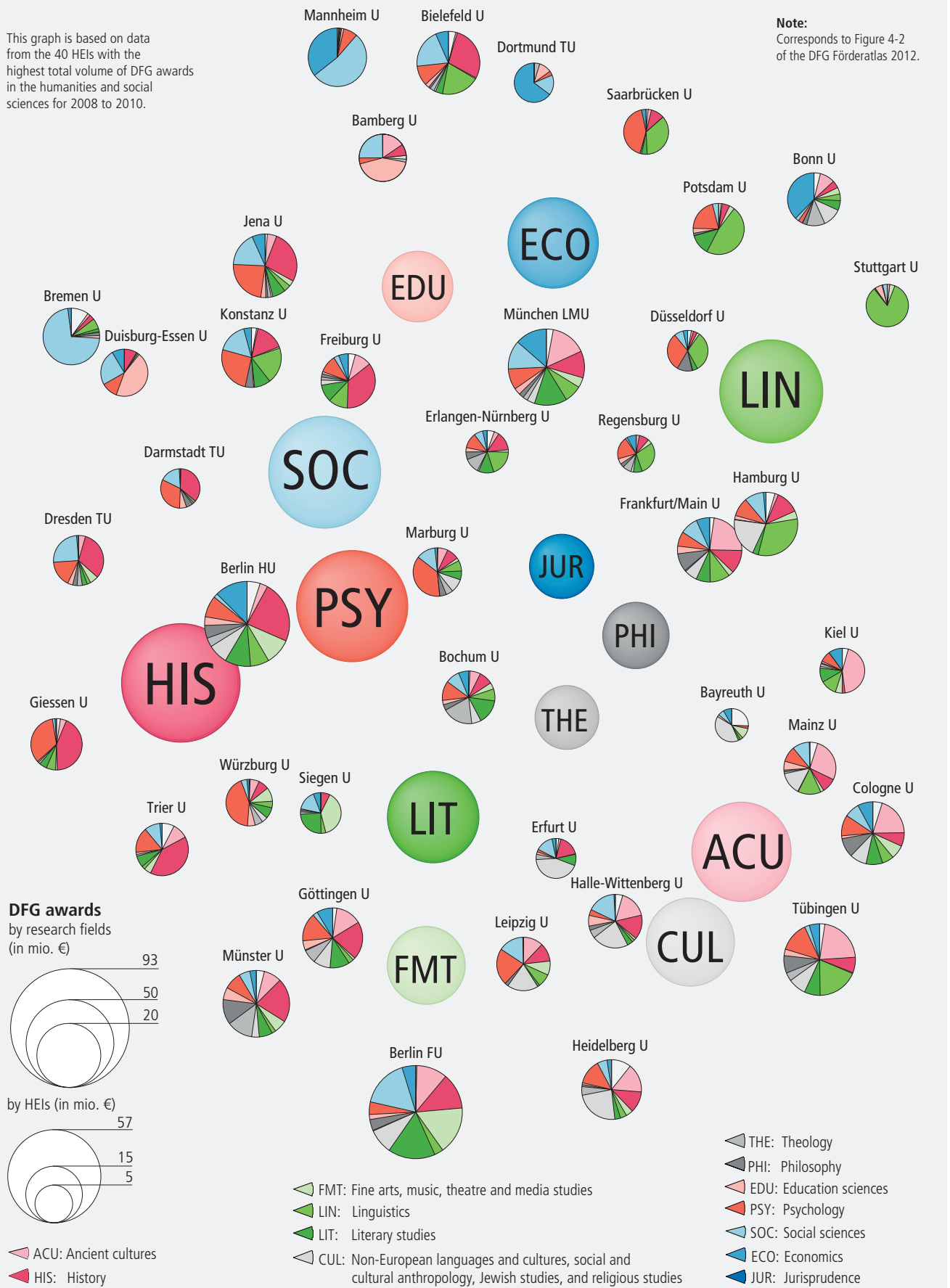
## 4.2 Life Sciences

The life sciences clearly represent the largest scientific discipline funded by the DFG. During the 2008–2010 period, the DFG approved grants totalling almost €2.3 billion for research projects in the life sciences at HEIs and non-university research institutions. For projects in the funding areas of health, food, agriculture, fisheries and biotechnology, the EU remitted a total of more than €305 million to German research institutions under the Sev-

**Figure 21:**  
Funding profiles of HEIs: Subject map based on DFG awards in the humanities and social sciences

This graph is based on data from the 40 HEIs with the highest total volume of DFG awards in the humanities and social sciences for 2008 to 2010.

**Note:**  
Corresponds to Figure 4-2 of the DFG Förderatlas 2012.



enth Framework Programme as calculated for a three-year period. The federal government provided research funding totalling €1.2 billion for life sciences projects, specifically in the fields of health and nutrition as well as biotechnology and related funding areas, at HEIs and non-university research institutions during the period under review (refer to Table 4-7 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

### HEIs at the Focus of DFG, Federal Government and EU Funding

The majority of the funds allocated to German institutions by these three funding sources went to the HEIs and specifically to universities. The 89% share of DFG grants awarded to universities was normal for the DFG. The comparable percentages for the federal government and the EU were 65% and 58% (refer to Table 4-7 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

Within the non-university sector, the **Max Planck Society (MPG)** was particularly active in obtaining DFG funding, while institutes belonging to the **Helmholtz Association (HGF)** and the **Leibniz Association (WGL)** also made bids for large amounts of funding. Apart from the **MPG** and the **HGF**, **federal institutions** also participate strongly in EU programmes, an example being the European Molecular Biology Laboratory (EMBL) in Heidelberg, which is also classified as a federal facility according to the Funding Atlas scheme. A summary of funding to non-university research institutions by the DFG, the federal government and the EU are provided in Tables A-20, A-37 and A-40 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas).

### HEIs Receiving the Most DFG Funding for the Life Sciences – in Absolute and Relative Terms

Table 6 lists the 20 HEIs receiving the largest amounts of DFG funding, in absolute terms as well as relative to the number of professors and total research staff, for the 2008–2010 period. Leading the ranking according to absolute funding received, and placing relatively close together, are the universities **LMU München**, **Freiburg** and **Heidelberg**. These HEIs, along with four others placing among the best ten, are also found among the top ten when ranked relative to the number of professors (six of the ten relative to the total size

of research staff). Other institutions that were highly successful in the life sciences when ranked according to funding relative to the number of professors were **Würzburg**, **Tübingen** and the **Hannover Medical School**.

### Göttingen Very Popular among DAAD and AvH-funded Visiting Researchers

The **LMU München**, which leads among HEIs receiving DFG grants, is also a particularly attractive location for research stays among AvH funding recipients. The universities of **Göttingen**, **Bonn** and **Heidelberg** are found at positions close behind in this regard. Among DAAD recipients, **Göttingen** leads the ranks, whereas the **HU Berlin** and the **University of Hohenheim** follow in this case. The latter phenomenon can be best explained with reference to visiting researchers active in the fields of veterinary medicine and agricultural and forestry sciences (refer to Tables A-41 and A-42 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

### Specialised Profile Development within DFG-funded Life Sciences Research

Figure 22 shows the research focuses of the 40 HEIs receiving the largest amount of DFG funding, here again depicted in the form of a graph based on profile analysis. The HEIs have been plotted within a landscape described by the seven research areas within the life sciences, as distinguished by the DFG, and are positioned according to the DFG-funded research focus in each case.

For the majority of the HEIs shown in Figure 22, the focus is on research in fields classified in the area of medicine, specifically microbiology, virology and immunology (MVI), medicine (MED), and neurosciences (NEU). Research in the field referred to as foundations of biology and medicine (FBM), which is also the name of the corresponding review board, predominates at the HEIs positioned at the lower left of the map, specifically, **Frankfurt am Main**, **Düsseldorf**, **Marburg**, **Cologne**, **Halle-Wittenberg** and **Bochum**, in addition to the universities of **Freiburg** and **Göttingen** as well as the **LMU München**, which are shown at right.

The locations at the upper right are for the most part HEIs, which include the research field of veterinary medicine, horticulture, ag-

Table 6:

DFG awards for 2008 to 2010 in absolute figures and relative to size by HEI in the life sciences

DFG funding (absolute)		DFG funding <sup>1)</sup> relative to size					
Higher education institution	Total	Higher education institution	Professorial staff		Higher education institution	Researchers	
	Mio. €		No.	T € per prof.		No.	T € per res.
München LMU	113.7	Freiburg U	144	749.5	Bielefeld U	291	60.0
Freiburg U	107.9	Würzburg U	146	661.1	Würzburg U	1,892	51.0
Heidelberg U	107.9	Tübingen U	124	657.6	Bochum U	513	48.5
Würzburg U	96.5	Hannover MedH	136	632.4	Hannover MedH	2,047	42.0
Berlin HU	87.0	Cologne U	118	610.4	Cologne U	1,826	39.5
Hannover MedH	86.0	Heidelberg U	206	524.4	Göttingen U	2,042	38.7
Berlin FU	84.5	München TU	145	512.2	Frankfurt/Main U	1,608	38.3
Tübingen U	81.2	Frankfurt/Main U	123	500.7	Freiburg U	2,841	38.0
Göttingen U	79.0	München LMU	239	476.4	Tübingen U	2,198	37.0
München TU	74.1	Dresden TU	116	462.2	Berlin HU	2,435	35.7
Cologne U	72.2	Düsseldorf U	110	462.0	Berlin FU	2,441	34.6
Frankfurt/Main U	61.6	Berlin HU	188	461.7	Hohenheim U	593	33.8
Bonn U	60.4	Bielefeld U	38	456.2	Heidelberg U	3,206	33.6
Erlangen-Nürnberg U	55.2	Bochum U	56	441.0	München TU	2,266	32.7
Münster U	54.2	Berlin FU	193	437.5	Dresden TU	1,650	32.4
Dresden TU	53.5	Ulm U	97	431.4	Marburg U	1,353	31.7
Düsseldorf U	50.9	Göttingen U	185	427.1	München LMU	3,684	30.9
Marburg U	42.8	Lübeck U	67	388.3	Potsdam U	298	30.3
Giessen U	42.7	Marburg U	112	384.2	Erlangen-Nürnberg U	1,860	29.7
Ulm U	41.8	Erlangen-Nürnberg U	148	374.0	Düsseldorf U	1,722	29.6
<b>Ranked 1-20</b>	<b>1,453.2</b>	<b>Ranked 1-20</b>	<b>2,690</b>	<b>507.1</b>	<b>Ranked 1-20</b>	<b>36,768</b>	<b>36.0</b>
<b>HEIs overall</b>	<b>2,015.6</b>	<b>HEIs overall</b>	<b>6,074</b>	<b>331.9</b>	<b>HEIs overall</b>	<b>69,195</b>	<b>29.1</b>

<sup>1)</sup> Only HEIs which employed more than 30 professors and/or 250 researchers in the scientific discipline under consideration during 2009 were included within the scope of this calculation.

**Note:**

Abridged excerpt from Table 4-8 of the DFG Förderatlas 2012. Table 4-8 in its complete form, with the 40 HEIs receiving the most funding in 2008-2010, is available in English at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas).

**Data basis and sources:**

Deutsche Forschungsgemeinschaft (DFG): DFG awards for 2008 to 2010.

Federal Statistical Office of Germany (DESTATIS): Education and culture. Personnel at HEIs, 2009. Special analysis of Subject-Matter Series 11, Series 4.4.

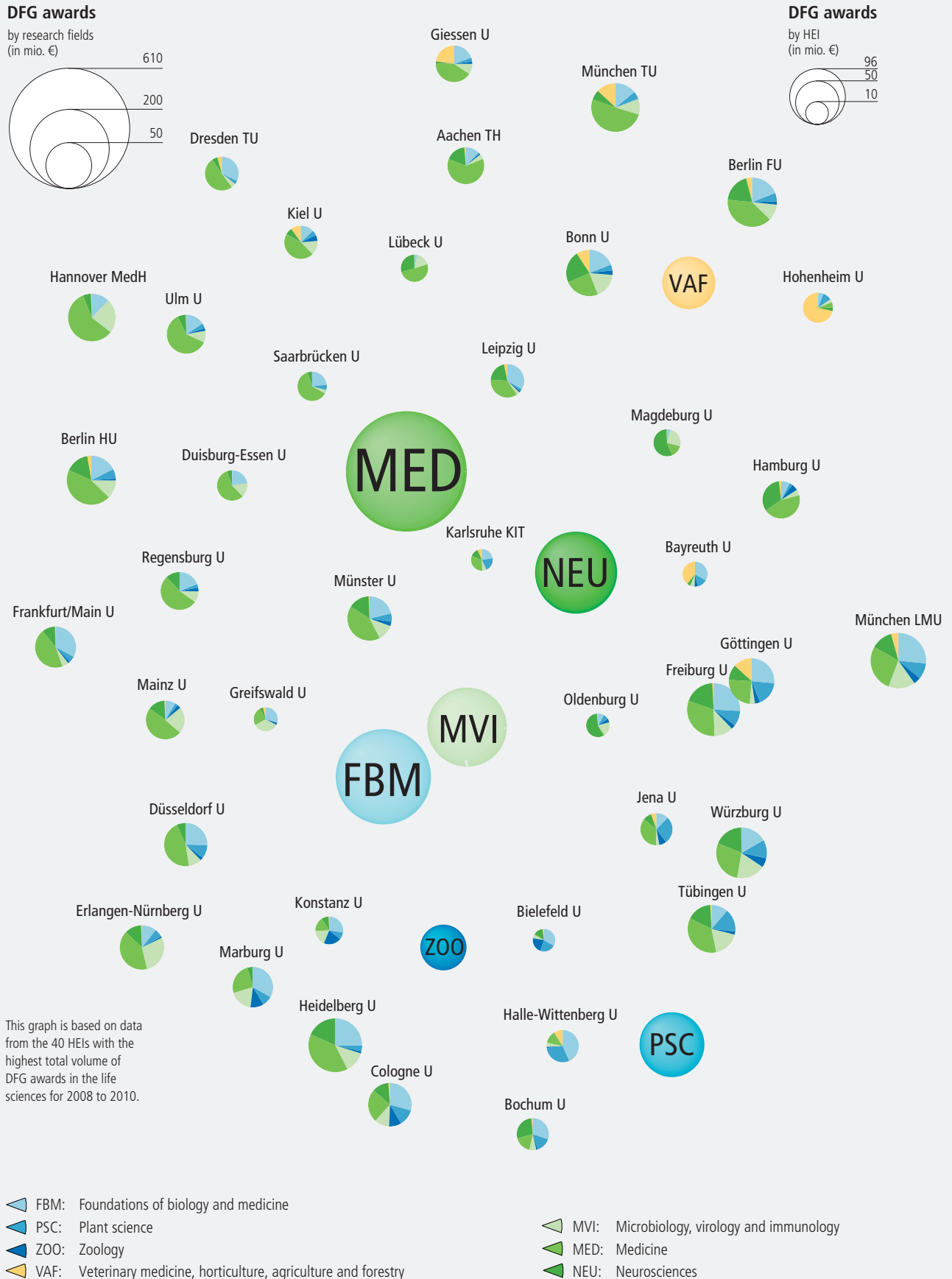
Calculations by the DFG.

riculture and forestry (VAF) in their DFG-funded research portfolio. The most prominent among these is the **University of Hohenheim**, where 70% of the DFG grants approved for the life sciences are dedicated to this research field, so that Hohenheim leads the ranks in this field (refer to Table 4-14 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)). Other universities heavily involved in VAF are **Giessen**, **Göttingen**, the **TU München** and the relatively small **University of Bayreuth**. At the latter HEIs, research in this field accounts for only a small share of their portfolios when compared with **Hohenheim**.

At the opposite end of the landscape, i.e. at the “south end” of the subject map, is found a cluster of HEIs where plant science (PSC) or zoology (ZOO) is included in the range of research fields. Examples of such universities are: **Halle-Wittenberg**, **Bochum**, **Göttingen**, **Jena**, **Tübingen**, **Cologne** and **Würzburg**.

Tables showing statistics for the three research areas distinguished by the DFG within the life sciences as well as the figures serving as the basis for the profile map (including the DFG-funded HEIs not shown here) are available at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas) (Tables 4-11,

**Figure 22:**  
Funding profiles of HEIs: Subject map based on DFG awards in the life sciences



**Note:** Corresponds to Figure 4-4 of the DFG Förderatlas 2012.

4-12, 4-14 and A-11). Cooperative relationships among HEIs throughout Germany have resulted within the life sciences in a number of regional clusters. A cartographic representation of these relationships can be viewed in Figure 4-3, also available at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas).

### 4.3 Natural Sciences

Chemistry, physics, mathematics and geosciences, as areas of study within the natural sciences discipline, form a part of the basic repertoire of subjects taught at many German universities, and thus are also characteristic of the research profile of these institutions. Related in a variety of ways to other subjects of study, the natural sciences lay an important foundation for basic research in almost every discipline.

Providing funding totalling almost €1.6 billion, the DFG is clearly the main source of grants for this scientific discipline. Non-university institutions researching the natural sciences participate to an above-average extent in the DFG's programmes. Such institutions received more than €200 million or 13% of the total volume under consideration here, which was awarded for the most part to projects conducted by institutes belonging to the **Leibniz Association (WGL)** or to the **Max Planck Society (MPG)**; refer to Table 4-15 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

Direct project funding for the natural sciences by the federal government amounted to almost €1 billion during the period under review. HEIs and non-university research institutions received roughly equal shares of this funding. Researchers at **Helmholtz Centres** were the most active in this sector (at 18%), while members of the **Max Planck Society**, the **Leibniz Association** and the **Fraunhofer-Gesellschaft** obtained shares amounting to between 6% and 8% (refer to Table A-37 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

Compared with the life sciences or even more the engineering sciences, the funding priorities of the EU's Seventh Framework Programme offer only limited areas of involvement for the natural sciences. Of particular significance in this regard is the research priority referred to as environment (including climate change; UMW). Funding for this area amounted to almost €80 million,

two thirds of which was acquired by applicants active at non-university research institutions (refer to Tables A-39 and A-40 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

#### Bonn Receives the Greatest Amount of DFG Funding for the Natural Sciences – Bremen Leads in the Relative Comparison

Table 7 lists the 20 HEIs that were awarded the most DFG funding for natural sciences, on the one hand based on absolute figures as well as in relative terms (i.e. when compared based on funding relative to the number of professors and total research staff). Among the ten leading HEIs in the absolute ranking, there is hardly any change from the Funding Ranking 2009. The only new member of this group is the **TU Berlin** – which supplanted the **University of Münster**, now ranking 12th. The **University of Bonn** acquired the most funding for the natural sciences, followed by two universities in **Munich**, the **LMU** and the **TU**.

When the absolute amount of DFG grants is measured relative to the number of professors active in the natural sciences discipline, the two rankings agree to a large extent: eight of the ten HEIs receiving the most funding in absolute terms also lead the ranking resulting from the per capita measurement. The universities of **Regensburg** and **Stuttgart**, which rate average on absolute funding, rank among the five most successful HEIs in the listing relative to the number of professors.

The **University of Bremen** leads the table both when ranked relative to professors and to the total research staff. This position is to be attributed, firstly, to Bremen's success in competing for funding offered by the Excellence Initiative: both the "*MARUM Center for Marine Environmental Sciences*" (a Cluster of Excellence) and the closely associated Graduate School "*Global Change in the Marine Realm (GLOMAR)*" are located at Bremen. The second major factor is that this university in northern Germany acquires large sums of grant money from more than one programme for projects classified under the research area of geology and palaeontology (GAP).

Table 7:

DFG awards for 2008 to 2010 in absolute figures and relative to size by HEI in the natural sciences

DFG funding (absolute)		DFG funding <sup>1)</sup> relative to size					
Higher education institution	Total	Higher education institution	Professorial staff		Higher education institution	Researchers	
	Mio. €		No.	T € per prof.		No.	T € per res.
Bonn U	68.0	Bremen U	74	597.9	Bremen U	587	75.9
München TU	62.9	Regensburg U	54	565.6	Bielefeld U	326	68.8
München LMU	62.1	Bonn U	127	534.1	Bonn U	990	68.7
Hamburg U	51.4	Karlsruhe KIT	84	512.5	Berlin TU	646	67.6
Heidelberg U	45.4	Stuttgart U	61	501.2	Berlin HU	502	65.5
Bremen U	44.5	München LMU	124	501.1	Regensburg U	463	65.5
Berlin TU	43.7	Heidelberg U	91	500.1	Mainz U	662	64.2
Karlsruhe KIT	43.0	München TU	128	493.2	Hannover U	678	61.1
Mainz U	42.5	Mainz U	87	489.4	München LMU	1,030	60.3
Berlin FU	42.2	Berlin TU	92	476.1	München TU	1,045	60.2
Hannover U	41.4	Berlin FU	93	454.4	Kiel U	508	60.1
Münster U	40.6	Konstanz U	33	451.1	Heidelberg U	765	59.3
Erlangen-Nürnberg U	37.6	Kiel U	70	437.3	Erlangen-Nürnberg U	655	57.4
Bochum U	36.3	Bielefeld U	51	437.2	Göttingen U	601	57.1
Cologne U	34.5	Bochum U	85	428.5	Cologne U	611	56.5
Göttingen U	34.4	Hannover U	98	421.3	Berlin FU	747	56.5
Berlin HU	32.9	Münster U	100	407.4	Hamburg U	924	55.6
Stuttgart U	30.8	Göttingen U	87	395.5	Karlsruhe KIT	786	54.7
Kiel U	30.6	Ulm U	39	394.6	Bochum U	667	54.3
Frankfurt/Main U	30.3	Düsseldorf U	44	388.7	Stuttgart U	574	53.7
<b>Ranked 1-20</b>	<b>854.9</b>	<b>Ranked 1-20</b>	<b>1,621</b>	<b>474.0</b>	<b>Ranked 1-20</b>	<b>13,766</b>	<b>60.8</b>
<b>HEIs overall</b>	<b>1,363.6</b>	<b>HEIs overall</b>	<b>4,967</b>	<b>274.5</b>	<b>HEIs overall</b>	<b>30,124</b>	<b>45.3</b>

<sup>1)</sup> Only HEIs which employed more than 30 professors and/or 150 researchers in the scientific discipline under consideration during 2009 were included within the scope of this calculation.

**Note:**

Abridged excerpt from Table 4-18 of the DFG Förderatlas 2012. Table 4-18 in its complete form, with the 40 HEIs receiving the most funding in 2008–2010, is available in English at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas).

**Data basis and sources:**

Deutsche Forschungsgemeinschaft (DFG): DFG awards for 2008 to 2010.

Federal Statistical Office of Germany (DESTATIS): Education and culture. Personnel at HEIs, 2009. Special analysis of Subject-Matter Series 11, Series 4.4.

Calculations by the DFG.

### Locations Receiving the Most Funding – Highly Popular among International Visiting Researchers as well

More than 2,000 natural scientists funded by the AvH and over 1,200 recipients of DAAD funding visited German HEIs during the period under review (2006–2010). Among these researchers, AvH recipients preferred the regions of **Munich**, **Bonn** and **Heidelberg**, while those supported by the DAAD spent their stays mostly in the **Berlin** area (**HU Berlin**, **FU Berlin** and **Potsdam**), in **Göttingen** or in **Tübingen** (refer to Table 4-16 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

The programmes offered by the AvH appeal to the interests of chemical scientists in par-

ticular: roughly one in five stays at HEIs is accounted for by researchers in this group, while only the humanities are able to attract a greater level of interest (23%). AvH recipients in chemistry visited a total of 61 HEIs during the 2006–2010 period. At the top of the list of favoured HEIs are the two universities in **Munich**, followed by **Göttingen**, **Aachen** and **Erlangen-Nürnberg** (refer to Table A-41 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)). The HEIs hosting visiting researchers funded by the DAAD are listed in Table A-42 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas).

The significance of international (and national) cooperation is discussed in greater detail in Chapter 5, illustrated by referring to bibliometric data for the field of Chemistry.

The results of the bibliometric analysis presented there clearly bring to light the international character of the research carried out in this field.

### DFG Subject Classification System Enables Highly Detailed Research Profiles for the Natural Sciences

Figure 23 shows the research profiles of the 40 universities awarded the most funding. Here a subject map is used to represent the relative shares of funding in the various research fields, of which 18 in total are distinguished within the natural sciences.

The profile chart takes in a wide overall range of subject areas, extending from the research fields of physical and theoretical chemistry (PTC), molecular chemistry (MOL) and chemical solid state research (CSR) at the lower left, to condensed matter physics (CMP) and particles, nuclei and fields (PNF) at the lower right, and to the geoscience fields of geology and palaeontology (GAP) and geophysics and geodesy (GPG) in the upper half of the map.

A typical characteristic of the majority of the HEIs shown in the figure is relatively broad participation in the research fields classified under the natural sciences. The universities of **Tübingen** and **Göttingen** are found at the centre of the map since they receive third-party funding in all research fields within the natural sciences. Examples of universities that pursue a special focus, in this case in polymer research (POL), are **Bayreuth**, **Halle-Wittenberg** and **Mainz**.

DFG-funded research in molecular chemistry (MOL) predominates at **Münster**, **Erlangen-Nürnberg** and **Heidelberg** (at the lower left). The DFG provided the largest amount of funding for condensed matter physics – as can be seen from the correspondingly large size of the CMP symbol. CMP dominates research activities at the universities of **Hamburg**, **Regensburg** and **Duisburg-Essen** as well as in **Konstanz**, **Augsburg**, **Halle-Wittenberg** and **Leipzig**.

Tables showing data for the research areas of physics, geosciences, mathematics and chemistry as well as the figures serving as the basis for the profile map (including the DFG-funded HEIs not shown here) are available at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas) (Tables 4-19, 4-20, 4-21 and A-11). The wide range

of close cooperative relationships within natural sciences research are presented as a cartographic representation in Figure 4-5 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas).

## 4.4 Engineering Sciences

The Funding Atlas distinguishes a total of ten research fields funded by the DFG within the engineering sciences. The subject spectrum ranges from production technology and process engineering to computer science and system engineering, to construction engineering and architecture. During the 2008–2010 period, the DFG approved grants totalling almost €1.4 billion for research projects in the engineering sciences. The engineering sciences also profit to an exceptional degree from the programmes of the federal government and the EU.

Within the framework of R&D project funding measures between 2008 and 2010, the federal government provided a total of more than €1.6 billion for research at universities and at non-university research institutions. As calculated for a three-year period, a total of €711 million was paid to German institutions in the context of the EU's Seventh Framework Programme for projects in the discipline of engineering sciences (refer to Table 4-23 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

### Non-university Research Institutions Receive Equal Funding from the Federal Government and the EU

Of the funding taken into account in these statistics, HEIs and non-university research institutions share the funds from the EU's Seventh Framework Programme at a ratio of 46:54, while the proportion is similar for federal government funding (40:60). The DFG's focus is clearly on the HEIs. When compared across scientific disciplines, participation of non-university research institutions is slightly below average (8% compared with 10%; refer to Table 4-23 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

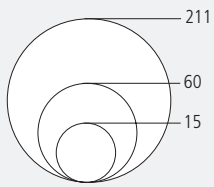
Corresponding to the variation among funding profiles, the **Fraunhofer-Gesellschaft (FhG)**, which actively sources little DFG funding, is seen as the major non-university recipient of federal government and EU funding for the engineering sciences. The FhG acquired more than 20% of the total



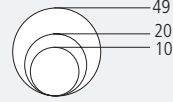
**Figure 23:**  
Funding profiles of HEIs: Subject map based on DFG awards in the natural sciences

**DFG awards**

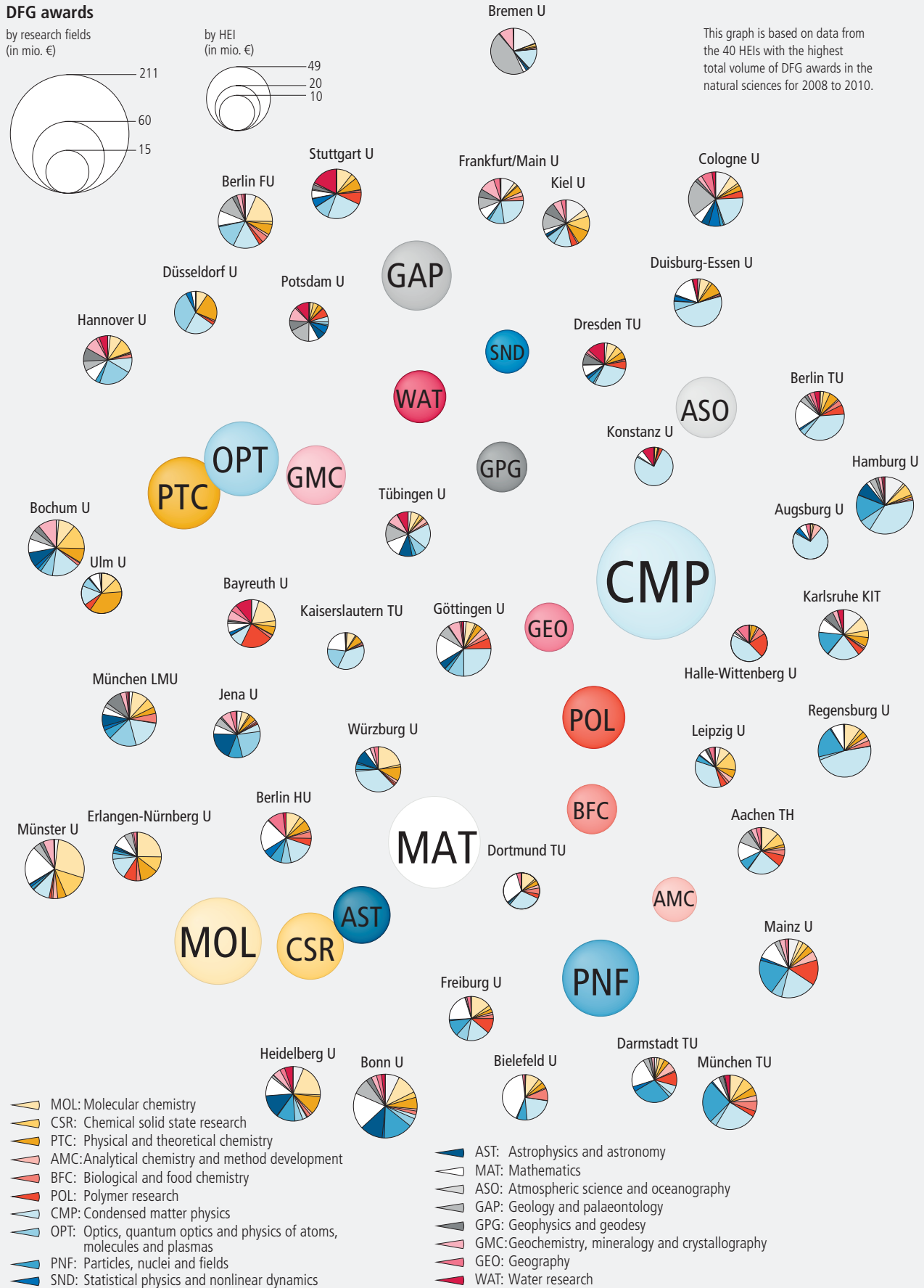
by research fields  
(in mio. €)



by HEI  
(in mio. €)



This graph is based on data from the 40 HEIs with the highest total volume of DFG awards in the natural sciences for 2008 to 2010.



- MOL: Molecular chemistry
- CSR: Chemical solid state research
- PTC: Physical and theoretical chemistry
- AMC: Analytical chemistry and method development
- BFC: Biological and food chemistry
- POL: Polymer research
- CMP: Condensed matter physics
- OPT: Optics, quantum optics and physics of atoms, molecules and plasmas
- PNF: Particles, nuclei and fields
- SND: Statistical physics and nonlinear dynamics
- AST: Astrophysics and astronomy
- MAT: Mathematics
- ASO: Atmospheric science and oceanography
- GAP: Geology and palaeontology
- GPG: Geophysics and geodesy
- GMC: Geochemistry, mineralogy and crystallography
- GEO: Geography
- WAT: Water research

**Note:** Corresponds to Figure 4-6 of the DFG Förderatlas 2012.

third-party funding of each of these two organisations (1% from the DFG). The **Helmholtz Association (HGF)** also stands out among recipients of federal and EU funding, accounting for 10% of all funding granted in each case (DFG: 1%).

The institutes of the **German Aerospace Center (DLR)** and the **Jülich Research Centre (FZJ)** were also particularly active in acquiring federal and EU funding. More details about the funding acquired by specific non-university research institutions from the DFG, the federal government and the EU are provided in Tables A-20, A-37 and A-40 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas).

### Aachen Acquires the Most DFG Funding in Absolute Terms – TU Freiberg Also Very Successful in a Relative Comparison

The **RWTH Aachen** received almost €161 million, which was the highest volume of grants approved in the engineering sciences, followed by the **TU Darmstadt** (€85 million), the **KIT Karlsruhe** (€84 million) and the **TU München**. Compared with the Funding Ranking 2009, hardly any institutions have changed position, not least the **RWTH Aachen** at its exceptionally high position (refer to Table 8).

As already seen for the scientific disciplines presented above, there is a close correlation

**Table 8:**

DFG awards for 2008 to 2010 in absolute figures and relative to size by HEI in the engineering sciences

DFG funding (absolute)		DFG funding relative to size <sup>1)</sup>					
Higher education institution	Total	Higher education institution	Professorial staff		Higher education institution	Researchers	
	Mio. €		No.	T € per prof.		No.	T € per res.
Aachen TH	160.6	Aachen TH	155	1,035.0	Bremen U	536	89.8
Darmstadt TU	84.6	Bremen U	51	950.5	Saarbrücken U	308	77.4
Karlsruhe KIT	83.6	Darmstadt TU	113	745.7	Darmstadt TU	1,251	67.6
München TU	74.0	Hannover U	86	729.4	Aachen TH	2,420	66.4
Stuttgart U	66.6	Erlangen-Nürnberg U	82	712.4	Hannover U	1,009	62.0
Hannover U	62.6	Karlsruhe KIT	123	677.8	Erlangen-Nürnberg U	947	61.9
Dresden TU	58.7	Freiburg U	33	611.4	Kiel U	232	51.5
Erlangen-Nürnberg U	58.6	Freiberg TU	39	571.2	Karlsruhe KIT	1,630	51.3
Bremen U	48.2	Saarbrücken U	42	565.5	Freiburg U	414	49.4
Dortmund TU	44.6	München TU	150	494.3	Ulm U	248	46.0
Berlin TU	43.4	Bochum U	61	479.6	Dortmund TU	973	45.8
Braunschweig TU	41.1	Stuttgart U	139	479.2	Bochum U	644	45.8
Bochum U	29.5	Dortmund TU	95	467.6	Paderborn U	421	42.2
Saarbrücken U	23.8	Braunschweig TU	100	409.1	Freiberg TU	566	39.3
Freiberg TU	22.3	Chemnitz TU	53	405.7	Braunschweig TU	1,098	37.4
Chemnitz TU	21.5	Paderborn U	46	386.7	Bayreuth U	212	37.1
Ilmenau TU	20.7	Dresden TU	160	367.2	München TU	2,024	36.5
Freiburg U	20.5	Ilmenau TU	58	359.5	Siegen U	298	35.5
Hamburg-Harburg TU	18.6	Ulm U	35	326.0	Ilmenau TU	586	35.3
Paderborn U	17.8	Clausthal TU	45	311.0	Clausthal TU	416	33.6
<b>Ranked 1-20</b>	<b>1,001.2</b>	<b>Ranked 1-20</b>	<b>1,668</b>	<b>578.4</b>	<b>Ranked 1-20</b>	<b>16,236</b>	<b>52.2</b>
<b>HEIs overall</b>	<b>1,277.2</b>	<b>HEIs overall</b>	<b>10,424</b>	<b>122.5</b>	<b>HEIs overall</b>	<b>41,271</b>	<b>30.9</b>

<sup>1)</sup> Only HEIs which employed more than 30 professors and/or 150 researchers in the scientific discipline under consideration during 2009 were included within the scope of this calculation.

**Note:**

Abridged excerpt from Table 4-24 of the DFG Förderatlas 2012. Table 4-24 in its complete form, with the 40 HEIs receiving the most funding in 2008-2010, is available in English at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas).

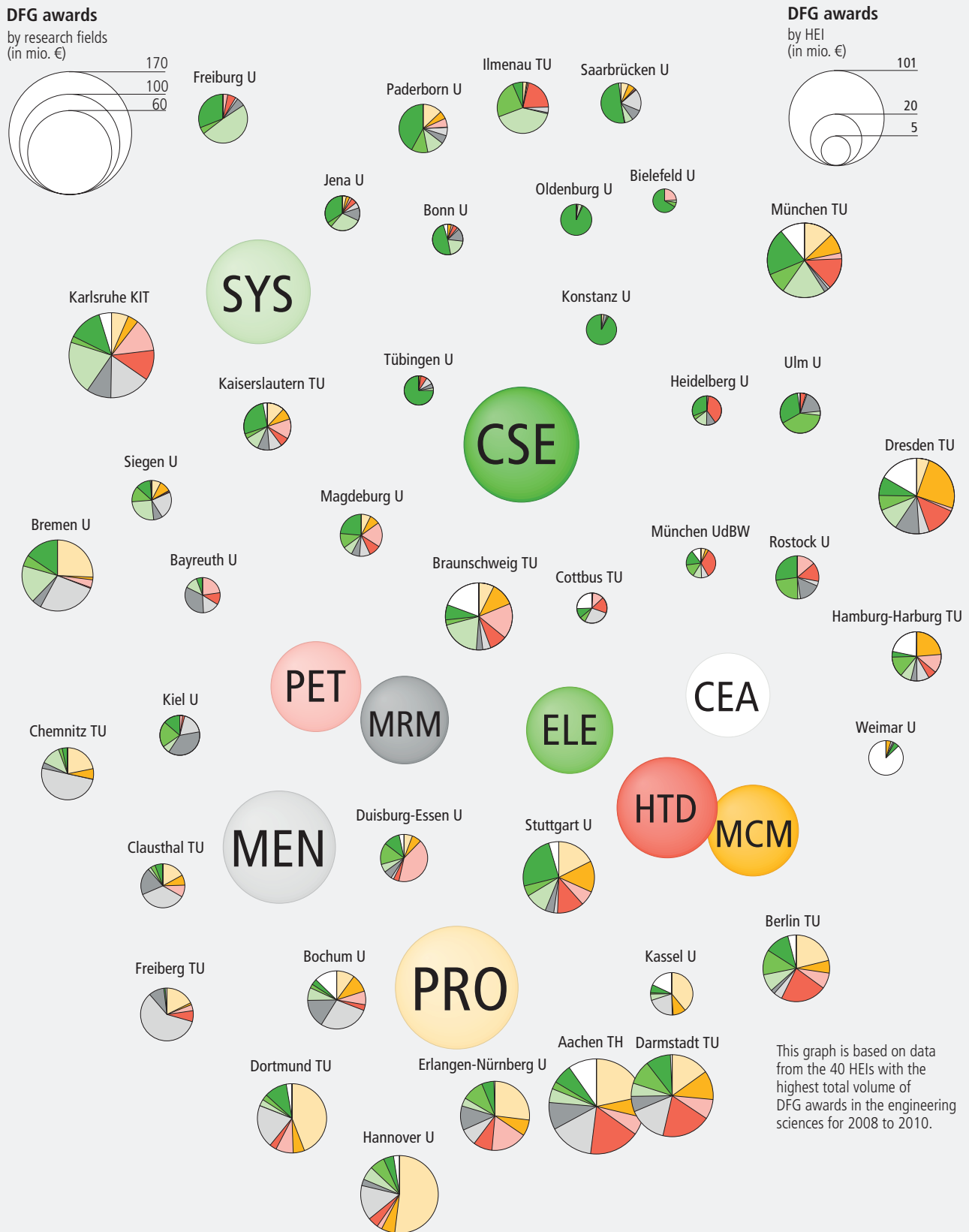
**Data basis and sources:**

Deutsche Forschungsgemeinschaft (DFG): DFG awards for 2008 to 2010.

Federal Statistical Office of Germany (DESTATIS): Education and culture. Personnel at HEIs, 2009. Special analysis of Subject-Matter Series 11, Series 4.4.

Calculations by the DFG.

**Figure 24:**  
Funding profiles of HEIs: Subject map based on DFG awards in the engineering sciences



This graph is based on data from the 40 HEIs with the highest total volume of DFG awards in the engineering sciences for 2008 to 2010.

**Note:** Corresponds to Figure 4-8 of the DFG Förderatlas 2012.

between the absolute and relative amount of funding granted. Seven of the ten largest funding recipients are also at the head of the list of HEIs acquiring the most relative amounts of DFG funding.

The **University of Freiburg** succeeded in joining the top ranks of relative recipients. While not a technical university, Freiburg has an institute that acquires a comparatively large amount of DFG funding in the areas of system engineering and computer science. The **Saarland University** is also highly successful in computer science. The third case involves once again a technical university of the classic type: while a small university, the **TU Freiberg**, stands out mainly due to materials science, but it is also active in other research fields within the engineering sciences.

### Aachen, Munich, Darmstadt and KIT Karlsruhe Particularly Attractive for AvH-funded Visiting Researchers

The prominent position of the four institutions named above is underscored by their ability to attract visiting researchers funded by the AvH Foundation: they also lead the ranks in this case. The DAAD funding recipients, in contrast, pursue somewhat different focuses by preferring the **TU Berlin**, the **RWTH Aachen**, the **Gottfried Wilhelm Leibniz Universität Hannover** and the **TU Dresden** (refer to Table 4-25 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

### Research Profiles of HEIs in the DFG-Funded Engineering Sciences

Figure 24 presents the research profiles of the 40 HEIs receiving the highest grant amounts in the engineering sciences, in the familiar form. Corresponding to their focuses within the framework of DFG-funding, the HEIs have been positioned within a landscape in which the total of ten research fields in the engineering sciences are distinguished.

A number of institutions can be identified in the upper area of the map, most of which are not technical universities but which have achieved profiles in the engineering sciences,

specifically in computer science (CSE) and system engineering (SYS). Examples of this are **Saarbrücken**, to which more than half of the DFG grants in this scientific discipline go for projects relating to computer science, and **Paderborn**, with a comparably large share.

Institutions with a large share of DFG projects in materials engineering, such as **Chemnitz**, **Clausthal** and **Freiberg**, are found at the lower left, while HEIs covering the research field of construction engineering and architecture (CEA) to a significant degree can be seen at right. Examples of these include, quite naturally, the **Bauhaus-Universität Weimar**, but also **Dresden** and **Hamburg-Harburg** as well as **Cottbus**, **Braunschweig** and **Kassel** and even **Karlsruhe** (at the left of the map).

Production technology, which is the research field within the engineering sciences with the largest amount of funding, dominates DFG-funded research at the universities of **Hannover**, **Dortmund**, **Erlangen-Nürnberg** and **Aachen** (in the lower part of the map).

In addition to depicting the individual research focuses, the map reveals profile similarities among institutions. Examples of this are the universities of **Erlangen-Nürnberg**, **Aachen** and **Darmstadt**, which have very similar research profiles – and differ considerably from the major institutions positioned at the opposite end of the subject map, specifically the **KIT Karlsruhe**, the **TU München** and the **TU Dresden**. Yet, “profile partnerships” are also seen among smaller HEIs, such as **Clausthal** and **Chemnitz**, **Kaiserslautern** and **Magdeburg** as well as **Rostock** and **Ulm**.

Tables listing the details on the research areas of mechanical engineering, computer science, system engineering, electrical engineering as well as construction engineering and architecture are available at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas) (Tables 4-28, 4-29, 4-30 and 4-31). The figures serving as the basis for the profile map (including the DFG-funded HEIs not shown here) are available in Table A-13 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas). A cartographic representation of cooperative projects in the engineering sciences among groups in Germany, depicted as network structures, is available in Figure 4-7 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas).

## 5 National and International Cooperation as Reflected by Bibliometric Data and Illustrated by Chemistry

The key performance indicators presented in this report are based as a rule on third-party funding. Such data is generally accepted as being a strong indicator of research activity and research quality particularly in cases where a) third-party funding is acquired through competition and b) the recommendation for grant approval is handed down as part of a scientific review process, i.e. in the course of a peer review procedure. Other generally accepted indicators are based on publication activities. Specifically, the publication rate is generally regarded as a measure of research productivity. In addition, the citation rate for publications by authors at one institution is also seen as a measure of the response or “impact” – and is often interpreted even as an indicator of “research quality”.

Indicators based on publications and citations were last published for the field of *medicine* in the 2003 edition of the Funding Ranking (cf. DFG 2003). The research area of *chemistry* has therefore been selected for a similar review in the DFG Funding Atlas 2012. Chemistry is one of the few fields for which it is possible to perform a bibliometric analysis without having to gather additional data and by directly drawing on the databases of Thomson Reuters (Web of Science) and Elsevier (Scopus), the two best-known and frequently used (refer to Moed 2005: p. 138). This is possible because, firstly, these databases list almost exclusively articles in international journals, which is considered the standard publication form in chemistry, and, secondly, the large majority of researchers in chemistry choose professional journals in English for publishing their papers. These reasons, along with the fact that bibliometric data are widely accepted and considered reliable for studying this subject area, were the basis for selecting the field of chemistry as the subject of a pilot study.

### 5.1 Data Basis and Methodology

We owe thanks to the Institute of Science and Technology Studies (IWT) at the Bielefeld University for the support in making it possible to use the results of bibliometric analyses in this Funding Atlas.

The analysis is based on data for publications appearing in the period 2008–2010 that were indexed in the Web of Science database. The dataset is restricted to publications in specialist journals for the subject of chemistry, as defined by Thomson Reuters. In view of the need to link this data to the success rate of funding proposals submitted to the DFG, the analysis focusses on the 40 universities receiving the largest amounts of DFG funding for research in chemistry, as listed in this report.

An exact total of 20,498 publications meeting these conditions were identified in the Web of Science, specifically:

- a. at least one of the authors was from one of the 40 institutions receiving the most funding for chemistry research;
- b. the article appeared between 2008 and 2010 in a journal classified under the research area of chemistry in the Web of Science.

In the tables below, co-publications involving authors from more than one institution are counted for each of the participating institutions (referred to as “whole counting”). From condition b) above, it implicitly follows that the data selected cannot be expected to provide a complete picture of the publication activities of the chemistry researchers at the institutions reviewed. Rather, by making a selection based on these conditions, a sample (albeit a large one) has been taken of publications that treat issues specifically relating to chemical science (more details on the data basis are provided by the Glossary of Methodological Terms at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

## 5.2 Publication Activity in Chemistry

In the publication database of Thomson Reuters, an exact total of 30,389 articles in journals classified under chemistry are listed for the period of 2008–2010 as having an author from Germany. After China, the US and Japan, Germany is thus the country ranking fourth worldwide in the number of specialised publications (refer to Table 6-1 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

German authors participated in about 7% of all publications worldwide that appeared in chemistry journals. Of the 30,389 chemistry articles in which German authors participated during 2008–2010, as listed in the source database, 20,498 refer to an author's address at one of the 40 universities selected for this report. Thus, roughly two out of three chemistry journal articles from Germany originated with researchers from the institutions selected here.

### High Correlation: Amount Granted by the DFG for Research in Chemistry and the Institution's Publication Rate in Chemistry

When the number of chemistry publications is related to the amount of funding for chemistry awarded to these universities by the DFG during the 2008–2010 period, a relatively high degree of agreement can be seen between the two ranking schemes: 38 of the 40 are found both in the ranking according to publications and in the listing by grants approved. Of the ten HEIs ranking the highest on the scale of DFG grants, seven are similarly among the top ten when measured according to publication rate for chemistry journals (refer to Table A-43 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)).

In most cases there are only moderate differences in ranking position: a difference of five positions at the most can be seen for about half the universities. Clear anomalies exist as well, however, for instance in the case of the **TU Berlin**, which at fourth place ranks high in terms of DFG funding but only average (20th place) according to the publications specifically related to chemistry that are attributed to this institution. The **Friedrich Schiller University Jena**, on the other hand, is found near the bottom of the ranks (at 36th place) with respect to DFG grants but among the leaders (ninth place) in terms of publications.

Just as the DFG grants reflect only a portion of third-party funded research, or even of research activities at all, the international journal papers classified under chemistry in the Web of Science represent only part of the research in chemistry. Yet the two subsets nonetheless overlap to a great degree.

## 5.3 Cooperation in Chemistry as Revealed by Bibliometric Data

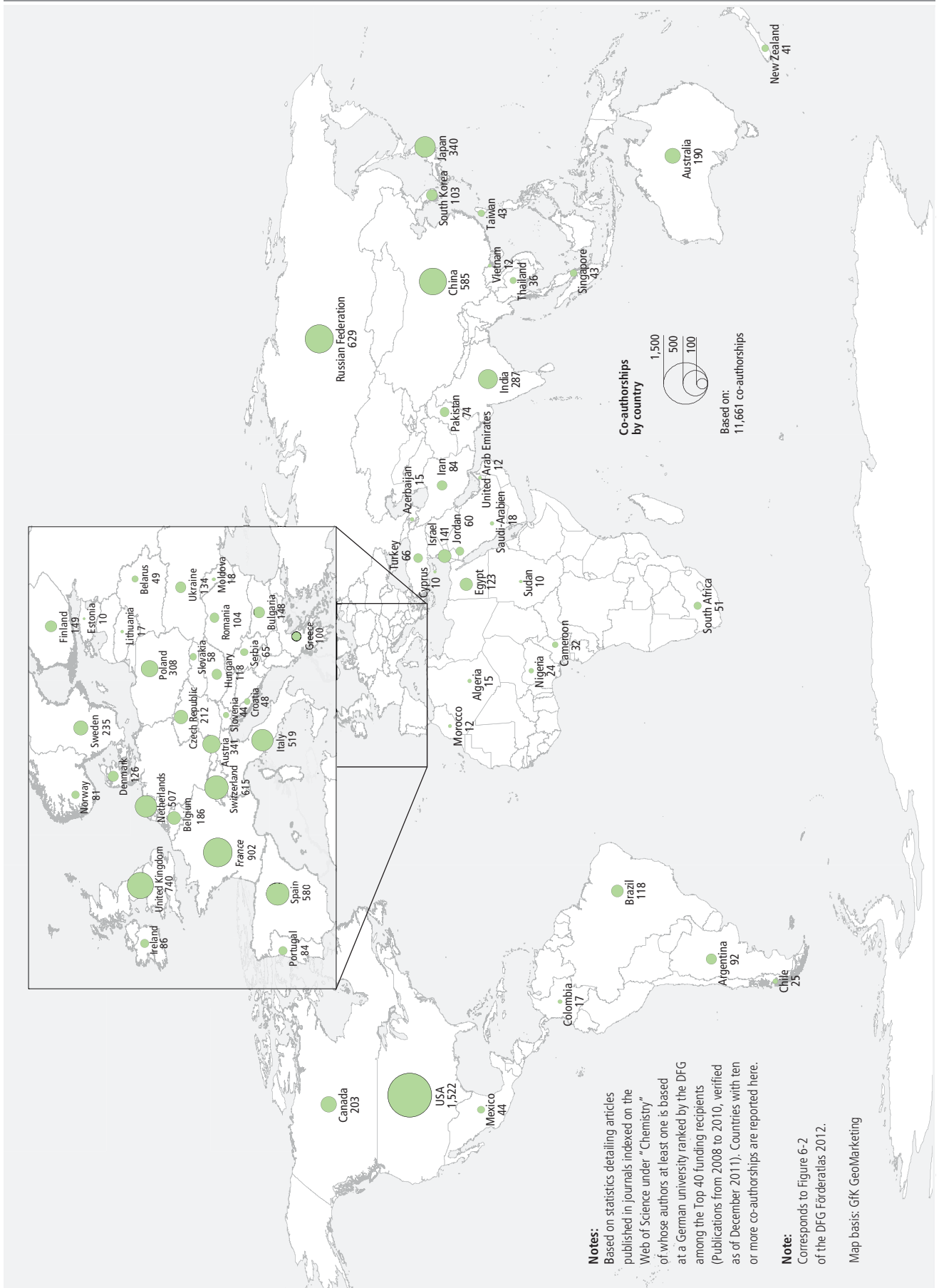
Bibliometric data provide an additional avenue for studying cooperative relationships at the international level, which supplements the methods presented above, namely: the analysis of cooperative projects taking place as part of DFG-funded cooperation programmes at the national and international level, and the investigation of research stays abroad involving doctoral researchers in Research Training Groups or visiting researchers in Collaborative Research Centres. Cooperation is reflected in bibliometric data in the form of co-authorship information. In our analysis, we specifically concentrate on institutional cooperation, as the Web of Science includes the addresses of a paper's authors for each publication listed in the database (including name of the institution and country). These details serve as the basis for the analyses of research in chemistry presented below.

### 5.3.1 Overall Significance of Cooperation among Institutions

Ninety-seven percent of the 20,498 publications resulted from co-authorship, with four being the most frequent number of authors. Cooperation is therefore the normal case and individual authorship the exception. When the concept of cooperation is broadened beyond co-authorship among individuals to include the resulting cooperation among institutions, it has proven useful in bibliometric studies to differentiate among three forms of cooperation based on scope:

- ▶ **Intra-institutional:** all of one paper's authors are from one and the same institution.
- ▶ **National cooperation:** researchers from at least two research institutions in Germany participated in the publication but no colleagues from abroad.
- ▶ **International cooperation:** authors from Germany as well as other countries

**Figure 25:**  
International co-authorships by chemistry researchers at higher education institutions in Germany



(i.e. the address of the researcher's institution was in another country) participated in the publication.

More than 43% of the papers investigated here were published together with co-authors from research institutions abroad (refer to Figure 6-1 at [www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)). Among the chemical scientists at the HEIs investigated here, it is thus typical for research activities and resulting publication to take place within the context of international cooperative projects.

### 5.3.2 International Cooperation

The great significance of international cooperation is also reflected in the number of countries from which the researchers serving as co-authors originate. For the 2008–2010 period, the Web of Science lists an exact total of 108 countries of origin for the co-authors of the chemistry articles that were published jointly with authors active at the 40 German universities studied. Figure 25 consists of a

world map showing all of the countries from which at least ten co-authors of these publications originated.

As might be expected, most of the cooperative projects involved the US: of the total of 8,851 publications in which international co-authors participated, 1,522 involved partners at American research institutions.

With respect to neighbouring European countries, close cooperation is seen with France (902 co-authorships), the UK (740), Switzerland (615), Spain (580), Italy (519) and the Netherlands (507). Beyond Europe, the co-authors of German chemical scientists can be observed as coming comparatively frequently from the Russian Federation (629), China (585), Japan (340), India (287), Canada (203) and Australia (190).

The cartographic representation also reveals the fact that hardly any single continent is missing from the cooperation map for German research in chemistry. The data investigated in this study reveals cooperation with researchers from 108 countries – limited by no means to a few “best partners” but involving chemical scientists from all over the world.



## 6 Conclusion

### Summary

With the Funding Atlas 2012, the DFG presents, in the customary three-year interval, key indicators that provide information on the research profiles of higher education institutions (HEIs) and non-university research institutions. The analyses are based largely on data covering grants of public third-party funding to HEIs and non-university research institutions. The English edition presented here represents a summary of the key findings found in the German edition. Supported by comprehensive offerings on the web, where additional key indicators in table and chart form are presented, the Funding Atlas 2012 furnishes unique summary knowledge of the core areas in which German HEIs and non-university research institutions pursue publicly funded research.

The DFG Funding Atlas is currently the only reporting system providing information in a form that both takes in all research areas and allows comparisons for all of Germany. Beyond the purely monetary viewpoint, which normally follows from key figures on third-party funding, the differentiations made in the report on the basis of research fields and topics help to more clearly recognise the tremendously multi-faceted nature of publicly funded research.

Unlike most other statistical reporting systems or ranking or rating studies, in this study the data is not collected from the research institutions where the scientists receiving grants are active. The information is instead provided by the funding organisations themselves. In this way, the Funding Atlas remains faithful to a key service commitment: to furnish planning data to the DFG member institutions as well as to all other organisations that depend on reliable planning data for the purpose of defining research strategies. With the readers targeted by the English edition of the Funding Atlas 2012 in mind, the issue of in-

ternational visibility of research in Germany is another vital aspect addressed. The key indicators presented here are proof that international research cooperation has long since become commonplace – as seen in ongoing exchange as evidenced by research visits, in joint publication of journal articles as well as in the review process for funding applications, which involves international reviewers. The DFG actively supports this trend within the framework of its funding programmes and through on-site activities at the DFG offices outside Germany, which have been greatly expanded in recent years.

### Perspectives

Simultaneous with renaming the Funding Ranking to Funding Atlas, the reporting system has undergone further development, focussing more strongly in the future than in previous years on the issue as to what extent changes are reflected in the key indicators presented. Thus, views based on time series in particular will be provided to a greater extent in future editions of the Funding Atlas. The printed edition published in three-year intervals will continue to represent the main medium but will be flanked by web offerings to be expanded considerably in stages.

The English edition provides information for the most part to scientists and researchers in other countries and to those employees of international research and funding institutions who have a special interest in research in Germany. The information package will be supplemented in this case as well by extensive web offerings in English ([www.dfg.de/fundingatlas](http://www.dfg.de/fundingatlas)). The website provides all those interested with the opportunity to refer to the figures and tables available online and thus obtain specific background information on the analyses offered in the English summary.

## 7 Appendix

### Index of Abbreviations

#### General Abbreviations

GDR	German Democratic Republic
Bn.	Billion
cf.	compare
cum. %	cumulative percent
ExIn	Excellence Initiative
FP	EU Framework Programme
GDP	Gross domestic product
HEI	Higher education institution
i.e.	that is
Mio.	Million
No.	Number
p.	page
prof.	Professor
PROFI	Project-funding information system of the federal government
R&D	Research and development
res.	Researchers
UK	United Kingdom
US	United States

#### Institutions and Organisations

AvH	Alexander von Humboldt Foundation
BMBF	Federal Ministry of Education and Research
CNRS	Centre national de la recherche scientifique

DAAD	German Academic Exchange Service
DESTATIS	Federal Statistical Office
DFG	Deutsche Forschungsgemeinschaft (German Research Foundation)
DKFZ	German Cancer Research Centre
EMBL	European Molecular Biology Laboratory
ERC	European Research Council
EU	European Union
FH	University of applied sciences
FhG	Fraunhofer-Gesellschaft
HGF	Helmholtz Association of National Research Centres
iFQ	Institute for Research Information and Quality Assurance
INRA	Institut national de la recherche agronomique
INSERM	Institut national de la santé et de la recherche médicale
LMU	Ludwig-Maximilians-Universität
MPG	Max Planck Society
OECD	Organisation for Economic Cooperation and Development
TH/TU	Technical University
U	University
WGL	Gottfried Wilhelm Leibniz Association of Science (Wissenschaftsgemeinschaft Gottfried Wilhelm Leibniz e.V.)

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## Data Basis and Sources

- Alexander von Humboldt Foundation (AvH):** Research visits by AvH guest researchers from 2006 to 2010.
- Deutsche Forschungsgemeinschaft (DFG):** DFG grants approved 1991 to 2010, participation in Coordinated Programmes (Collaborative Research Centres, Research Units, DFG Research Centres, Graduate Schools and Clusters of Excellence) 2008 to 2010, reviewers of proposals submitted within the framework of the Individual Grants Programme and the Coordinated Programmes from 2008 to 2010 and elected members of DFG Review Boards for the term of office 2008 to 2011.
- EU Office of the BMBF:** Participation in the EU's Seventh Framework Programme (term: 2007–2013; project data as of 16 March 2011).
- European Research Council (ERC):** Participation in the EU's Seventh Framework Programme (term: 2007–2013; project data as of 16 March 2011, call for papers for Starting Grants until June 2011).
- Federal Ministry of Education and Research (BMBF):** Direct R&D project funding by the federal government 2008 to 2010 (PROFI project database).
- Federal Statistical Office (DESTATIS):** For HEIs, the current basic funds and third-party funding 1998–2009, changes in R&D expenditure 1998–2009, scientific and artistic personnel working full-time, and income of HEIs and non-university research institutions 2009.
- Federation of Industrial Cooperative Research Associations (AiF):** Funding for Industrial Cooperative Research (IGF), the Central Innovation Programme for SMEs (ZIM) and the Research Programme at Universities of Applied Sciences in 2008–2010.
- German Academic Exchange Service (DAAD):** Stays by DAAD guest researchers as well as students and graduates from 2006 to 2010.



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